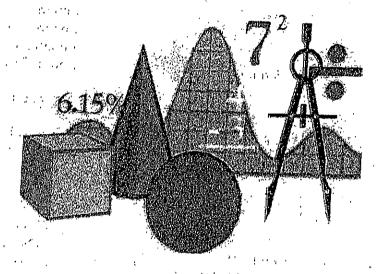
Dispensa



Basic English for Math Students

Docente: Prof. Inglese 1 - Corso A



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BASIC GRAMMAR UNITS



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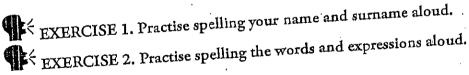
UNIT 1 PHONETIC SYMBOLS

CONSONANTS	T. Communication of the Commun
1 /p/ as in nen /nen/	VOWELS
/b/ as in big/bro/	25 /i:/ as in see /si:/
: 5 /t/ as in tea /ti-/	26 /1/ as in his /h1z/
$\frac{4}{d}$ /d/ as in do /d/	2/ /i/ as in twenty /'twenti/
) /k/ as in cat /leme/	28 /e/ as in ten /ten/
6 /g/ as in go /gozz/	29 /æ/ as in stamp/stæme/
7 /f/ as in four /for/	of as in father /'forage
8 /v/ as in very /?rem!/	of as in hot/hot/
9 /s/ as in son /sAn/	32 /o:/ as in morning/morner/
10 /z/ as in zoo /zu:/	33 /U/ as in football /furball
11 /l/ as in live /lrv/	34 /u:/ as in you /in:/
12 /m/ as in my/mar/	35 /n/ as in sun /snn/
12 / / my/mal/	36 /3/ as in learn /13:n/
14 /L/ 1027	37 /ə/ as in letter /'letə/
15 / Lappy /næpi/	refer \ fela\
16 /!/ red/	DIPHTHONGS (two vowels together)
17 / / Ses / Jes /	38 /eɪ/ as in name /neɪm/
/Juca /or are are	20 / 1101111/
10 /r/ as III manks / Hænks/	40 / "/ IEW / M9U/
20 /C/	At my/may
21 V. WIM SHE /J1:/	10 ,
22 / C/ Elevision /telivian/	as iii boy /boI/
as in child/t/aild/	AA / Hear / MIO/
German /daa:man/	45 /TTP/
24 /ŋ/ as in English /'mglrs/	4) /Uə/ as in tour/tUə/
Write the word that these phonetic symb	ols express:
1. teibl =	
2. t∫eə =	4. θ3:t1 =
	5. kemistri =
	6. batl =
Now write these words in phonetic symbo	
head	13:
. head =	thermometer -
terribe	revision -
. test-tube =6	bird =

ALPHABET AND SPELLING

The pronunciation of the letters of the alphabet, as read by an Italian speaker:

```
A = ei
B = bi
C = si
D = di
E = i
F = ef
G = gi
H = eic
I = ai
 I = gei
 K = chei
 L = el
  M = em
 N = en
  O = 011
  P = pi
  Q = chiu
  R = a: (a long open sound)
  S = es
   T = ti
   U = iu
   V = vi
   W = dvplin
   X = echs
   Y = uai
    Z = zed (British English) zi (American English)
```



operation	back	scientist
multiply	just	happy
recognize	quite	miniaturize
good luck	view	calculate
fetch	exercise	task
good luck	•	

SOME PRONUNCIATION AIDS

THE "ED" FORM (used in the Simple Past tense or past participle of a regular verb):

This is pronounced (t) after certain consonant sounds, for example:

stop	stopped	(p)t
look	looked	(k)t
pass	passed	(s)t
laugh	laughed	(f)t
etch	etched	(ch)t
push	pushed	(sh)t

It is pronounced (d) after certain consonant sounds, for example:

dub dubbed hug hugged love loved cram crammed clean cleaned travel travelled use used	(b)d (g)d (v)d (m)d (n)d (l)d (z)d
---	--

It is pronounced (id) after the consonants "t" and "d", for example:

waited	(t)id
added	(d)id

The pronunciation of "S" or "ES" (For the third person singular form of the verb, for the plural of a noun, or for the Saxon Genitive):

The "s" is pronounced (s) after certain consonant sounds, for example:

It is pronounced (z) after certain consonant sounds, for example:

It is pronounced (iz) after certain consonant sounds, for example:

weakness	weaknesses	(s)iz
lose	loses	(z)iz
watch	watches	(ch)iz
distinguish	distinguishes	(sh)iz

√ THE GROUP OF LETTERS "GN"

At the beginning or end of a word the "gn" is pronounced (n), for example:

(n) gnome (n) sign

In the middle of a word the "g" and the "n" are usually pronounced separately, for example:

(g)(n) magnetize (g)(n) signal (g)(n) recognize

✓ THE DOUBLE "C"

This is usually pronounced (k)(s), for example:

(k)(s) accept (k)(s) success (k)(s) access

✓ THE GROUP OF LETTERS "OUGH"

This group of letters is pronounced in various ways, depending on the word, for example:

 (λf) enough/rough (of) cough

bought /thought	(ɔ:t)
though through	(ои)
bough	(au)

✓ THE LETTERS "CH"

The "ch" in English is usually pronounced (ch), for example:

chip	checker
cheap	chatty
choice	Chinese
chain	achieve
	achieve

but sometimes it is pronounced (k), for example:

character characteristic mechanism	chemicals architectures
mechanism	

MUTE LETTERS

shou(l)d whis(t)le (w)rite (k)now si(g)n clim(b) hym(n)	cou(l)d cas(t)le (w)rong (k)nife forei(g)n com(b) autum(n)	wou(l)d lis(t)en ans(w)er (k)nock champa(g)ne dum(b)	ca(l)m fas(t)en (w)ho (k)nob bom(b)	wa(l)k Chris(t)mas (w)hose kneel	ta(l)k of(t)en (w)hole	ha(I)f
w(h)ere (h)onest han(d)kerchie g(u)ess dau(gh)ter	w(h)y (h)onour	w(h)at (h)our We(d)n(e)sday g(u)itar	w(h)en (h)eir circ(u)ir	w(h)ich	w(h)ether	
strai(gh)t throu(gh) ti(gh) ou(gh)t thou(gh)t cau(gh)sychology (p)sychiatrist (p)neumatic (p)neumonia	li(gh)t tl(gh)t cau(gh)t	mi(gh)t wei(gh)t bou(gh)t	ri(gh)t nei(gh)bour brou(gh)t			
capt(a)in cu(p)board	math(e)matics med(i)cine i(s)land	int(e)resting fr(i)end i(r)on	veg(e)table			
			mus(c)le			

EXERCISE 1

Now practise reading these sentences aloud, paying particular attention to the underlined words:

- 1. The boy stopped, looked right then left and crossed the road.
- 2. When I cleaned my shoes I used that brush.
- 3. We waited an hour for the bus.
- 4. I posted a letter to my mother yesterday.
- 5. Those shops don't sell plugs.
- 6. He watches television every evening.
- 7. I didn't recognize youl
- 8. Sign your name here please.
- 9. I can't access the information.
- 10. I thought my cough was bad enough, but yours sounds really rough. 11. Though the bough was strong it broke under his weight and he fell through the green-house roof.
- 12. This chatty Chinese child has great character.
- 14. The honest housewife stopped outside the hotel and waited an hour for a bus to take 13. I didn't know that he was a psychiatrist.
- 15. During the Second World War the Germans dropped a lot of bombs on London. her home.
- 16. I have played the guitar since I was fifteen.
- 17. Newcastle won against Manchester City last Sunday.
- 18. My neighbour has travelled to a lot of foreign countries.
- 19. If you listened more carefully you would be able to answer my question.
- 20. The temperature in Saudi Arabia is extremely high in August.
- 21. The Tremiti Islands are exceptionally beautiful.
- 22. Get yourself a plate out of the cupboard.
- 23. Mathematics is a very interesting subject.
- 24. The captain abandoned the ship after all the passengers had left,

√ HOMONYMS

Some words in English are spelt and pronounced in exactly the same way, but have completely different meanings or grammatical functions in different contexts:

An aeroplane can fly thousands of feet above the ground. ("fly" is a verb in this case) Waiter, there's a fly in my soup! ("fly" is a noun meaning an insect in this case) I like scientific subjects like Chemistry and Physics. (the 1st "like" is a verb meaning For example: to enjoy; the 2nd "like" is a preposition meaning for example, such as)

A)	/	
13/	EXERCISE	_
	TWINTING	1

Now consider the following sentences and decide the function of the underlined words
I think that it is necessary to do something to stop air pollution. (
2. The planet faces temperature increases unprecedented in human history. The solubility of solids changes when the temperature increases. ()
3. Temperature changes influence the solubility of solids. () The solubility of solids changes when the temperature increases. ()
4. Crude oil <u>needs</u> to be refined. () Oil in Italy is not sufficient for the nation's <u>needs</u> . ()
5. A <u>light</u> beam is shone through the sample. () Helium is a very <u>light</u> substance. ()
6. Air pollution is due to <u>dissolved</u> gases. () The gas has been <u>dissolved</u> in the liquid. ()

Lynn Rudd - Rose Filazzoia
STUDENTS' NOTES
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UNIT 3 DATES AND TIMES

In English the days of the week and the months of the year must begin with a capital letter.

✓ DAYS OF THE WEEK:

Monday Tuesday Wednesday Thursday Friday Saturday Sunday

MONTHS OF THE YEAR:

January
February
March
April
May
June
July
August
September
October
November
December

✓ THE YEAR:

THE DATE:

06/09/74

In British English this date is read -

the sixth of September nineteen seventy-four/September the sixth nineteen seventy-four but in American English the same date would be read-

June the ninth nineteen seventy-four/the ninth of June nineteen seventy-four

✓ E-MAIL ADDRESS:

lynnmargaret.rudd@uniba.it = l y n n m a r g a r e t dot r u d d at u n i b a dot i t (all small letters) rosa.filazzola@uniba.it = rosa dot filazzola at uniba dot it (all small letters)

Write out in full you own e-mail address and then how it is pronounced

EXERCISE 1

Now write these dates in full (British English) and read them aloud:

31/01/98 = _____

15/08/70 = _____

04/07/45 = -____

✓ TELEPHONE NUMBERS

oh two seven oh, five three three nine nine oh two seven oh, five double three double nine

✓ MONEY

	British	Δ.	manias -
1p	a penny/one p	1¢	nerican a/one cent ten cents a/one dollar three dollarsseventy-five cents
10p	ten pence/ten p	· 10¢	
£1	a/one pound	1\$	
£3.75	three pounds seventy-five pence	\$3.75	

THETIME

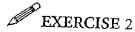
7.00	seven o'clock
8.00 a.m. 10.00 p.m. 7.30	seven (informal) eight a.m./eight o'clock in the morning ten p.m./ten o'clock in the evening half past seven/seven thirty
7.15 7.45 9.20 9.55 10.23 10.46 16.08 21.00	half seven (informal) (a) quarter past seven/seven fifteen (a) quarter to eight/seven forty-five twenty (minutes) past nine/nine twenty five (minutes) to ten/nine fifty-five twenty-three minutes past ten/ten twenty three fourteen minutes to eleven/ten forty-six sixteen oh eight twenty-one hundred hours



Practise reading these telephone numbers aloud:

080-5423967; 0274-9961708;

0423-645523; 334-2600498



Write these prices in full and read them aloud:

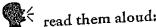


70p =	
£25.50 = _	
30¢ =	
\$45.40 = _	



EXERCISE 3

Write these times in full and read them aloud:



	08.10 = ten past eight	e.g. 08.00 = eight o'clock;
	12.30 =	₩
	12.40 =	10.15 =
	07.50 =	11.25 =
	11.05 =	06.45 =
	10.37 =	11.00 =
•		07.02

UNIT 4 ARTICLES

THE DEFINITE ARTICLE

THE DEFINITE ARTICLE "THE" IS USED FOR:

- a) Countable nouns singular and plural (the boy, the boys)
- b) Nouns that are unique because only one exists (the Sun, the Moon)
- c) Rivers, Canals, Seas, Oceans

(the Pacific Ocean, the Adriatic Sea, the Panama Canal, the Danube River)

- d) Theatres, Cinemas, Hotels, Museums, Galleries (the British Museum, the Hilton Hotel, the National Gallery)
- e) Expressions with "of"

(the House of Commons, the House of Lords, the Duke of York)

f) Class of people

(the old, the young)

g) Before superlatives

(the best, the worst)

h) Before ordinal numbers and Roman numerals (Henry VIII, pronounced Henry the eighth)

"THE" IS NOT USED FOR:

a) Individual persons

(Mrs. Smith, Mary)

b) Continents

(America, Africa, Asia)

c) Nations

(England, Canada)

d) Lakes and Mountains

(Mount Everest, Lake Como)

e) Cities and towns

(New York, Milan)

f) Streets, parks, bridges

(Oxford St., Hyde Park)

g) Buildings referred to as institutions (school, prison, hospital, church, university, market, town)

EXCEPTIONS

the entire family (The Smiths)

plural geographical names (the United States, the Netherlands) plural geographical names (the Alps, the Highlands, the Great Lakes)

(the Hague)

(the Mall, the Brooklyn Bridge, the Oxford Road) when referring to the building itself. (the prison, the new hospital, the school)

- h) Uncountable nouns when generalising (meat, history, information)
- i) Time expressions (in 1978, in Winter, since January)
- j) Holidays, Days (at Easter, at Christmas, on Tuesday)
- k) Certain parts of the Day (at night, at midday)
- l) Meals (breakfast, dinner)
- m) With "work"
 (I'm going to work)
- n) With "home" and "bed"

 (I'm going home, I'm at home";

 I'm going to bed; I'm in bed)
- o) Before names of games (He plays golf)

when specifying
(the supermarket meat)
a particular year or period
(in the year 1978, in the
Winter of 1978, in the 1970s)
a particular holiday
(the Christmas of 1994, the first
Tuesday of the month)
other parts of the day
(in the morning, in the afternoon,
in the evening, in the night)
a particular meal
(the breakfast this morning)

THE INDEFINITE ARTICLE

\checkmark the indefinite article "a/an" is used:

- a) With singular countable nouns (a man, a girl)
- b) To indicate a "certain thing"/when giving a general definition (a whale is a mammal not a fish)
- c) With professions, religions, nationalities (a painter, a Catholic, a Frenchman)
- d) In structures using "rather", "quite", "such" (such a good time, rather a nice picture, quite a hot day)
- e) For expressions involving speed and quantity (20 miles an hour, three times a day)

N.B. "an" is used before a noun or adjective which begins with a vowel or a mute "h" (an episode, an artist, an Englishman, an awful headache, an hour)

✓ THE INDEFINITE ARTICLE IS NOT USED:

- a) before plural nouns (singular α painter, plural painters)
- b) before uncountable nouns (information, advice, money)
- c) before abstract nouns (happiness, beauty)
- d) before names of meals, unless they are preceded by an adjective (I have lunch at one o'clock. I had a good lunch today)

ARTICLE EXERCISES

1. Decide whether the words or expressions require the definite article or not in this text:
the definite article or not in this text:
Thomas French was one of the greatest explorers inhistory. He travelled toSouth America,Greenland and many other parts ofworld. He was born in1886, onChristmas Day. His family lived nearRegent's Park. They were rich andmoney was never a problem. Thomas leftschool because he wanted to go tosea. He sailed acrossAtlantic Ocean with some friends. At twenty he joined an expedition toAfrica. Later he led expeditions toAndes, to both Poles and even to parts ofUSSR. He also climbedMount Everest twicehistory of all these journeys is in his diaries, which show uslife of an explorer in1920sbreakfast was French's favourite meal and he always ate well. He went tobed early but often got up at night to write his diary. He also took hundreds of photos, which are now on show at National Gallery.
2. Insert the indefinite article "a" or "an" if necessary in the following sentences:
1. My friend is painter; let's ask him for advice about galleries. 2. We had fish and chips for lunch. That doesn't sound like very exciting meal. 3. I've been waiting for the bus for hour. 4. He is vegetarian; you won't get meat at his house. He'll give you nut cutlet. 5. I had quite nice day out with my friends. 6 person who suffers from claustrophobia has dread of being confined in small space, and would always prefer stairs to lift. 7. Do you take sugar in your tea? I used to, but now I'm on diet. I'm trying to lose weight. 8. I have headache and sore throat. 9 friend of mine is expecting baby. If it's girl she's going to call her Ethel. That's old-fashioned name for girl. 10. The escaped prisoner hid in wood, but he didn't light fire because smoke might have attracted attention. 11. Mr. Jones is old customer and honest man. Has he been accused of dishoners.
12. If you need money I can lend you ten pounds. 13. He needs assistant with good knowledge of Spanish and experience
- Applience

in using computer. 14. It's time you had holiday. You haven't had day off for month. 15. When he was charged with murder he said he had alibi.
3. Complete the text with "a", "an", "the" or leave a blank if the article is not required:
ENERGY
waves are vibrations that transfer energy from place to place without matter (solid, liquid or gas) being transferred. For example, think of Mexican wave in crowd at football match wave moves around stadium, while each spectator stays in their seat, only moving up then down when it is their turn. Some waves must travel through substance. This substance is known as medium, and it can be solid, liquid or gas sound waves and seismic waves are like this. As the waves travel through it, medium vibrates. Other waves do not need to travel through substance. They may be able to travel through medium, but they do not have to visible light, infrared rays, and microwaves are like this. They can travel through empty space.

UNIT NOUNS

Types

S COM ROP ABST	ER	e.g. boy, girl, apple e.g. England, John, Mary e.g. beauty, love, joy e.g. team, fleet, group
----------------	----	--

Use:

A noun is used as the SUBJECT or the OBJECT of a sentence. e.g. John is reading a book.

Plural forms:

The plural of a noun is usually formed by adding an "s" to the singular: e.g. apple, apples; door, doors

Exceptions:

- When a noun ends in "o", "ss", "sh", "ch" or "x" it adds "es" in the plural: 1. e.g. potato, potatoes; dress, dresses; dish, dishes; watch watches; box, boxes Nouns of foreign origin ending in "o" only add an "s": e.g. photo, photos; piano, pianos
- When a noun ends in "y" preceded by a consonant the "y" changes to an "i" and adds "es": 2. e.g. lady, ladies

When a noun ends in "y" preceded by a vowel only an "s" is added: e.g. key, keys

12 nouns ending in "f" or "fe" change the "f" to a "v" and add "es": 3 e.g. calf, calves; half, halves; leaf, leaves; sheaf, sheaves; self, selves; shelf, shelves; wife, wives; life, lives; knife, knives; thief, thieves; loaf, loaves; wolf, wolves. Other nouns ending in "f" or "fe" add an "s" in the usual way:

e.g. roof, roofs; cliff, cliffs

Some nouns form their plural with a complete vowel change or a different suffix: 4. e.g. man, men; woman, women; foot, feet; tooth, teeth; child, children; mouse, mice; person, people 5.

Some nouns have the same singular and plural form:

e.g. sheep, sheep; deer, deer; fish, fish (the plural form "fishes" exists but is rarely used)

6. Some nouns are always singular: e.g. This information is not sufficient.

My advice is not to go out.

His knowledge of English is quite good.

Some nouns are always plural: 7.

e.g. The police are looking for the thief.

His trousers are torn.

These scissors aren't very sharp.

The names of some fields of science end with an "s", but are singular: 8.

e.g. Mathematics is sometimes a difficult subject.

Nuclear physics is very interesting. Informatics is popular.

COUNTABLE AND UNCOUNTABLE NOUNS

Nouns can be divided into two categories; countable (with a plural form) and uncountable (always singular).

Materials: glass, wood, stone, paper, cloth, metals (iron, silver, gold, platinum, copper, etc.)

Food and drink: wine, coffee, tea, ice, water, jam, bread, butter, salt, pepper, beer, meat, milk, fruit,

Others: advice, information, news, baggage, luggage, furniture, knowledge, hair, money.

Therefore it is necessary to use quantitative words to be able to express "a certain quantity of" which can be used before plural nouns and before uncountable nouns.

used in an affirmative phrase Some (adjective or pronoun)

eg. I have some money in my wallet.

used in the negative or interrogative phrase Any (adjective or pronoun)

eg. I haven't got any sweets in my bag. Are there any sweets left in your bag?

used in an affirmative phrase No (adjective)

eg. I have no sweets in my bag.

used in an affirmative phrase None (pronoun)

eg. None of the students had a book.

Compounds of some/any/no.

somebody	someone	something	somewhere	somehow
anybody	anyone	anything	anywhere	anyhow
nobody	no one	nothing	nowhere	nohow

The concept of "molto" can be expressed with:

used with uncountable nouns

eg. There isn't much milk in the fridge.

Many used with countable nouns

eg. There are many people in the park.

A lot of used with both countable and uncountable nouns (only in affirmative phrases) eg. There is a lot of food on the table.

There are a lot of glasses in the cupboard.

To express the idea of "scarsità" we can use

Not much or very little (some) used with uncountable nouns

eg. There is not much /very little sugar in the bowl.

Not many, few, very few (some) used with countable nouns eg. Not many/few/very few students had the book.

To express the idea of "tanto" we can use

So much with uncountable nouns

eg. He had so much money he didn't know how to spend it.

So many with countable nouns

eg. There were so many students in the room that they couldn't all sit down.

To express the idea of "troppo" we can use

Too much with uncountable nouns

eg. Too much noise is intolerable.

Тоо талу with countable nouns

eg. Too many cooks spoil the broth.

To express the idea of "sufficienza" we can use

Enough + noun

eg. Not enough people came to the concert.

Adjective + enough

eg. The student is clever enough to pass the exam.

NOMINAL GROUPS

Nominal groups are sequences of 2 or more nouns which must be deciphered starting from the final noun in the group, since the preceding nouns qualify that noun:

For example: cylindrical metal container = a container which has a cylindrical shape and is made of metal (un contenitore cilindrico di metallo)

fourth generation computers = computers which belong to the fourth generation (i computer della quarta generazione)

a three-speed electric motor = an electric motor having three speeds (un motore elettrico a tre velocità)

chemical reduction process = a chemical process which uses reduction (processo chimico di riduzione)

fractional distillation = a distillation which involves a process for separating components of a mixture through differences in physical or chemical properties (distillazione

tensile test = a test used to measure tension (prova di resistenza a trazione) elastic limit = the limit of elasticity of a material (limite di elasticità) double bond = a chemical bond in which two pairs of electrons are shared by two electrical supply system = a system which supplies electrical energy (rete di disatoms in a molecule (legame doppio) bleaching agent = a substance (i.e. calcium chloride or calcium hydroxide) used as tribuzione dell'energia elettrica) a bleach, disinfectant or deodorant (agente sbiancante) oil-modified alkyd resins = alkyd (synthetic) resins used in paint, which are modified by the addition of oil (resine alchidiche modificate con olio)

POSSESSIVE CASE (SAXON GENITIVE)

- 1. 's is added to singular and plural nouns not ending in "s":
 - e.g. John's book; a man's jacket; men's trousers; the child's room; the children's school.
- 2. For plural nouns ending in "s" only an apostrophe is added:
 - e.g. the students' books; the Smiths' house
- 3. Names of people ending in "s" can take either 's or just an apostrophe:

e.g. James's car or James' car

However classical names take only an apostrophe:

- e.g. Pythagoras' Theorem
- 4. When the possessors are more than one the 's is added to the last possessor in the list: e.g. John and Mary's school.

EXERCISE 1

Put the following nouns into their plural form:

1.	girl,	_
	tomato,	
	kiss,	_
4.	latch,	_
	brush,	
	kimono,	
7.	man,	
8.	foot,	
	child,	
	. sheep,	
11	. baby.	
- 12	donkey,	

EXERCISE 2 Put the verb "to be" into the singular or plural as required by the pour subject.
Put the verb "to be" into the singular or plural as required by the noun subject: 1. The boys at school. 2. The apple on the table. 3. The potatoes in the kitchen. 4. Her trousers too long. 5. Electronics a popular subject. 6. This information irrelevant. 7. The police investigating the crime. 8. The deer which live in the forest eating all the wild plants. 9. The men in the garden. 10. My foot hurting me.
EXERCISE 3 Insert "much", "many", "some" or "any" in the following sentences:
1. Is there milk? Yes, there's in the fridge. How is there? There isn't 2. Have you got sweets? Yes, I've got How have you got? I've only got three. 3. I've drunk wine and beer. I really think you've drunk too! 4. I wish one would do thing about that hole in the road. I don't think one wants to do thing about it!
EXERCISE 4 Translate the following nominal groups into Italian:
1. evaporating dish =
8. a lab technician =

$\hat{}$
ک

EXERCISE 5

Make nominal groups from these groups of words

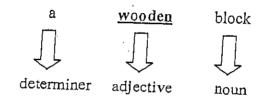
1. A bank of data
EXERCISE 6 Give the correct possessive case form of these incorrect expressions: 1. The house of Mr. Smith =
2. The school of the girls =
3. The car of Mr. Jones =
4. The room of the children =
5. The strength of Hercules =
6. The game of the boys =
7. The book of the teachers =
8. The horse of the Prince of Wales =
9. The vote of the people =
10. The son of Mr. and Mrs. Smith =

UNIT 6 ADJECTIVES

Adjectives are words that describe or modify other words. They can identify or quantify another person or thing in the sentence. Adjectives are usually positioned before the

In the following examples, the highlighted words are adjectives:

Adjectives usually go between the determiner and the noun: a wooden block



- 1. They live in a beautiful house.
- 2. Lisa is wearing a sleeveless shirt today.

Where do adjectives go?

An adjective can be put before the noun. Then it is an attribute.

e.g. Mandy is a careful girl.
This is a nice car.
Doris has a boring job.

An adjective can be put after the verb to be. This is called predicative position.

e.g. The girl is careful.

This car is nice.

I was not at all amused by the discussion.

The end of the film was really exciting.

BUT... Sometimes more than one adjective is needed to describe something (or someone).

What happens if a hat is both old AND ugly?

Do we say... an ugly old hat OR an old ugly hat?

An ugly old hat is correct because a certain order for adjectives is expected

(Note, you may hear the other version old ugly hat, though it doesn't sound natural) So what is the correct order of adjectives when we put them before a noun or the thing they describe?

IMPORTANT: The order of adjectives before a noun IS NOT FIXED.

The list below is only a guide and is the order that is preferred.

In real life there might be slight variations of the order of adjectives but the following order is what is expected the most.

Types of Adjectives

Before the adjectives there will normally be the Determiner.

1. Determiner: The determiner tells us if the noun is singular or plural, definite or indefinite

a, an, the, my, your, four, those, some etc

And then there are the adjectives that refer to...

- 2. Numerical: Tells us how many there are. one, two, four etc.
- 3. Degree: adds emphasis to a noun. very, quite etc.
- 4. Abstract quality or Opinion: Explains what we think about something. This is usually our opinion, attitude or observations. These adjectives almost always come before all other adjectives. beautiful, boring, stupid, delicious, useful, lovely, comfortable
- 5. Dimensions/Size: Tells us how big or small something is, (but not specific measurements..

big, small, tall, huge, tiny

- 6. Shape / Weight / Length: Tells about the shape of something or how long or short it is. It can also refer to the weight of someone or something. round, square, circular, skinny, fat, heavy, straight, long, short,
- 7. Condition: Tells us the general condition or state of something broken, cold, hot, wet, hungry, rich, easy, difficult, dirty
- 8. Age: Tells us how old someone or something is, old, young, new, ancient, antique
- Colour: The colour or approximate colour of something. green, white, blue, reddish, purple
- 10. Pattern: The pattern or design of something. striped, spotted, checked, flowery
- 11. Origin/Nationality: Tells us where something is from. American, British, Italian, eastern, Australian, Chilean
- 12. Sustance or Material: What is the thing made of or constructed of? gold, wooden, silk, paper, synthetic, cotton, woollen

13. Purpose/Qualifier/Use: What is it for? These adjectives often end in -ing. sleeping (bag), gardening (gloves), shopping (bag), wedding (dress) If you look at the examples above, you can ask... what are the gloves used for? (gardening) What is the bag used for? (shopping)

And after these adjectives there is the...

Noun: The person or thing that is being described

Examples of the order of adjectives before a noun:

My two very elegant large square well-kept 100-year-old brown striped

1 2 3 4 5 6 7 8 9 10

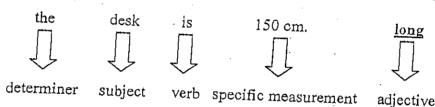
English pine reading chairs.

11 12 13

My two swift young white Irish race horses.

1 2 3 4 5 6 7

However, when specific measurements are used, the adjective denoting length, width, height goes after the amount of the specific measurement: the desk is 150 cm. long.



N.B. Something to have in mind is that it does not sound natural using three or more adjectives in the same sentence and it is very rare to hear four adjectives together before a noun.

E.g.

A big fat dog.

An interesting old Indian rug.

A striped silk shirt

Some comfortable black sleeping bags

Four small round wooden tables

Those funny little old men

SOME ESSENTIAL PRONOUNS AND ADJECTIVES

SUBJECT PRONOUNS I work at the university YOU speak English well HE uses the computer SHE works in a bank IT bit the postman WE posted the letter YOU are learning English THEY drink tea	Jane works with He speaks as well as I am watching John works with The postman hit The letter was posted by The teacher will teach The tea is drunk by	OBJECT PRONOUNS ME YOU HIM HER IT US YOU THEM
I AM USING YOU CAN RIDE HE IS READING SHE IS DRINKING IT IS EATING WE WILL LEND YOU THIS IS THEY ARE DOING	POSSESSIVE ADJECTIVES MY COMPUTER YOUR BICYCLE HIS BOOK HER COFFEE ITS FOOD OUR BOOK YOUR CAR THEIR HOMEWORK	POSSESSIVE PRONOUNS IT'S MINE IT'S YOURS IT'S HIS IT'S HERS IT'S ITS IT'S OURS IT'S YOURS IT'S THEIRS

REFLEXIVE PRONOUNS

I WASH YOU WASH HE WASHES SHE WASHES IT WASHES WE WASH YOU WASH THEY WASH	MYSELF YOURSELF HIMSELF HERSELF ITSELF OURSELVES YOURSELVES THEMSELVES
---	--

DEMONSTRATIVE ADJECTIVES

I like THIS dress best Can I try on THESE shoes?

THAT bag is mine THOSE trousers are John's

DEMONSTRATIVE PRONOUNS

I like THIS best THESE fit better than the others

THAT's mine THOSE are John's

RELATIVE PRONOUNS

	SUBJECT	OBJECT	POSSESSIVE
PERSON	WHO/THAT	WHO/WHOM/THA	WHOSE
THING	WHICH/THAT	WHICH/THAT	WHOSE/OF WHI <i>C</i> H

EXAMPLES

PERSON:

The man who was talking to you is my father. (Subject)

My friend, who is pessimistic, says it will rain. (Subject)

The man that is speaking is my father. (Subject)

The man I saw is called Smith. (The object relative pronoun is implicit)

She introduced me to her father, who/whom I had never met. (Object)

The man whom/that you saw is called Smith. (Object)

The people whose house you see are very rich. (Possessive)

Chopin, whose works are very famous, was born here. (Possessive)

THING:

This is the dog which was barking. (Subject)

His new house, which is enormous, has no garage. (Subject)

The glass that is empty is mine. (Subject)

The bike which I rode broke down immediately. (Object)

The bike I rode broke down immediately. (The object relative pronoun is implicit)

The red apple, which I had picked, was delicious. (Object)

The dog that you hear barking is mine. (Object)

Living in a house whose walls are made of glass would be terrible. (Possessive)

His thesis, of which the last fifty pages were copied, was very interesting. (Possessive)

USE WITH A PREPOSITION:

The man to whom I was speaking is her father.

The man who I was speaking to is her father.

The man I was speaking to is her father. (the relative pronoun is implicit)

Mary, with whom I drove home, has a Rolls Royce.

Mary, who I drove home with, has a Rolls Royce.

The ladder on which I was standing started slipping.

The ladder which/that I was standing on started slipping.

The wine, for which I paid a lot, is awful.

The wine, which I paid a lot for, is awful.

The patterns used may be:

Preposition + relative pronoun......

Pronoun +......preposition
.....preposition

What = "the thing that" What we saw amused us. When she sees what you have done she will be very angry. Which can refer to an entire phrase: He said he had never seen her before, which was not true. When = in/at which (time) The day when they arrived was very cold. Where = in/at which (place) The hotel where they were staying was wonderful. Why = for which (reason) The reason why I am here is to explain the misunderstanding. EXERCISE 1. Order of adjectives. Choose the best answer for each sentence. 1. The house is _ a. large and white b. white and large c. large white house. 2. They live in a ___ a. large and white b. white and large c. large white 3. Which sentence uses the correct order of adjectives? a. We took a ride on a blue, old Chinese bus. b. We took a ride on a Chinese, old, blue bus. c. We took a ride on an old, blue Chinese bus. 4. Which sentence uses the correct order of adjectives? a. I'd like three good reasons why you don't like spinach. b. I'd like a good three reasons why you don't like spinach. c. I'd like good reasons three why you don't like spinach. 5. Which sentence uses the correct order of adjectives? a. I like that really big red old antique tractor in the museum. b. I like that really big old red antique tractor in the museum. c. I like that old, red, really big antique tractor in the museum. 6. Which sentence uses the correct order of adjectives? a. My brother rode a beautiful big black Friesian horse in the parade. b. My brother rode a beautiful Friesian big black horse in the parade. c. My brother rode a big, black, beautiful Friesian horse in the parade. EXERCISE 2. Order of adjectives. For each of the following sentences, choose the correct order of adjectives to fill in the blank. house on the corner. 1. My grandmother lives in the _

a. little blue, green and whiteb. little blue and green and whitec. little, blue, green, and white

2. The store carries an assortment of	objects.
a. interesting new, old and antique	•
b. new, old, interesting and antique	
c. interesting, old and new and antique	
3. We went for a two-week cruise on a	ocean liner.
a. incredible brand-new, huge Italian	oodii iiici,
b. incredible, huge, brand-new Italian	
c. Italian incredible, brand-new, huge	
4. I bought a pair ofboots.	•
a. new, nice, red rain	
b. nice new red rain	
c. red nice new rain	
5. My dad was thrilled with his gift of	bowties for his
a. three squirting new nice big polka-dotted	
b. three polka-dotted nice new squirting	
c. three nice big new polka-dotted squirting	
_	
6. Please put the marbles into that	box.
a. round little old red	
b. little old round red	
c. little old red round	
7. I was surprised to receive a	puppy for my birthday.
a. little, cute, eight-week-old golden retriever	puppy for my diffiday.
b. cute eight-week-old little golden retriever	
c. cute little eight-week-old golden retriever	•
8. Our work uniform consists of black pants, black shirt.	oes, and a
a. yellow baggy big polo	
b. big baggy yellow polo	
c. baggy yellow big polo	
9. I've been spending a lot of time in antique shops lo	aking for the newfort
clock.	oxing for the perfect
a. little silver Italian cuckoo	
b. little Italian silver cuckoo	
c. silver little Italian cuckoo	
10. Which sentence uses the correct order of adjectives?	
a. Our grandparents drive a motorhome with hi	
 a. Our grandparents drive a motorhome with bl. b. Our grandparents drive a motorhome with bl. 	ack and white stripes.
c. Our grandparents drive a motorhome with bla	ack white stripes.
T T THE STREET WITH ONE	ion, white surpes.

11. Which sentence uses the correct order of adjectives?

a. During my college years, I wore a red, white and black big hat to sporting events.

b. During my college years, I wore a big red, white and black hat to

sporting events.

c. During my college years, I wore a big red white and black, hat to sporting events.

high propositi
and a Collection the words in bold type with the correct object pronoun.
EXERCISE 3. Substitute the words in bold type with the correct object pronoun:
e.g. I wrote a letter to Mary. I wrote a letter to her.
The letter to
1. We gave the letter to our friends. We gave the letter to
1. We gave the letter to our irrelate. We gave the plate to 2. I passed the plate to John. I passed the plate to 2. I passed the plate to his dog. John gave the meat on his plate to
2. I passed the plate to his dog. John gave the meat on his plate to
2. I passed the plate to John. I passed the plate to
4. The teacher explained the verb tenses to Mary and me. The teacher explained the
4. The teacher explained the vero tonses to 124.
verb tenses to
EXERCISE 4. Insert the correct possessive adjective (linked with the subject) in the
EXERCISE 4. Insert the correct possessive adjective (mixed with
EADINGIDE "Transparences"
following sentences:
e.g. Peter is getting into his car.
1:fa atory
1. Margaret is writinglife-story.
1. Margaret is writing new house. 2. I will show you new house. 3. We are cleaning bedroom. 3. We are Collow exhibits paintings.
2. We are cleaning bedroom.
3. We are cleaning paintings. 4. The Art Gallery exhibits paintings. work in the Art Gallery.
4. The Art Gallery exhibits paintings 5. The artists exhibit work in the Art Gallery. 6. Can you lend me book. 7. Work in Venice.
5. The artists exhibit book
6. Can you lend me work in Venice.
6. Can you lend me book. 7. The sculptor probably performed work in Venice.
: the following sentences:
EXERCISE 5. Insert the correct relative pronoun in the following sentences:
1. It's too dark in here. I can't see I'm doing.
1. It's too dark in here. I can't see in doing. 2. The student did this exam must be extremely clever. used to hang on that wall has been taken to the mender's.
2. The student and to hang on that wall has been taken to the mender's.
2. The student did this exam must be extremely elever. 3. The clock used to hang on that wall has been taken to the mender's. 4. Yesterday I saw a film about a little boy mother died when he was only
4 Yesterday I saw a min about a state
five. 5. My pen-friend, with I have been corresponding for two years, is coming to
5 My pen-friend, with I have been corresponding for two yours, is
visit me next week.
THE HIVEL WAS VOLY U.S.
6. The house he was writing his essay broke.
6. The house he was writing his essay broke. 7. The pen with he was broken in the accident received a lot of
7. The pen with ne was writing in the accident received a lot of 8. The boy leg was broken in the accident received a lot of
really shouldly thave done.
9. I allowed you to read that letter, she had spoken that morning.
10 Obering thinking about the boy with
11. Did you hear they said?
11. Did you hear mother writes detective stories. 12. I met somebody mother writes detective stories. believes that all wars are wrong.
12. I met somebody believes that all wars are wrong. 13. A pacifist is a person believes that all wars are wrong.
15. A pacinst is a poison

14. Mr. Carter, with in our plan.	I spoke on the phone last night, is very interested
EXERCISE 6. Make one senten	ce from two. Use who/that/which:
1. A girl was injured in the accide	ent. She is now in hospital.
2. A building was destroyed in the	e fire. It has now been rebuilt.
3. A waiter served us. She was ve	ry impolite
4. A bus goes to the airport. It runs	s every half hour.
5. Some people were arrested. The	y have already been released.
6. A dictionary is a book. It explai	ns the meaning of words.
7. Marconi was a scientist. He inve	nted the telephone.

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UNIT 7 REGULAR AND IRREGULAR VERBS

Paradigm or three principle parts of verb:

Infinitive	Past Tense	Past Participle
to work	worked	worked
to have	had	had
to be	was/were	been
to do	did	done

Simple	Tenses
--------	--------

		Compound Tense	8
Present	I work (io lavoro)	Present Perfect	I have worked (io
Past	I worked (io lavorai/lavoravo /ho lavorato)	Past Perfect	ho lavorato) I had worked (io
Future	I will work (io lavorerò)	Future Perfect	avevo lavorato) I will have worked
Progressive	Tenses	•	(io avrò lavorato)
Present	I am working (io sto lavorando)	Precènt Deuf	

	_		 	
_				

Present	I am working (io sto lavorando)	Present Perfect	I have been working (ho
Past	I was working (io stavo lavorando)	Past Perfect	lavorato (continuamente)) I had been

Future	I will be working (io starò lavorando) Future Perfect	working (avevo lavorato (continuamente)) I will have been working (avrò lavorato
		(continuamente))

Verbals

1. Infinitive	Present	to work (lavorare)
 Gerund Participle 	Past Present	to have worked (aver lavorato) working (lavorare/il lavoro = verbo sostantia)
•	-	working (lavorando - nei tempi progressivi; funzionante - come aggettivo) worked (lavorato)

Conditional Form

Present

I would work (io lavorerei)

Past

I would have worked (io avrei lavorato)

Active/Passive Voice

Passive Voice = to be + past participle

Active

Present

Past

he uses the computer he used the computer he will use the computer

Future Present Perfect he has used the computer he had used the computer

Past Perfect Future Perfect he will have used the computer

Present Progressive

he is using the computer

Infinitive

to use

Present Conditional

Past Conditional

he would use the computer

he would have used the computer

Passive

the computer is used by him the computer was used by him the computer will be used by him the computer has been used by him the computer had been used by him

the computer will have been

used by him

the computer is being used by him

to be used by him

the computer would be used by him the computer would have been

used by him

Sentence Order:

Affirmative

= Subject + main verb

Interrogative

= auxiliary verb (conjugated with subject) + subject + infinitive/participle of

main verb (as required by the tense)

Negative

= Subject + auxiliary verb (conjugated with subject) + not

+ infinitive/participle of the main verb (as required by the tense)

Simple Tenses

SIMPLE PRESENT (PRESENTE):

FORMATION

Affirmative I work You work He/she/it works Interrogative Do I work? Do you work? Does he/she/it work? Negative I do not (don't) work You do not (don't) work He/she/it does not (doesn't)

work

We do not (don't) work You do not (don't) work They do not (don't) work

We work You work They work Do we work? Do you work? Do they work?

USE

1. To express habitual actions

e.g. I work every day.
I get up at 7 o'clock.

2. To state a fact that is always true

e.g. Vegetarians don't eat meat.

We come from Canada.

3. To state a fact that is true for a long time

e.g. I live in Bari.

She works in a bank.

4. With verbs which do not have a continuous form:

A. Verbs which express feelings and emotions:

admire, adore, appreciate, desire, fear, hate, like, loathe, love, wish

e.g. I hate you (now) - not I am hating you.

B. Verbs of the senses:

feel, hear, see, smell

e.g. I hear you (now) - not I am hearing you.

C. Verbs of mental activity:

believe, agree, appreciate

e.g. I believe you (now) - not I am believing you.

D. Verbs of possession:

belong, owe, own, possess

e.g. How much do I owe you? - not How much am I owing you?

SIMPLE PAST (PASSATO REMOTO/PASSATO PROSSIMO/IMPERFETTO):

FORMATION

A CACIMALACTI		
I worked	Did I work?	I did not (didn't) work
You worked	Did you work?	You did not (didn't) work
He/she/it worked	Did he/she/it work?	He/she/it did not (didn't) work
We worked	Did we work?	We did not (didn't) work
You worked	Did you work?	You did not (didn't) work
They worked	Did they work?	They did not (didn't) work
	-	

N.15.

If the regular verb ends in "e", add "d" only: love - loved.

If the regular verb has one syllable (one vowel + one consonant) then double the consonant and add "ed": stop - stopped.

If the regular verb ends in a consonant + "y", change the "y" to "i": study - studied; carry - carried.

USE

For actions completed in the recent or distant past

1. At a definite time

e.g. I walked to the university this morning. I met him last year.

2. When time is asked

e.g. When did you meet him?

3. When the action is in the past, even if the time is not mentioned

The train was ten minutes late. e.g.

SIMPLE FUTURE (FUTURO)

FORMATION

I will work You will work He/she/it will work We will work You will work They will work

Will I work? Will you work? Will he/she/it work? Will we work? Will you work? Will they work?

I will not (won't) work You will not (won't) work He/she/it will not (won't) work We will not (won't) work You will not (won't) work They will not (won't) work

N.B. "shall" may be found to indicate the first person singular or plural in more formal use, but in common everyday use "will" is adopted for all persons.

USE

1. To express the speaker's opinion with no time reference

I'm sure he will come. e.g.

2. To express assumptions

I suppose they will sell their house.

3. To express speculations

Perhaps we will find them at the hotel.

4. For habitual actions which we assume will certainly take place

Winter/Spring will come soon.

5. For Type 1 conditional sentences

If I study I will pass the exam. e.g.

COMPOUND TENSES

PRESENT PERFECT (PASSATO PROSSIMO):

FORMATION

I have worked You have worked He/she/it has worked We have worked You have worked They have worked

Have I worked? Have you worked? Has he/she/it worked? Have we worked? Have you worked? Have they worked?

I have not (haven't) worked You have not (haven't) worked He/she/it has not (hasn't)worked We have not (haven't) worked You have not (haven't) worked They have not (haven't) worked

1. The Present Perfect is used with "just" for very recently completed actions

He has just gone out. eig.

2. The Present Perfect looks back from the present into the past and expresses what has already happened during the arc of time before now. The action happened at an indefinite time in the past.

I have met many famous people (at some time in my life before now) I have already had lunch. (the time is not specified)

The action can continue to the present and probably into the future

- She has lived here for twenty years. (she still lives here and will probably continue
- 3. The Present Perfect expresses an action or a state which began in the past and continues to
 - I have known Alice for six years.
- 4. The Present Perfect expresses a past action with results in the present
 - I have lost my wallet. (It's not in my pocket now)
- 5. The Present Perfect is used with "for" and "since"
 - "for" denotes a period of time extending into the present
 - We have lived in London for ten years. (we still live there)
 - "since" is used with a point in time and means "from that point to the time of speaking"
 - She has been here since six o'clock. (she is still here)
 - We have been friends since our schooldays. (we are still friends)

PAST PERFECT (TRAPASSATO PROSSIMO):

FORMATION

He/she/it had worked We had worked You had worked	Had I worked? Had you worked? Had he/she/it worked? Had we worked? Had you worked?	I had not (hadn't) worked You had not (hadn't) worked He/she/it had not (hadn't) worked We had not (hadn't) worked You had not (hadn't) worked
---	--	--

The Past Perfect is used to express an action in the past which had already happened before e.g.

When I got home, John had cooked a meal. (First John cooked a meal, then I got home)

Notice the difference in the context of the following sentence:

When I got home, John cooked a meal. (First I got home, then John cooked a meal)

FUTURE PERFECT (FUTURO ANTERIORE):

FORMATION

I will have worked You will have worked He/she/it will have worked We will have worked You will have worked They will have worked	Will I have worked? Will you have worked? Will he/she/it have worked? Will we have worked? Will you have worked? Will they have worked?	worked We will not (won't) have worked You will not (won't) have worked
USE	, oneneg;	They will not (won't) have worked

- 1. The Future Perfect is usually used with time expressions beginning with by: by then, by that time, by tomorrow
 - By the end of the month, I will have been here for ten years.

- 2. The Future Perfect is used for an action which at a given future time will be in the past or will have just finished
 - By the end of this lesson, we will have finished Unit 7.

PROGRESSIVE

PRESENT PROGRESSIVE (PRESENTE PROGRESSIVO):

FORMATION

I am working You are working He/she/it is working We are working You are working They are working

Am I working? Are you working? Is he/she/it working? Are we working? Are you working? Are they working?

I am not (I'm not) working You are not (aren't) working He/she/it is not (isn't) working We are not (aren't) working You are not (aren't) working They are not (aren't) working

1. The Present Progressive is used for an action which is happening now

2. The Present Progressive is used for an activity which is happening around now, but perhaps not at the moment of speaking

She is studying Maths at university.

3. The Present Progressive is used to express a planned future arrangement

I'm meeting John at 8 tonight. e.g.

PAST PROGRESSIVE (PASSATO PROGRESSIVO):

FORMATION

I was working You were working · He/she/it was working We were working You were working They were working

Was I working? Were you working? Was he/she/it working? Were we working? Were you working? Were they working?

I was not (wasn't) working You were not (weren't) working He/she/it was not (wasn't) working We were not (weren't) working You were not (weren't) working They were not (weren't) working

- 1. The Past Progressive is used for a past activity that has duration
 - I met her while I was working in Paris.
- 2. The Past Progressive is used when the action began before the Past Simple
 - She was making coffee when we arrived.
- 3. The Past Progressive indicates an activity in progress before and probably after a time in the past
 - When I woke up the sun was shining. e.g.

FUTURE PROGRESSIVE (FUTURO PROGRESSIVO):

FORMATION

I will be working You will be working He/she/it will be working We will be working You will be working They will be working

Will I be working? Will you be working? Will he/she/it be working? Will we be working? Will you be working? Will they be working?

I will not (won't) be working You will not (won't) be working He/she/it will not (won't) be working We will not (won't) be working You will not (won't) be working They will not (won't) be working

USE

1. The Future Progressive is used as an ordinary continuous tense with a point in future time, expressing an action which starts before that time and probably continues after it

This time next Wednesday you will be doing the test.

2. The Future Progressive is used to express future without intention, or an action which will occur in the normal course of events

You will be doing exams in June. e.g.

Notice the difference in context:

I am seeing Tom tomorrow. (I have an arrangement with Tom) I will be seeing Tom tomorrow. (I work with Tom, so I will be meeting him in the normal course of events)

PRESENT PERFECT PROGRESSIVE (PASSATO PROSSIMO PROGRESSIVO):

FORMATION

I have been working You have been working He/she/it has been working We have been working You have been working They have been working

Have I been working? Have you been working? Has he/she/it been working? Have we been working? Have you been working? Have they been working?

I have not (haven't) been working: You have not (haven't) been working. He/she/it has not (hasn't) been working We have not (haven't) been working You have not (haven't) been working They have not (haven't) been working

USE

1. The Present Perfect Progressive is used to express an activity which began in the past and continues without stopping up to the present (and probably continues into the future)

We have been working for three hours.

2. The Present Perfect Progressive is used for an action which continued for a period of time in the past and has finished so recently that it leaves an effect in the present

I haven't any money left because I've been shopping. (my purse is empty now)

PAST PERFECT PROGRESSIVE (TRAPASSATO PROSSIMO PROGRESSIVO):

FORMATION

I had been working You had been working He/she/it had been working We had been working

Had I been working? Had you been working? Had he/she/it been working? Had we been working?

I had not (hadn't) been working You had not (hadn't) been working He/she/it had not (hadn't) been working We had not (hadn't) been working

You had been working They had been working

Had you been working? Had they been working? You had not (hadn't) been working They had not (hadn't) been working

1. The Past Perfect Progressive is used when the action began before the time of speaking in the past and continued up to that time (or stopped just before)

It was six o'clock in the evening and he was tired because he had been working since dawn. 2. The Past Perfect Progressive is used for a repeated continuous action previous to the time of speaking in the past

When I arrived home he had been trying to phone Mary all morning without success.

FUTURE PERFECT PROGRESSIVE (FUTURO ANTERIORE PROGRESSIVO):

FORMATION I will have been working You will have been working	Will I have been working? Will you have been working?	I will not (won't) have been working You will not (won't) have been working
He/she/it will have been working	Will he/she/it have been working?	He/she/it will not (won't) have been working
We will have been working	Will we have been working?	We will not (won't) have been working
You will have been working	Will you have been working?	You will not (won't) have been working
They will have been working	Will they have been working?	They will not (won't) have been working

The Future Perfect Progressive is used with time expressions when the action is continuous between the present and the future

By the end of the month he will have been working here for ten years. When you arrive I will have already been working for three hours. e.g.

CONDITIONAL FORM

PRESENT CONDITIONAL (PRESENTE CONDIZIONALE):

FORMATION I would work You would work He/she/it would work We would work	Would I work? Would you work? Would he/she/it work? Would we work? Would you work?	I would not (wouldn't) work You would not (wouldn't) work He/she/it would not (wouldn't) work We would not (wouldn't) work You would not (wouldn't) work
		We would not (woul

They would work

Would they work?

They would not (wouldn't) work

USE

The Present Conditional is mainly used in Type 2 conditional phrases to express hypothetical probability

If you studied you would pass the exam e.g.

PAST CONDITIONAL (PASSATO CONDIZIONALE):

FORMATION

I would have worked	Would I have worked?	I would not (wouldn't)
You would have worked	Would you have worked?	have worked You would not
He/she/it would have worked	Would he/she/it have worked?	(wouldn't) have worked He/she/it would not
We would have worked	Would we have worked?	(wouldn't) have worked We would not (wouldn't)
You would have worked	Would you have worked?	have worked You would not

(wouldn't) have worked

They would have worked Would they have worked? They would not

(wouldn't) have worked

N.B. "should" may be found to indicate the first person singular or plural in more formal use, but in common everyday use "would" is adopted for all persons and "should" is used as the conditional form of the modal verb "must".

USE

The Past Conditional is mainly used in Type 3 conditional phrases to express unfulfilled or impossible situations

e.g. If you had studied you would have passed the exam. (But you didn't study, so you didn't pass)

Passive voice

The passive voice is formed with "to be" + past participle: "to be" must be put into the tense desired. Only transitive verbs can be put into the passive voice.

M.B. Notice

- 1) that the subject and the object of the active sentence are inverted in the passive sentence;
- 2) the preposition "by" is used before the agent;
- 3) the object pronoun must be used to substitute the agent;
- 4) to put a modal verb into the passive form we use the passive infinitive
 - active-"he can use the computer"; passive-"the computer can be used by him".

PRESENT PASSIVE (PRESENTE PASSIVO)

I am seen
You are seen
He/she/it is seen
We are seen
You are seen
Are we seen?
You are seen
Are you seen?
Are you seen?
Are you seen?
Are you seen?
Are they seen?

I am not (I'm not) seen
You are not (aren't) seen
He/she/it is not (isn't) seen
We are not (aren't) seen
You are not (aren't) seen
They are not (aren't) seen

PAST PASSIVE (PASSATO PASSIVO):

I was seen

You were seen

He/she/it was seen

Were you seen?

Was he/she/it seen?

Were we seen?

Were we seen?

Were you seen?

Were you seen?

They were seen

Were they seen?

I was not (wasn't) seen
You were not (weren't) seen
He/she/it was not (wasn't) seen
We were not (weren't) seen
You were not (weren't) seen
They were not (weren't) seen

FUTURE PASSIVE (FUTURO PASSIVO):

I will be seen

You will be seen

Will I be seen?

Will you be seen?

We will be seen

We will be seen

Will we be seen?

Will we be seen?

Will you be seen?

I will not (won't) be seen
You will not (won't) be seen
He/she/it will not (won't) be seen
We will not (won't) be seen
You will not (won't) be seen
They will not (won't) be seen

PRESENT PERFECT PASSIVE (PASSATO PROSSIMO PASSIVO):

I have been seen
You have been seen
He/she/it has been seen
We have been seen
You have been seen
They have been seen

Have I been seen?
Have you been seen?
Has he/she/it been seen?
Have we been seen?
Have you been seen?
Have you been seen?
Have they been seen?

I have not (haven't) been seen
You have not (haven't) been seen
He/she/it has not (hasn't) been seen
We have not (haven't) been seen
You have not (haven't) been seen
They have not (haven't) been seen

PAST PERFECT PASSIVE (TRAPASSATO PROSSIMO PASSIVO):

I had been seen

You had been seen

He/she/it had been seen

We had been seen

You had been seen

Had you been seen?

Had he/she/it been seen?

Had we been seen?

Had you been seen?

Had you been seen?

Had you been seen?

I had not (hadn't) been seen
You had not (hadn't) been seen
He/she/it had not (hadn't) been seen
We had not (hadn't) been seen
You had not (hadn't) been seen
They had not (hadn't) been seen

FUTURE PERFECT PASSIVE (FUTURO ANTERIORE PASSIVO):

I will have been seen

You will have been seen

He/she/it will have been seen

Will I have been seen?

Will you have been seen?

Will he/she/it have been seen?

I will not (won't) have been seen You will not (won't) have been seen He/she/it will not (won't)

have been seen

We will have been seen

You will have been seen

Will we have been seen?

Will you have been seen?

Will they have been seen?

We will not (won't) have been seen You will not (won't) have been seen They will not (won't) have been seen

PRESENT PROGRESSIVE PASSIVE (PRESENTE PROGRESSIVO PASSIVO):

I am being seen You are being seen He/she/it is being seen We are being seen You are being seen They are being seen

Am I being seen? Are you being seen? Is he/she/it being seen? Are we being seen? Are you being seen? Are they being seen?

I am not (I'm not) being seen You are not (aren't) being seen He/she/it is not (isn't) being seen We are not (aren't) being seen You are not (aren't) being seen They are not (aren't) being seen

PAST PROGRESSIVE PASSIVE (PASSATO PROGRESSIVO PASSIVO):

I was being seen You were being seen He/she/it was being seen We were being seen You were being seen They were being seen

Was I being seen? Were you being seen? Was he/she/it being seen? Were we being seen? Were you being seen? Were they being seen?

I was not (wasn't) being seen You were not (weren't) being seen He/she/it was not (wasn't) being seen We were not (weren't) being seen You were not (weren't) being seen They were not (weren't) being seen

N.B. The other Progressive tenses cannot be used in the Passive form

PRESENT CONDITIONAL PASSIVE (PRESENTE CONDIZIONALE PASSIVO):

I would be seen You would be seen He/she/it would be seen

Would I be seen? Would you be seen? Would he/she/it be seen?

I would not (wouldn't) be seen You would not (wouldn't) be seen He/she/it would not (wouldn't) be seen

We would be seen You would be seen They would be seen

Would we be seen? Would you be seen? Would they be seen?

. We would not (wouldn't) be seen You would not (wouldn't) be seen They would not (wouldn't) be seen

PAST CONDITIONAL PASSIVE (PASSATO CONDIZIONALE PASSIVO):

I would have been seen

Would I have been seen?

I would not (wouldn't) have

You would have been seen

Would you have been seen?

been seen

He/she/it would have

Would he/she/it have been

You would not (wouldn't) have been seen

been seen We would have been seen seen?

He/she/it would not (wouldn't) have been seen

Would we have been seen?

We would not (wouldn't) have been seen

You would have been seen

Would you have been seen?

You would not (wouldn't) have

They would have been seen

Would they have been seen?

been seen They would not (wouldn't) have

been seen

SOME COMMON IRREGULAR VERBS

SOME CO	OMMON IRRE	GOLLA	T. C. 1:1:1-10	Past Tense	Past Participle
	Past Tense	Past Participle	Infinitive	LENT	LENT
Infinitive	WAS/WERE	REEN	LEND	LET	LET
BE		BEATEN	LET	LAY	LAIN
BEAT	BEAT	BECOME	LIE		LIT
BECOME	BECAME	BEGUN	LIGHT	LIT	LOST
BEGIN	BEGAN	BITTEN	LOSE	LOST	MADE
BITE	BIT	BROKEN	MAKE	MADE	MEANT
BREAK	BROKE	BROUGHT	MEAN	MEANT	MET
BRING	BROUGHT	BUILT	MEET	MET	PAID
BUILD	BUILT	BURNT	PAY	PAID	PUT
BURN	BURNT	BOUGHT	PUT	PUT	READ
BUY	BOUGHT		READ	READ	RIDDEN
CATCH	CAUGHT	CAUGHT	RIDE	RODE	
CHOOSE	CHOSE	CHOSEN	RING	RANG	RUNG
COME	CAME	COME	RISE	ROSE	RISEN
COST	COST	COST	RUN	RAN	RUN
	CUT	CUT		SAID	SAID
CUT	DID	DONE	SAY	saw ["]	SEEN
DO	DREW	drawn	SEE	SOLD	SOLD
DRAW	DREAMT	DREAMT	SELL	SENT	SENT
DREAM	DRANK	DRUNK	SEND	SHONE	SHONE
DRINK	DROVE	DRIVEN	SHINE	SHOT	SHOT
DRIVE		EATEN	SHOOT	SHOWED	SHOWN
EAT	ATE	FALLEN	SHOW		SHUT
FALL	FELL	FED	SHUT	SHUT	SUNG
FEED	FEĎ	FELT	sing	sang	SAT
FEEL	FELT	FOUGHT	SIT	SAT	SLEPT
FIGHT	FOUGHT	FOUND	SLEEP	SLEPT	SMELT
FIND	FOUND	FLOWN	SMELL	SMELT	SPOKEN
FLY	FLEW	FORBIDDEN	SPEAK	SPOKE	
FORBID	FORBADE	FORGOTTE	•	SPENT	SPENT
FORGET	FORGOT		SPLIT	SPLIT	SPLIT
FREEZE	FROZE	FROZEN	STAND	STOOD	STOOD
GET	GOT	GOT	STEAL	STOLE	STOLEN
GIVE	GAVE	GIVEN	SWIM	swam	SWUM
· GO	WENT	GONE	TAKE	TOOK	TAKEN
GRO₩	GREW	GROWN	TEACH	TAUGHT	TAUGHT
HAVE	HAD	HAD	TEAR	TORE	TORN
HEAR	HEARD	HEARD		TOLD	TOLD
HIDE	HID	HIDDEN	TELL		r THOUGH
HIT	HIT	HIT	THINK		THROWN
	HELD	HELD	THROV	` 	-STOOD
HOLD	HURT	HURT	and the second second second second	-STAND -STOOD WOKE	WOKEN
HURT	KEPT	KEPT	WAKE		WORN
KEEP	KNEW	KNOWN	WEAR	WORE	WON
KNOW	LAID	LAID	MIM	WON	WRITTEN
LAY	LED	LEĎ	WRITE	WROTE	44 107 7 7 777
LEAD	LEARNT	LEARNT			•
LEARN		LEFT			
LEAVE	LEFT			•	
大 人		•			

1.

12. The journey takes two hours.

IRREGULAR VERB ACTIVITY

N.B. The Simple Past tense is used for actions which finish in the recent or distant past. The Present Perfect tense is used for actions which begin in the past and continue up to the present; they either finish in the present or continue towards the future.

Put the verbs in the following sentences into the Simple Past or the Present Perfect tense as required in context:

 He (go) to the cinerna on Fridays I (meet) her every Wednesday. Since her husband died she always (wear) 	,	·
4. I his morning I (leave) the house at	t 0 o'clook	
5. Your little boy is crying – I think he (fall)		
o. At the concert the group (sing) all m	y favourițe songs.	
7. At Easter I (eat) too much.		
8. Don't bother to prepare anything, I already	(have) lunch.	
9. I just (speak) to my mother on the pl 10. Last night I (dream) I was flying.	ione.	
11. Ever since I was a child I (get up)	at seven of alcolo	
12. This book was very cheap, it (cost) 5	On.	•
13. Please give me some disinfectant, your dog ((bite) me.	b
14. I never (teel) so well in all my life.		•
15. This book by James Banister is excellent. Yo	ou (read) any of	fhis books?
2. AUXILIARIES AND ORDINARY VERBS FORMS Some auxiliaries when used in certain ways make according to the rule for ordinary verbs, i.e. with examples are either auxiliaries used in these ways. Make the sentences a) interrogative and b) negati	e their negative and in "do" the verbs used in s or ordinary verbs.	terro gative
the second dy interrogative and by negati	ve, using "do",	
1. They have eggs for breakfast.		
2. He needs some new shoes.		
3. Your cat catches mice.		
4. They have to work hard.		
5. She does the cleaning.		
6. We know the place.		
7. You like salad.		
8. He understood me.	<u> </u>	
 He needed more money. You drink tea. 	:	•
11. He had to borrow one		

- 13. He made a lot of mistakes.
- 14. She had a look at it.
- 15. Her hair needs cutting.
- 16. It matters very much.
- 17. He does his homework after supper.
- 18. She has a cold shower every morning.
- 19. They like a lot of noise.
- 20. He had to make a speech.
- 21. He does his best.
- 22. He has to get up at five every day.
- 23. They have lunch at one.
- 24. He uses a printer.
- 25. She dared him to climb it.
- 26. You did it on purpose.
- 27. He has his house painted every year.
- 28. They had a good time.
- 29. The drink did him good.
- 30. My watch wants cleaning.
- 31. She came again.
- 32. He had to wait for you.
- 33. You had your fence painted.
- 34. They went by bus.
- 35. They buy ice-creams.

NEGATIVE AND INTERROGATIVE FORMS 3.

Put these sentences into the interrogative and negative forms.

- 1. I go to work every day.
- 2. I meet her on Wednesdays.
- 3. He always wears black.
- 4. I make the cakes.
- 5. She gets up at 6.30.
- 6. He understands me.
- 7. They have lunch at 1.00.
- 8. She speaks slowly.
- 9. He leaves the house at 8.30.
- 10. I read a chapter of my book every night.
- 11. You eat too much.
- 12. He often falls.
- 13. Ian sings very well.
- 14. It cries when it is hurt.
- 15. He takes the dog out three times a day.
- 16. The curtain rises at 8.00.
- 17. I smoke 50 cigarettes a week.
- 18. They eat shell-fish raw.

- 19. I dream every night. 20. Birds often lay eggs in that nesting box. 21. I often feel unhappy. 22. He usually pays £1.00 for a drink. 23. The dog sometimes bites the postman. 24. The drink costs £1.00. 25. She lies down after lunch. 26. These roses grow well in this soil.
- 27. The cat always fights the dog.
- 28. We see him every morning.
- 29. I often sleep badly.
- 30. She always drinks water.

4. THE SIMPLE PRESENT VERSUS THE PRESENT PROGRESSIVE

N.B. The Simple Present tense is used for habitual actions, the Present Progressive for actions which are happening at the moment.

Put the verb in bracke	ts into the Simple Present or the Presen	t Paramental a to	
in the context of the senter	ices:	a rogressive tense as	required
1. You can't see John now: he	e (have) a shower.		
2. They usually (drink)	coffee but today they (dring	ale)	
3. What you (do)	in the evenings?	ik) tea	l.
I usually (play)	on the computer or (watch)	′T*\ <i>J</i>	
4. You can't go out now as it	(rain) and you (not have	1 Y,	
umbrella.	and you (not may	o) an	
5. The last bus (leave)	at 11.15.		
6. He always (speak)	so quickly that I (not understand	١.	
7. Jane (make)	a dress for herself at the moment. Sh	e (male)	ı.
an ner own dotnes.		c (make)	
8. A lot of youngsters (wear)_	hats these days.		
9.1 (wear)	my sunglasses today because the cup is a	ration a	
To, fou can't have that book r	now because I (read)	ery strong.	
11. Ine kettle (boil)	. Shall I make the tea?		
12. Iou (enjoy)	yourself or would you prefer to go I	namei	
i (enjoy)	myself very much." I (want)	to staic to the au	_1
13. I'm afraid I've broken one	of your tea cups.	to stay to the end	l.
Never mind. I (not like)	that set animum		•
14. How he (get)	to work generally?		
He usually (go)	by bus, but tomorrow he (go)	•.	
Peter's car.			
15. Why you (put)	on your coat?	•	
I (go)fc	or a walk. You want (come)	د مصاطئین	
16. She always (buy)	lottery tickets but she never (w	with the	
any ming.			
17. You (like)	_ this necklace? I (give)	it to my wife next	
		, ======	

week for her birthday.	
at plant?	
18. You (dream)at ingite. Yes and if I (eat) too much st	ipper I (have)
nightmares.	
vour family?	
19, 10tt (10vc)	
19. You (love)	парру,
Its Wil, Diowil, The (1883)	
0	ov. cp. v. p.4 cm
5. THE PRESENT PERFECT VERSUS TH	IE SIMPLE PAS I
	L C dietent past The Present
N.B. The Simple Past tense is used for actions whi	ch hnish in the recent of distant past. The resemble
Derfect tense is used for actions which Degin in the	Past and commiss of
finish in the present or continue towards the futur	e,
Put the verbs in brackets into the Present	Perfect or the Simple Past tense as required in
the context of the sentences:	••
	•
How long you (live) here!	
I (live) here since 1980.	•
I (live) in Oxford for three y	ears and then (go)to
Z, He (live)	
Cambridge. 3. You (wear) your hair shows the shown in the shown	rt when you were at school?
	ir hii evel silice i
(leave)school [(wear)	it long.
(leave)school r (wear)	of plays.
4. Shakespeare (write) a lot 5. My father (write) several place.	ove He just (finish) his
5. My father (write)several pro	270, 110)461 (
third comedy	•
6. We (fly) over the Alps yest	.crday.
77 / \	
7. I (not see) my sister for thin	ale Lies enving to give 11D.
7. I (not see) my sister for three for a we	ek, ries trying to give up.
9. Chopin (compose) some of 10. When she (arrive) ? She (arrive)ten immediage
11 Va., (look) . the door be	elote you left the nome.
12. I can't go out because I (not finish)	my homework yet.
13. I never (drink) wine.	•
Well, have some now.	
14. The clock is slow.	
It isn't slow, it (stop)	
16. You (have)lunch yet:	
Yes, I (have) it at one o	'clock.
17. The newspaper (come)	?
Ves Perer is already reading it.	
18 We (miss) the bus. N	ow we'll have to walk.
19: John (break) his arm in	a car accident last year.
17: Joilli (Dicak) ind addit in	en e

20 1/ (1.)	
20. You (be) here before?	
ies. I (spend)	
You (enjoy)yourself?	
You (enjoy)	
6. ACTIVE TO PASSIVE VOICE	
STANCE TO TWO LAW A OLCE	
Put the following active sentences into the passive voice.	
1. You should open red wine about three hours before you use it.	
2. She washed the floor and cleaned the sink.	
3. Someone will serve refreshments.	
4. They are delivering my new computer this afternoon.	
5. They have made these trousers of very cheap material.	
6. Somebody had cleaned my shoes.	
7. He rang the door-bell.	
8. Members of the library may keep books for three weeks. Then they must ret	
9. You must leave your bicycle outside.	urn them.
10. The mob broke all the shop windows during the riots.	
11. They were pulling down the old theatre.	
12. Someone has stolen my hand-bag	•
13. They will have used two litres of paint to decorate the ve-	
14. The Organisers will exhibit the paintings till the and of the	
is the theves had cut an enormous hole in the door	
16. Someone cut the tyres with a knife.	
17. They hadn't mended the roof before it fell in.	
18. People are spending far more money on food now than five years ago.	
20. The ponce have asked us a lot of questions about the those	
21. They cannot serve meals after 11 p.m	
22. People may use the phone in the hall.	
7. VERB TENSE REVIEW	
· · · · · · · · · · · · · · · · · · ·	
A. Put the verbs in brackets into the annual contact	
A. Put the verbs in brackets into the correct tense (Simple Present or Present I. I (see) my father tomorrow.	ent Progressive):
2. You ever (see)	
2. You ever (see) accidents like this on the motorway? 3. My mother (come) to see me every now and then. 4. Did you hear what he said? He always (1)	
4. Did you hear what he said? He always (be) sarcastic.	
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	•
6. My husband generally (wash up)	
6. My husband generally (wash up) after lunch but I (do) 7. A football commentator: "Charles (take) the ball and (send) towards the goal."	it today.
towards the goal."	it down
8. What you (do)in the kitchen now?	
I (make) the rea	
9. John (not seem) to (improve)	
10. The milkman (bring) the milk to the door every day.	•

B. In the following sentences insert a suitable verb in the Present Progressive tense:
B. In the following sentences insert a surely
1. We to Milan next week. 2. Mrs. Brown her daughter to our school next term.
2. Mrs. Brown her daughter to our school host
2. Mrs. Brown with you to the party? 3. Who spain very shortly.
3. Who for Spain very shortly. 4. Sam my solicitor about this matter this afternoon.
4. Sam for Spain very shortly. 5. I my solicitor about this matter this afternoon.
6. Are you at the next station? their supper in the kitchen tonight.
6. Are you their supper in the kitchen tonight. 7. The children football this afternoon.
7. The children football this afternoon. 8. We football road and spring.
8. Weto America next spring,
9. My cousins to America next spring, 10 to America next spring,
10 We
C. Put the verb in brackets into the Simple Past tense, the Past Progressive tense or the
"used to" + infinitive form as required in the following sentences: "used to" + infinitive form as required in the following sentences: together.
"used to" + infinitive form as required in the following together. I. As children Jack and I often (play) in South America during the war.
1. As children Jack and I often (play). in South America during the war. 2. I (live) in South America during the war.
7 I (live) m oddar 2
2. I (live) ten minutes ago. 3. The programme (finish) a beautiful princess who (live)
4 Once upon a time there (De)
in a magnificent castle. his homework while I (clean) the kitchen. My son (do) his homework while I (clean) me with my homework.
his homework while I (clean) have homework.
5. My son (do) his homework while I (clean) me with my homework. 6. When I was a boy my father never (help) me with my homework. cloud the road when he (see) the man.
7. He (run) work late again today? 8. You (have to) about three minutes ago; what a pity you (not
8. You (have to) work late again today? 9. My husband (leave) about three minutes ago; what a pity you (not sooner.
9. My husband (leave)
come)
D. Rewrite the following sentences, giving the correct form of the verbs in brackets (Pres-
D. Rewrite the following sentences, giving the corresponding
Desfect tenses Active of Passive/.
1. I (not see) this essay very nearly. 2. You (write) the essay very nearly yet.
2. They gold they would come at five o close, but have
5. Why you (leave) his lawn this week. 6. Mr. Smith (not cut) his lawn this week.
6. Mr. Smith (not cut)
7. How many pages you (write)
6. Mr. Smith (not cut); 7. How many pages you (write); 8. What you (tell) all the countries of the world. 9. I (not see) as a Christmas present for your brother?
9. I (not see) as a Christmas present for your brother? 10. What you (buy) my old car.
10. What you (ouy) my old car. 11. I (sell) my old car. 10. Characterists to her friend in America twice this year.
11. I (sell) to her friend in America twice this year. 12. She (write) a bad car-crash.
12. She (write) a bad car-crash. 13. My sister (have) a bad car-crash.
14 The building (be painted)
by at school this year:
13. My sister (have) a bad car-crash. 14. The building (be painted) by at school this year? 15. Who he (be taught) by at school this year?
The state of the following sentences into the Future Progressive:
E. Change the verbs in the following sentences into the Future Progressive:
E. Change the verbs in the following sentences into the Future Progressive:
E. Change the verbs in the following sentences into the Future Progressive: 1. Peter is coming back in a minute. 2. Who will give me a hand with the food?
E. Change the verbs in the following sentences into the Future Progressive:

3.	When is your father leaving?		
4.	Will you put your car in the garage	e?	
5.	They are cutting down the trees in	the park tomorrow.	
6.			
	•		
\geq		sentences into the Future Perfect Tense:	
1.	The train (arrive)	by the time you get to the station.	
2.	You (finish)	by ten o'clock?	
3.	We already (take)	our examination in a week's time.	
	By 2012 I (be)		
5.	If you come late we already (have)_	supper.	
6.	If you don't hurry the plane (leave)_	by the time you get to	o the airport.
as	required in the following sentences	te Past Perfect Tense or the Past Perfect Progress: in Cambridge for five years when	
1.			ı
2	(go)	to visit himfor an hour when it (crash)	
	How many drinks he (have)		·
٠,	(give)h		
4.	Mr. Smith (sleep)	for nearly two hours when his w	ife
	(wake)		
		a present since she	
	(be)	a child.	
6.	The police were sure that the car (be s	stolen) _ ·	by the men
	they (see)		•

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		STUDE	ENTS' NOTES				
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UNIT 8 MODAL VERBS

Modal or defective verbs have various characteristics which distinguish them from any regular or irregular verb:

1. "To" is never placed before the infinitive of the modal verb.

2. The modal verb is an auxiliary verb and is always followed by the infinitive of another verb without "to" (except in the short answer: Yes I can/No I can't).

The third person singular of the Simple Present tense does not require an "s".

4. Some tenses of the modal verb are completely non-existent, therefore verb synonyms must be used to form these tenses.

1. CAN/TO BE ABLE TO + INFINITIVE

CONJUGATION: Simple Present		
I can speak English Simple Past	Can you speak French?	I can't speak French
I could read when I was 5 Simple Future	Could you read when you were 3?	I couldn't read when I was 3
I will be able to go to Spain	Will you be able to go to France?	I won't be able to go to France
Present Perfect		
I have been able to play the guitar since I was 15	Have you been able to play the plano since you were 15?	I haven't been able to play the piano
Past Perfect	•	since I was 15
I had been able to prepare the cake before they arrived	Had you been able to prepare the tea before they arrived?	I hadn't been able to prepare the tea
Future Perfect		
I will have been able to finish by 5 o'clock Present Conditional	Will you have been able to finish by 4 o'clock?	I won't have been able to finish by 4 o'clock
I could go to Spain if I had 4 days holiday	Could you go to China if you had 4 days holiday?	I couldn't go to China if I had 4 days holiday
Past Conditional I could have gone to Spain if I had had 4 days holiday	Could you have gone to China if you had had 4 days holiday?	I couldn't have gone to China if I had had 4 days holiday

USE

1. To express capability (can/to be able to):

He can/is able to speak English.

She could/was able to ride a horse when she was five.

I have been able to sing since I was a child.

2. To express possibility (can/to be able to)

We can ski today because there's a lot of snow. e.g.

The sky is very cloudy; it could rain.

There's so much snow that they have been able to ski all day.

3. To ask for, give or refuse permission (can/to be allowed to)

Can I borrow the car tonight? No, you can't.

Could you send me some more information please?

The children have been allowed to stay up late.

2. MAY/TO BE ALLOWED TO + INFINITIVE

CONJUGATION:

Simple Present

I may go

May I go?

I may not go

Simple Past

I might go

Might I go?

I might not go

Simple Future

I will be allowed to go

Will I be allowed to go?

I will not be allowed

to go

Present Perfect

I have been allowed to go

Have I been allowed to go?

I haven't been allowed to go

Past Perfect

I had been allowed to go

Had I been allowed to go?

I hadn't been allowed to go

Future Perfect

I will have been allowed...

Will I have been allowed to?

I won't have been allowed to go

Present Conditional

I might go

Might I go?

I might not go

Past Conditional

I might have gone

Might I have gone?

I might not have

gone

1. To ask for, give or refuse permission (may/to be allowed to)

May I leave the room? No, you may not. e.g.

She said I might use her car.

I have been allowed to use her car.

2. To express possibility or supposition (may/might)

e.g. The plane may/might be late due to fog.

The sky is very cloudy so it may/might rain.

He may/might come to the party.

3. MUST/TO HAVE TO + INFINITIVE

CONJUGATION:

Simple Present

I must study

Must I study?

I mustn't study

Simple Past

I had to leave my job

Had I/ did I have to leave..?

I hadn't/didn't have

to study

Simple Future

I will have to phone him.

Will I have to phone him?

I won't have to phone him

Present Perfect

I have had to re-do this

Have I had to re-do this?

I haven't had to re-do this

Past Perfect

I had had to work

Had I had to work on Sundays?

I hadn't had to work

Future Perfect

I will have had to finish by

Monday

Will I have had to finish

by Tuesday?

I won't have had to finish by Tuesday

Present Conditional

I should/ought to study.

Should/Ought I to study?

I shouldn't/oughtn't to study

Past Conditional

I should/ought to have studied

Should/Ought I to have studied?

I shouldn't/oughtn't to have studied

USE

1. To express a positive or negative obligation (must/to have to)

The affirmative form MUST is used to express an obligation imposed by the speaker:

e.g. Your shoes are dirty; you must clean them.

You mustn't smoke in a hospital

The affirmative form HAVE TO is used to express obligation imposed by external authority or circumstances:

e.g. I have to be in the office by nine o'clock.

2. To express absence of obligation (don't have to/needn't)

e.g. This shirt is clean, so you don't have to/needn't wash it

N.B. The negative forms don't have to/needn't indicate that an action is not necessary and should not be confused with the negative form mustn't, which indicates that an action is prohibited:

dvice): I can speak French. (e.g. I should/ought to go to bed early tonight.	her the action is actually performed.
EXERCISE 1 Make these sentences a) negative and b) interrogative in all the simple and compountses and conditional forms: They can read English. We may use this one. You must tell him. EXERCISE 2 Decide how the modal verbs are used in the context of the following sentences (capability/supposition, permission, absence of permission, obligation, absence of obligation divice): I can speak French. You may borrow my book. You should tell the police about the accident. You really must study harder. You really must study harder. He can leave his bicycle here. James is strong, so he can move the wardrobe. He can leave his bicycle here. He can leave his bicycle here. He can do without cigarettes. He can do without cigarettes. He have can do without cigarettes. He would travel to come to the meeting. He doesn't have to come to the meeting. He would not come and see us. He would not come and pick us up. He would read when she was only three. EXERCISE 3 Insert an appropriate modal verb or verb synonym in the following sentences, proporticular attention to the context of use, the tense and form (affirmative or negative): De till.	ce the form is conditional, there is always	
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Insert an appropriate modal verb or verb synonym in the following sentences, particular attention to the context of use, the tense and form (affirmative or negative):	8. You ought to read the instructions before early 9. I'm sure he can do without cigarettes. ()
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	8. You ought to read the instructions before early 9. I'm sure he can do without cigarettes. (onym in the following sentences, and form (affirmative or negative):
	8. You ought to read the instructions before early 9. I'm sure he can do without cigarettes. (onym in the following sentences, and form (affirmative or negative):

4.	If you don't feel well, my suggestion is that you see a doctor immediately.
J.	Trouce III a IIIuseum; All umbrellas and cameras
ο.	The bus was late and we wait about an bour at the bus
	turn off all the lights and lock the door when I is a first
J.	The taking my umbreha, because it
٧.	You stay if you don't want to
ιο.	The children run in the corridor at school

STUDENTS' NOTES	
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CONDITIONAL FORMS

Conditional sentences are sentences expressing factual implications, or hypothetical situations and their consequences. They are so called because the validity of the main clause of the sentence is conditional on the existence of certain circumstances, which may be expressed in a dependent clause or may be understood from the context.

A full conditional sentence (one which expresses the condition as well as its consequences) therefore contains two clauses: the dependent clause expressing the condition, called the *protasis*; and the main clause expressing the consequence, called the *apodosis*. An example of such a sentence (in English) is the following:

If it rains, the picnic will be cancelled.

Here the condition is expressed by the clause "If it rains", this being the protasis, while the consequence is expressed by "the picuic will be cancelled", this being the apodosis. (The protasis may either precede or follow the apodosis; it is equally possible to say "The picuic will be cancelled if it rains".) In terms of logic, the protasis corresponds to the antecedent, and the apodosis to the consequent.

In English conditional sentences, the condition clause (protasis) is most commonly introduced by the conjunction if, or sometimes other conjunctions or expressions such as unless, provided (that), providing (that) and as long as.

In English language teaching, conditional sentences are often classified under the headings zero conditional, first conditional (or conditional I), second conditional (or conditional II), third conditional (or conditional III).

CONDITIONAL SENTENCES (3 TYPES)

TYPE 1 to indicate probable occurences

The verb in the IF Clause is in the present tense, the verb in the Main Clause is in the future tense. The IF Clause may come before or after the Main Clause. Sometimes the present tense can be used both in the IF Clause and in the Main Clause to express automatic or habitual actions, or phenomena that are always true:

Examples:

If you work hard, you will pass the exam

You'll catch the train, if you run fast.

If you heat ice, it melts (or will melt).

· Ice melts, if you heat it.

If the modal verb is used in the main clause there is no need for the future tense:

If you work hard you can pass the exam.

If the imperative form is used in the main clause there is no need for the future tense: Example:

Call me if you pass the exam

"unless" (meaning "if not") is also used in type 1 conditional sentences:

Example: You will not pass the exam unless you study (if you do not study)

TYPE 2 to indicate improbability or unreality.

The verb in the IF Clause is in the simple past tense and the verb in the Main Clause is in the present conditional. The meaning of the whole sentence can be present or future. (The past tense in the If Clause is not a real simple past, but a subjunctive form).

USES of TYPE 2.

1) When the supposition is contrary to known facts (present unreality);

2) When the action in the IF Clause is not expected to take place (future improbability);

3) Sometimes as an alternative to TYPE 1 to express possible plans or suggestions (future possibility).

Examples:

If I had a big house, I would invite you all to stay. (But I haven't a big house - present unreality)

If I wore purple shoes, my friends would laugh at me (But I don't intend to wear them future improbability)

If we run, we'll catch it - or - If we ran, we'd catch it. (future possibility)

The verb "to be" is the only verb which still maintains the subjunctive form in the Type 2 N.B. conditional sentence - "WERE" is used for all persons:

If I were you I would study harder.

If this text were easier I would be able to understand it better.

TYPE 3 to indicate unfulfilled/impossible conditions.

The verb in the IF Clause is in the past perfect tense, the verb in the Main Clause in the past conditional. The meaning of the clause is in the past.

Examples:

If I had known you were arriving today, I would have prepared something for tea. (But I didn't know, so I didn't prepare anything)

If he had tried to climb over the wall, he would have fallen (But he didn't try)

THE PRESENT CONDITIONAL

FORMATION:

should/would

infinitive of main verb

You/he/she/it/they

would

infinitive of main verb

N.B.

SHOULD MAY BE FOUND TO INDICATE THE FIRST PERSON SINGULAR OR PLURAL IN MORE FORMAL USE, BUT IN COMMON EVERYDAY USE WOULD IS ADOPTED FOR ALL PERSONS.

<u>AFFIRMATIVE</u>

should/would

work

You/he/she/it/they

would

work

INTERROGATIVE

Should/would I/we work?

Would you/he/she/it/they work?

NEGATIVE

I/we shouldn't/wouldn't work
You/he/she/it/they wouldn't work

SHORT ANSWER

I/we should/would

No I/we shouldn't/wouldn't

Yes you/he/she/it/they would
No you/he/she/it/they wouldn't

USE:

Yes

A) IN TYPE 2 CONDITIONAL SENTENCES (IF CLAUSES):

If I had time, I would help you.

B) FOR OFFERING AND REQUESTING POLITELY:

What would you like to eat?

I'd like steak and chips with peas please.

C) AS A PAST EQUIVALENT OF A FUTURE TENSE WHEN THE MAIN VERB IS IN THE

PAST TENSE:

She thinks she will be able to come.

She thought she would be able to come.

D) WHEN CHANGING FROM DIRECT TO INDIRECT SPEECH, WHEN THE INTRODUCTORY VERB IS IN THE PAST TENSE:

She said "I will come on Thursday".

She said she would come on Thursday".

The simple future in direct speech becomes the present conditional in indirect speech.

PAST (OR PERFECT) CONDITIONAL

FORMATION:

L'we should/would + have + past participle of main verb

You/he/she/it/they would + have + past participle of main verb

<u>AFFIRMATIVE</u>

I/we should/would have worked You/he/she/it/they would have worked

INTERROGATIVE

Should/would I/we have worked?
Would you/he/she/it/they have worked?

NEGATIVE

I/we

shouldn't/wouldn't have

worked

You/he/she/it/they

wouldn't

have

worked

USE

A) IN TYPE 3 CONDITIONAL SENTENCES TO EXPRESS UNFULFILLED CONDITIONS (SEE IF CLAUSE)

I would have phoned you if I had known you were not well. (but I didn't know so I didn't phone)

B) AS A PAST EQUIVALENT OF THE FUTURE PERFECT TENSE

I think he will have; arrived by the time we get home, I thought he would have arrived by the time we got home.

C) TO EXPRESS UNFULFILLED WISHES

I would have liked to have seen that film.

(I wanted to see it but I didn't get my wish.)

CONDITIONAL OF MODAL VERBS

The conditional forms of modal verbs (CAN - COULD, MAY - MIGHT) exist and are used in front of the main verb to indicate ability or possibility in all types of conditional sentences.

Type 1. If you work hard, you could pass the exam (ability)

Type 2. If you left earlier, you might catch the train (possibility)

Type 3. If he had left earlier, he could have caught the bus (ability or possibility)

CONDITIONAL SENTENCES

Put the verb in brackets into the correct tense depending on the type of conditional sentence given. Then give the other two conditional types of the same sentence.

1.	If you pass your exam we (celebrate), (Type)	
	(Type)	
2.	(Type	•
	(Type) (Type) more time. (Type)	
3.	(Type)	
4.	(Type) If you go to London where you (stay)? (Type)	
_	(Type)	?
5.	(Type)	
	(Type)	

6.	The flight will be cancelled if the fog (get) thicker. (Type	
	(Type)	
	(Type)	
7.	You would concentrate on the lesson better if you (not talk)s	o much.
,	(Type)	
	(Type)	
	(Type	
8.		in't have
	answered the wrong question. (Type)	
	(Type)	
	(Type)	2
9.		
	(Type)	
	(Type)	
	(Type)	
10.		es.
	(Type)	
	(Type)	
	(Type)	into
11.		HILO
	it. (Type)	
	(Type)	
10	(Type) If I had a long ladder I (can repair)the roof myself. (Ty	me) -
12.		P•
	(Type	
13.		
12,	(Type)	
	(Type)	•
14.		1
	(Type)	
	(Type)	F
15.		
	(Type)	
	(Type)	
	<i>A</i>	
	EXERCISE 2	
.*		
	Put the verb in brackets into the correct tense, depending on the context:	•
	1. If we (take) an umbrella with us last night, we would not have go	it wet.
	2. If I (not be) at work today, I would be at home watching TV.	
	3. If we (go) in two cars, we'll be more comfortable.	
	4. If it rained every day of the year, the earth (flood)	
	5. If you (not study) you'll fail the exam.	
	6. If you don't concentrate, you (not understand)	
	7. If Charles Brown had tried to escape from Alcatraz, he (catch) cer	rainly.
	8. I would go home now if I (be) you.	
	o. I would go notice now it I (be) you.	

. *

UNIT 10 PHRASAL VERBS

✓ VERBS FOLLOWED BY ADVERBS:

- A. These verbs can retain the meaning of the verb and the adverb which follows:
 - 1) I went away for a week and came back yesterday.
 - 2) He wrote down her telephone number and threw away the paper.
- B. The verb + adverb can take on a new meaning:
 - 3) Our plan didn't come off (it didn't succeed); it fell through (it failed).
 - 4) I'd like to give up (stop) smoking.
- C. Some verbs + adverbs have an object (they are transitive): In examples 2) and 4) the object is a noun, so the adverb can be placed either before or after the object:
 - He wrote down her telephone number and threw away the paper. He wrote her telephone number down and threw the paper away. I'd like to give up smoking I'd like to give smoking up.

Some other transitive verbs are:

blow up, call off, find out, make up, pick up, put on, put down, put up, try on, take off (remove), tell off, wake up, wash up, work out.

- D. If the object is quite long the adverb is placed before it:
 - I'd like to give up smoking forty cigarettes a day. e.g.
- E. If the object is a pronoun, the adverb must be placed after the object:
 - He wrote it down and threw it away. I'd like to give it up.
- F. Some verbs + adverbs don't have an object (they are intransitive): In examples 1) and 3) there is no object:
 - I went away for a week and came back yesterday. Our plan didn't come off; it fell through

Some other intransitive verbs are:

fall down, get up, set off (leave), sit down, stand up, take off (rise from the ground), wake up

VERBS FOLLOWED BY PREPOSITIONS (PREPOSITIONAL VERBS): These verbs usually retain the meaning of the verb, but require a specific preposition before the object. e.g. I paid for the car by cheque. She listened to the nine o'clock news.	ect:
Some other prepositional verbs are: agree with, arrive at, ask for, believe in, belong to, deal with, decide on, depend on, hope for, in on, laugh at, look after, look at, look for, send for, talk about, talk to, wait for	sist .
PHRASAL VERBS - EXERCISE	
Insert the correct verb, preposition or verb plus preposition in brackets in the follows	ing
sentences:	+ed)
1. I've for the job and I hope I get it. (succeeded, presented, applied, appoint	rea)
2. I never expected you to turn at the meeting, I thought you were abro	oad.
(in, around, up, on)	
in 1939 (broke out broke up, broke of	pen,
3. The Second World War in 1939. (broke out, broke up, broke of broke off)	
4. We can never relax in this office. New problems are always (coming coming up, raising, presenting)	
5. He's alwaysthe Government but he never votes in the elections. (runnout, running down, calling off, calling out)	ning
out, running down, caning on, one by	roke
6. The meeting at midnight and we all went home. (stopped up, b through, broke up, stopped off)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
7. He aimed his gun the target. (to, at, in, on)	
8. He his engagement just before the wedding. (broke up, broke out, baway, broke off)	oroke
	. VOII.
9. There are a lot of mistakes in this exercise, I'll have to it again with (come through, instruct, go over, go down)	
10. Before hope, let's try opening this door. (taking up, giving up, to up, to take up)	give
up, to take up)	
11. He as if he were the boss. (carries out, carries on, carries away, carri	ies in)

in the photograph because it had been taken from so

far away, (make her over, make her up, make her out)

12. It was difficult to ____

13.	He'll	his nervousness	once he's on st	age. (get through	1, get off, get aw	ray
14.	He asked me what was making out)		in the street ou	itside. (succeedin	g, going on, doi	ng,
15.	We were kept off, held up, put back)	_ for half an hou	ir in the traffic a	nd so we arrived l	ate. (broken dow	'n,
16.	There's no beer left and the through, go for, go without		so you'll have i	to	(go off,	go
	She's such an irritating perso up, put up, support, listen)	on. I don't knov	v how you can	· · · · · · · · · · · · · · · · · · ·	_with her. (star	ıd
	The good service at the hotel up for, made out, made for)		the poor foo	od to some extent	. (made up, mad	le
	That's the firm we've been _ on, working out)		. (d	lealing with, treat	ing with, workin	ıg
٠,	I've been trying to solve this through, work it out, bring i	_	,	n't	(work	ir
e tv		•			•	
	· ,					

STUDENTS' NOTES

QUESTION FORMATION

Open answer questions or wh-questions (What, Where, Which, Who, When, Why, Whose, How,

What.....like?) are formed by:

Question Word + Auxiliary / Modal Verb + Subject + Main Verb + Complement?

	A :11:/Model	Subject	Main Verb	Complement?
Question Word	Auxiliary/Modal	 	doing	
What	are	they .	feel	yesterday?
How	did	he		in London?
Where	were	you	staying	11. 201.10
Why	have	you	stopped?	
	had	you	told	my secret to?
Who		you	going	to London?
When	are	you	buying?	
Which car	are		borrow?	·
Whose book	did	you		like?
What	was	the hotel		

In short answer questions with the Simple Present/Simple Past of the verb "to be" there is no main verb ...

	Auxiliary	Subject	Complement?
Question Word	was	Paul	upset?
Why	were	your trousers?	
What colour What time	is	the tennis match?	
Which	is .	your house?	

What, Which and Whose can be followed directly by a noun:

- a) What size do you take?
- b) What sort of music do you like?
- c) Which coat is yours?
- d) Whose book is this?

Which is generally used when there is a limited choice:

- a) Which is your husband the blond one or the dark one?
- This rule is not always true What/Which newspaper do you read?

What can also be combined with a noun to ask precise questions:

- a) What day is the meeting?
- b) What kind of music do you like?
- c) What size do you want?

How can be followed by an adjective or by an adverb:

- a) How big is his new car?
- b) How fast does it go?
- c) How old are you?
- e) How often do you play tennis?
- f) How long did you wait?

How can also be followed by much and many

- a) How much money have you got in your purse?
- b) How many brothers or sisters have you got?

Short answer questions are formed by: Auxiliary/Modal Verb + Subject + Main Verb

Auxiliary/Modal	Subject	Main Verb	Complement
Do	you	know	Complement? Alice?
Has	John	finished	his homework?
Can	your brother	use	a video camera?

In short answer questions with the Simple Present/Simple Past of the verb "to be" there is no main verb

Auxiliary/Modal	Subject	Complement?
Are	they	your friends?
Was	the reacher	in class?
Am	I .	in trouble?

Short answer questions are used when the answer is simply a Yes or No. The answer is usually short and is formed by:

Yes/No + comma + subject pronoun + auxiliary (positive or negative)

e.g. "Are you going out?" "Yes, I am"
"Will you be back late?" "No, I won't"

Questions with Do/Does/Did

In questions where there is no auxiliary verb "have" or "be" or a modal verb then the auxiliary verb Do is used. Do is used to form negative and interrogative of the Simple Present and Simple Past Tenses of ordinary verbs.

Auxiliary	Subject	M.: 37 1
Do	T// /1	
Desa		work?
	he/she/it	work?
Did	I/you/he/she/it/we/they	
		Do

N.B. The verb "have" has two interrogative forms. Have you got a brother? = Do you have a brother?

In the Simple Past Tense we must use did + infinitive without "to" in interrogative and negative phrases and short affirmative or negative answers:

e.g. Did you see him?

<u>Not</u>

Did:you saw him?

Yes, I did (see him)
No, I didn't (see him)

Not Not

I did saw him.
I didn't saw him.

Interrogative Pronouns, Subject and Complement

If the question word is the subject of a phrase then do/does/did are not used:

Answer:

John asked me

- 1	,		ı
	Subject	Main Verb	Complement?
l	Who	asked	you?

BUT if the question word is the object/complement of a phrase then do/does/did are used: Answer: I asked John.

	Complement	Auxiliary	Subject	Main Verb
L	Who	did	you	ask?

F E

EXERCISE 1

Now make questions for which the following would be reasonable answers.

Ask about the words in bold type using question words like Who?, What?, Where?, When?, Why?, How?, How much/many?, How long?, What islike?, Whose?, Which?:

e.g. I saw Tom.

Possible question: Who did you see?

When a noun in brackets is placed after a pronoun, use this noun in the question: e.g. I saw him (Tom) today. Question: When did you see Tom?

Be careful when using the question words "Who" and "What" when the subject of the answer is unknown - the affirmative order is used:

e.g. Tom used the computer last.

Who used the computer last? What was lying on the table?

My pen was lying on the table.



- 1. They went to New York.
- 2. It takes four hours to get there.
- 3. He earns a hundred pounds a week.
- 4. It (my room) is twice as big as yours.
- 5. They left the country ten years ago.
- 6. They came by bus.
- 7. I've been here for two months.

- 8. They (the students) went to the museum yesterday.
- 9. He met her in a coffee bar.
- 10. They (the neighbours) complained about the noise.
- 11. The pigs ate them (the apples).
- 12. He got in by climbing over the wall.
- 13. John bought them (the tickets).
- 14. They (the desks) were very old-fashioned.
- 15. I smoke forty (cigarettes) a day.
- 16. It (the hotel) was awful.
- 17. I've had this cough since the beginning of October.
- 18. He (Guy Fawkes) tried to blow up Parliament.
- 19. I'd like to speak to Mr. Jones please.
- 20. This is Tom's.

EXERCISE 2

- 1. He stopped it (the train) by pulling the communication cord.
- 2. She (Mary) put it in the dustbin.
- 3. I threw it away because I was tired of it.
- 4. It (the lake) is very deep indeed.
- 5. It (the bridge) is built of reinforced concrete.
- 6. He broke it (his leg) in a skiing accident.
- 7. He (Tom) lost his job because he kept coming in late for work.
- 8. I bought the big one.
- 9. It (the concert) began at eight p.m.
- 10. She went to the dance with George.
- 11. He's coming at the end of the week.
- 12. I'm looking for a telephone box.
- 13. He's borrowed your typewriter.
- 14. He's ringing up the police.
- 15. It (the word 'boss') means employer,

UNIT 12

THE USE OF THE "ED" FORM

The "ed" suffix added to the stem/root of a regular verb indicates

EITHER:

A. THE SIMPLE PAST TENSE

e.g. The students STUDIED the instructions carefully.
The data REPRESENTED the arithmetic mean.

OR

B. THE PAST PARTICIPLE

This can be found:

- 1) IN THE PRESENT/PAST/FUTURE PERFECT TENSES
 - e.g. they HAVE/HAD/WILL HAVE STUDIED the instructions carefully.
- 2) IN THE PASSIVE FORM
 - e.g. this type of average IS CALLED the arithmetic mean.
 still further studies ARE NEEDED.
 The denominator tells us how many equal parts the

unit IS DIVIDED into.

- 3) USED AS AN ADJECTIVE (BEFORE A NOUN)
 - e.g. COMPLICATED calculations
 UNLIMITED range
 A MIXED number is a whole number and a fraction
 written together
- 4) IN AN ELLIPTICAL RELATIVE PHRASE (<u>AFTER</u> a noun, which may be the SUBJECT or the OBJECT of the main clause)
 - e.g. The greater number CALLED the minuend from which the smaller number CALLED the subtrahend is to be subtracted.= The greater number WHICH IS CALLED the minuend from which the smaller number WHICH IS CALLED the subtrahend is to be subtracted.

"ED" FORM ACTIVITY

Decide how the "ed" form is used (simple past, past participle in perfect tense, past participle in passive form, past participle as adjective, past participle in elliptical relative phrase) in the following sentences:

1.	Division is the operation by which one finds how many times one number, carred the
dix	visor is contained in another, called the dividend
2.	The number to be multiplied is <u>named</u> the multiplicand.
(
3.	Multiplication is only an abridged addition.
4.	She decided to become a mathematician when she was in high school.
Ü	
5.	Subtraction is proved by addition:
_	There had obtained the same results. (
7.	In order to prove that the result was correct, he <u>multiplied</u> the quotient by the divisor.
(
8.	Axioms are assumed to be true, ()
9.	The twentieth power of seven is the product of 7 <u>multiplied</u> twenty times by itself
(
$\overline{10}$. The extracted number was:30. ()

UNIT 13

THE USE OF THE "ING" FORM

 USE AS A GERUND (usually translated in Italian by a NOUN or an INFINITIVE)

The gerund is generally recognized when:

A) It is used as the SUBJECT or the OBJECT of a sentence (often preceded by AN ARTICLE)

e.g. UNDERSTANDING mathematics is essential in many other fields of science.

DEFINING the precise coordinates of x and y is the task of algebraists.

- B) It is PRECEDED BY A PREPOSITION OR A CONJUNCTION e.g. She is good at COUNTING numbers.
 - N.B. A sentence is formed BY CONNECTING two sentences with the word "or".

 (when BY is used before the gerund it may be translated with the Italian "GERUNDIO") writing English is difficult, BUT SPEAKING it is much harder.
- C) It is PRECEDED BY AN ADJECTIVE
 e.g. OUR UNDERSTANDING of the problem.
 EXPENSIVE COMPUTING.
 ACCURATE POSITIONING
- D) It follows CERTAIN VERBS

 e.g. I LIKE WORKING in a group.

 She HATES WALKING.

 He AVOIDS DRINKING coffee.
- E) It is part of a COMPOUND NOUN or a NOMINAL GROUP e.g. HAIR COLOURING, TIME-SHARING,

USE AS A PRESENT PARTICIPLE:

The present participle is recognized when it is used:

- A) As AN ADJECTIVE (BEFORE a noun, usually corresponding to AN ADJECTIVE ENDING IN "ANTE" OR "ENTE" in Italian)
 - e.g. An INTERESTING scientific paper = a scientific paper which interests one.

 A FUNCTIONING working group = a group of people which work well together.

 INTERSECTING lines = lines which intersect at one point
- B) In an ELLIPTICAL RELATIVE PHRASE (AFTER a noun, which may be the SUBJECT or the OBJECT of the main clause)
 - e.g. Three-fourths (3/4), is a vulgar (common or simple) fraction, **CONSISTING** of the numerator 3 and the denominator 4. = Three-fourths (3/4), is a vulgar (common or simple) fraction, **WHICH CONSISTS** of the numerator 3 and the denominator 4.
- C) In the PROGRESSIVE FORM.
 - e.g. She IS SOLVING a new mathematical problem.
- D) As the SECOND of two contemporary or almost contemporary actions, BOTH HAVING THE SAME SUBJECT
 - e.g. The student sat in the library SOLVING the math problems. = As THE STUDENT SAT in the library HE/SHE SOLVED the math problems.
- E) When ONE ACTION IS THE CAUSE OF THE OTHER
 - e.g. FEARING that she would not finish solving the problem on time, she rushed through it.=
 SINCE/AS/BECAUSE SHE FEARED that she would not finish solving the problem on time, she rushed through it.

USE AS A PREPOSITION

In rare cases the "ing" form is used as a preposition

e.g. **DURING** the 17th and 18th centuries many new mathematical discoveries were made.

"ING" FORM ACTIVITY

Decide how the "ing" form is used (gerund, present participle as adjective, present participle in elliptical relative phrase, present participle in the progressive form, preposition) in the following sentences:

	vertex, as their common origin. (
2.	Intersecting lines have a point in common. ()
3.	In ancient Egypt and Babylonia, geometry was used in surveying and building.
4.	A line is made up of an infinite number of points and is a one-dimensional figure
	having only length but no width or height. ()
5.	He is stating that a+b=c.
6.	Substituting numbers with letters is the same as substituting nouns with
	pronouns. ()
7.	The median is the figure for which there is an equal number of cases below and
	above it when arranging observations in ascending order.
8.	Figure A shows how well the lines are intersecting at Q.
9.	The table shows how the numbers have been increasing constantly.
3	
10.	The grouping of data into classes was covered in chapter 1.
	()

PREPOSITIONS

A preposition is a word which shows the relationship of a noun or pronoun to some other word in the sentence. The relationship include: direction, place, time, cause, manner and amount. A preposition always goes with a noun or pronoun which is called the object of the preposition. The preposition is almost always before the noun or pronoun. The preposition and the object. together are called a prepositional phrase.

I walked to the car. (preposition -to, object of the proposition - car, prepositional phrase - to the

I walked around the car. (preposition - around, object of the proposition - car, prepositional

phrase - around the car) The pen is on the table. (preposition - on, object of the proposition - table, prepositional phrase -

I read the book during class. (preposition - during, object of the proposition - class, prepositional on the table) phrase - during class)

Some of the commonly used propositions are:

_1	between	out	
above	by	over	
across	during	past	<u> </u>
after	for	until	
against	from	up	
along	in	upon	
among	inside	since	
around		through	
ať	into	toward	
before	like	under	
behind	near	with	
below	next	within	
beneath	of		
besides	off	over over	

Prepositions of Time: In, At, On

The preposition in is used for:

Month

in July

Years

in 1960 '

Centuries

in the 19th century

Long Periods

in the mornings

Seasons

in summer

The preposition at is used for:

A precise time

at 7.00 a.m.

The weekend

at the weekend

Night

at night

Festive Periods

at Christmas

The preposition on is used for:

Special Days

on my birthday

Days of the Week

Dates

on Tuesday on the 24th of December

Exceptions:

Examples:

in the past

at present

in the future

There is NO preposition of time if the day/year has each, every, last, next before it.

Examples:

each year

every Monday

last week

next day

Prepositions of Space: At, On, In

Preposition	Used for	Examples
At	a specific location or point in space	at the door at home
On	a horizontal or vertical surface	on the table on the blackboard
In	enclosed area	in New York in the car

Prepositions and Adverbs

A preposition is followed by a noun, pronoun or noun phrase, which forms the object of the preposition.

Some words can be a proposition or an adverb, but an adverb does not have an object.

I walked up the stairs. (up is the proposition and stairs is the object)

I walked up. (up is the adverb and there is no object)

N.B. Prepositions are used:

- 1. with time words:
 - on Monday
 - in the 20th century
 - at night
- 2. to show where something or someone is:
 - The plate is on the table.
 - Julie is in the garden.
 - The picture is on the wall.
- 3. after some adjectives:
 - She is good at tennis.
 - Scotland is famous for whisky
 - I'm worried about my new job.
- after some verbs:
 - I'm listening to music.
 - She is waiting for her friend.
 - He borrows money from his sister.
- 5. after some nouns:
 - She has trouble with remembering new vocabulary.
- 6. in certain phrases:
 - The bus arrived in the end.
 - She arrived just in time for the film.

USES OF THE PREPOSITION "BY"

The preposition "by" has different meanings, depending on the context in which it is used:

- a) Come and sit down by (= near) me.
- b) Hand this in by (= not later than) next Friday.
- c) This book was written by (action done by a person = passive form) Charles Dickens.
- d) He went by (= up to and then beyond/past) the church on his way to work.
- You can send this by (= via) e-mail.
- The animals came into the Ark two by (= in successive units of) two.
- g) Divide/multiply ten by five. (in certain mathematical operations)

PREPOSITION ACTIVITY

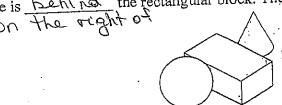
Exercise 1.	Complete	the descriptions	of position	in the	figures	below.	

1. The cube is suspended above over the small rectangular block. The small rectangular block the large rectangular block under the cube.

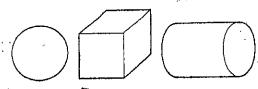


2. The cone is behind the rectangular block. The sphere is in front othe rectangular block.

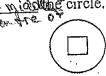
On the right of



3. The cube is between the sphere and the cylinder.

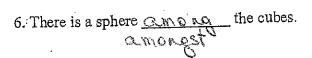


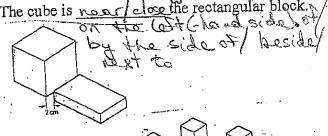
4. The square is in the middling circle.

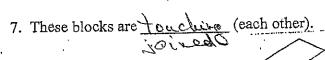


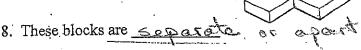
5. The rectangular block is near close to the cube. The cube is near close the rectangular block.

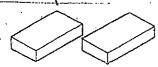
on the right (-hand) side of beside next to by the side of beside



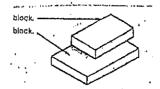








9.	These	blocks	are	



10. This side and this end are _____ (to each other)

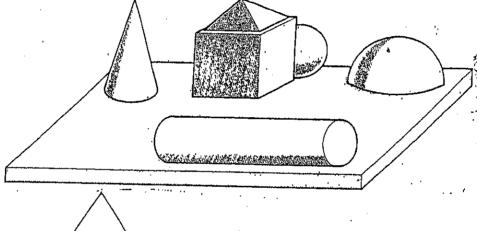


Exercise 2. Ask questions abut the positions of the objects below in the following way?

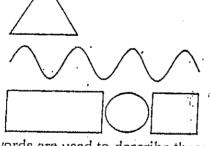
Where		sphere	?
Which side	is the	cone cylinder	on?
What position		cube	in?

Write questions to ask about the positions of the objects in the picture below?

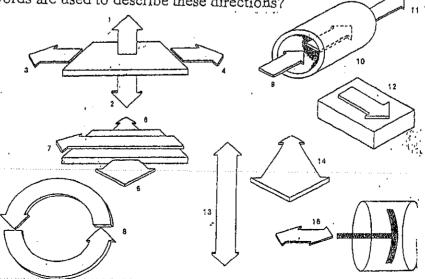




В.



Exercise 3. What words are used to describe these directions?



Exercise 4. Insert a suitable preposition in the space provided in the following sentences:

JAC	reise 4, moore		
2. · · · · · · · · · · · · · · · · · · ·	The submarine was submerged The firemen climbed I usually come The plates, knives and forks are I've put the milk	30 feet of water. the ladder to save the man from train. all the fridge, otherwise it will go state the classroom all the pure	om a fourth-floor window sour in this heat pils stood
ь.	When the total	the teacher sent him	the room.
7.	While he was standing his study.	the teacher sent him the door the headmaster s	
8. 9. 10.	I'm goingShe was born We must goWhen the bus stopped he got	France August, January 12 th 1984. this tunnel to get to the other side of and went	of the mountain. the nearest
12 13	shop. I am always happy when I am The plane was flying so high i	t was the clouds. evin's right and Bob is	his left, Kevin is
15	. The actors were waiting	Bob. the scenes before goi	ng on stage.

UNIT 15 COMPARATIVE AND SUPERLATIVE FORMS

FORMATION OF COMPARATIVE AND SUPERLATIVE

There are several ways of showing that similarities or differences exist between or amongst things. The regular comparative and superlative of descriptive words, whether these are adjectives or adverbs, is formed as follows:

1. by adding the ending fer and rest to words of one syllable

٨	
97	Examples
-CD-	Examples

	Absolute	Comparative	Superlative
	. new	newer	the newest
Adjectives	old	older '	the oldest
	big	bigger	the biggest
Adverbs	soon	sooner	the soonest
•	late	later	the latest

2. by placing the words more and most in front of words with three or more syllables

Examples

711	Absolute	Comparative	Superlative
	interesting	more interesting	the most interesting
Adjectives	convenient beautiful	more convenient more beautiful	the most convenient the most beautiful
Adverbs	ea ily	more easily	the most easily
•	carefully	more carefully	the most carefully

3. words with <u>two syllables</u> may be like 1 or 2 above in that they will add the suffix -er and -est if they end in -y or -ly, -ow, -le, and -er. Most of the remaining words take more and most in front of them.

Examples

	Absolute	Comparative	Superlative
-у	happy	happier	the happiest
	funny	funnier	the funniest
-ly	early	earlier	the earliest
	friendly	friendlier	the friendliest
-ow	shallow	shallower	the shallowest
	narrow	narrower ,	the narrowest
-le	able	abler	the ablest
	gentle	gentler	the gentlest
-er	clever	cleverer	the cleverest

N.B. Two-syllable adverbs ending in -ly take more or most.

Examples

quickly slowly more quickly more slowly most quickly most slowly

	Absolute	Comparative	Superlative
remaining descriptive two-syllable words	careful careless boring awful complex	more careful more careless more boring more awful more complex	the most careful the most careless the most boring the most awful the most complex

4. Some common two-syllable adjectives can have either type of formation.

3	Examples
	Examples

Absolute	Comparative	Superlative	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
common	commoner	the commonest	
	more common	the most common	٠.
handsome	handsomer	the handsomest	
	more handsome	the most handsome	
polite	politer	the politest	•
	more polite	the most polite	
gulet	quleter	the quietest	
	more quiet	the most quiet	

5. There are a small number of adjectives and adverbs that form the comparative and superlative using a different stem. These irregular comparisons are as follows:

Examples

	Absolute	Comparative	Superlative
Adjectives	bad	worse .	the worst
	far	further/farther	the furthest/farthest
	<u>far</u> good	better	the best
• •	many	more	the most
Adverbs	badly	worse	the worst
	far	further/farther	the furthest/farthest
•	little	less	the least
	much	more	the most
:	well	better	the best

USE IN SENTENCES

There are many reasons for using comparisons in discourse. They may be used to show: a) equivalence, b) non-equivalence, c) one item compared with other, d) parallel increase,

Equivalence	Eq	uiva	len	ce
-------------	----	------	-----	----

The following words or constructions are used to show equivalence (i.e. the same)

14		divalence (n.e. the same).	
as+adjective+as	are similar	each	
as many+plural noun+as	equal to	eitheror	
as much+sing.noun+as	is like	· ·	
1 .	13 11KC	all	
the sameas	similar/ly	both	
similar to	equal/ly	alike	i
the same	• •	анке	l
THE DULIE	compare to/with		

Non-equivalence

The following words and/or constructions are used to show non-equivalence (i.e. not the same)

not as+adjective+as	- some derions are used to snow non	requivalence (i.e. not the same).
, , , , , , , , , , , , , , , , , , ,	greater than	unequal (ly)
adjective + er than	not as many+plural noun+as	unlike
morethan	neithernor	
	,	not the same as
fewerthan	not as much+sing.noun+as	not all
lessthan	not equal to	1000

The superlative

The following words and/or constructions are used to show one item compared with others (the superlative).

1 t		
I the adioasissa		The state of the s
the adjective + est	the manner of the	
	the most+adjective	
		the least+adjective
		are remeratelective

Parallel increase

The following words and/or constructions are used to show parallel increase (i.e. two comparatives). the (adjective + er)the more; the (adjective + er)the less

e.g. The bigger the house, the more work you'll have to do.

The smaller the house, the less work you'll have to do.
adjective + er and adjective + er; more + adjective and more + adjective

e.g. Integrated circuits are becoming smaller and smaller.

Computers are becoming more and more intelligent.

EXERCISE 1

2	Write the comparatives as	nd superlatives of these adjectives.
1.	old	and any contract anjectives.
2.	hard	
3.	long	
4.	warm	
5	clean	
6.	парру	
7.	lazy	
3. ;	late	
). [big	
	good	

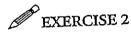
	 	
11. beautiful	 	
12. comfortable	 	
13. thin	 · · · · · · · · · · · · · · · · · · ·	
14. noisy		•

False friends

polite = courteous/well-mannered/cordial

comfortable = makes one feel at ease

noisy = loud/creating a lot of resonance convenient = suited to a particular situation

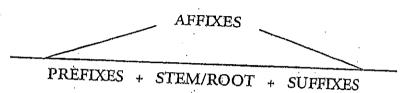


Put the adjective in brackets into the correct comparative or superlative form:

1. My sister is (old) mountain in the word than Madon than Madon than Bruce Wilder in our street is (handsome) driver in our street than Fred in Maton	ne.
2. Mount Everest is (high) than Madon 3. Megan Gayle is (beautiful) than Bruce Wil 4. Brad Pitt is (handsome) driver in our streets 5. Tom is the (careless) than Fred in Madon	ıld.
3. Megan Gayle is (beautiful) than Bruce Will 4. Brad Pitt is (handsome) driver in our street. 5. Tom is the (careless) than Fred in Man	na.
4. Brad Pitt is (handsome) driver in our street. 5. Tom is the (careless) than Fred in Man	
5. Tom is the (careless) than Fred in Mar	eet.
	rns.
6. Max is (good) subject at scho	ool.
7. Philosophy is (boring) singer in the gro	up.
8 Filen is (had)	est.
9 Mont Blanc (low)	
10 English is (interesting)	
11. Three o'clock in the morning is (quiet) than her brot	her.
12, Jane is (happy) girl I kn	.ow.
13. Samantha is (polite)	ass.
14. Peter is (clever) than Rome from E	sari.
15. Florence is (far)	

UNIT 16 WORD FORMATION

When you are reading you will find unfamiliar words. It is often possible to guess the meaning of these words if you understand the way words in English are generally formed.



An English word can be divided into three parts: a prefix, a stem or root and a suffix. Pre means 'before'; a prefix, therefore, is what comes before the stem or root. Let's consider, for example, the prefix de- (meaning "reduce" or "reverse") in a word like demagnetize (meaning "to deprive of magnetism"). A suffix is what is attached to the end of the stem. For example, the suffix -er (meaning "someone who")in programmer("the person who programs")

Both prefixes and suffixes are known as affixes

Prefixes usually change the meaning of the word; for example un-changes a word to the negative, as in able and unable.

Suffixes, on the other hand, change the word from one part of speech to another. For example -ly added to the adjective slow gives the adverb slowly or -ion added to the verb operate gives the noun

Let us consider some prefixes, their usual meanings, and how they change the meanings of English

Size Negative And Positive	Location	Time And Order	Number
remi- un- mini- non- micro- in- im- dis- re-(positive)	inter- super- trans- ex- extra- mid-	pre- ante- fore- post-	mono- bi- hex- oct- multi-

Now study these tables:

<u>~</u>		
Prefixe	o of \$17	·e
	, 0, 0,	

Prefixes of size	Meaning	Examples	
Prefix semi- equi- maxi- mini- micro- macro- mega- hyper-	half, partly equal big little tiny large very large excessively large	semiconductor	•

Negative and positive	Meaning	Examples
Prefix un-	not, not good enough	unmagnetized,
in-		incomplete Impossible
im- il-		illegal
ir- non-	not connected with	irregular, irrelevant non-programmable non-impact
mis- dis-	bad, wrong opposite feeling opposite action	mispronounce, mistake disagree disconnect
anti- contra- de- under-	against opposite reduce, reverse too little	antisocial contraposition demagnetize, decode underestimate
Positive: re- over-	do again too much	reorganize, redo overheat, overestimate

Prefixes of location Prefix	Meaning	Examples
inter-	between, among	interface, interactive, international
super- trans-	over	superhuman transmit, transfer, transatlantic transcontinental, transaction
ex-	out	exclude, exodus, exit
extra- sub- infra- peri-	beyond, outside under below around	extraordinary sub-schema, submarine infra-red peripheral, periscope, perimeter

Prefixes of time and order

PREFIX	MEANING	EXAMPLES		
ante- pre- ex-	before/former/previous	antecedent, antenatal prefix, prehistoric, ex-minist primary, primitive, prime minister		
prime-	first			
post-	after	post-dated		
retro-	backward	retroactive		

Prefixes of numbers

PREFIX	MEANING	EXAMPLES		
semi-	half/partly	semicircle, semiconductor		
mono-	one	monochromatic, monologue		
bi-	two	binary, bicycle		
di-		dioxide		
tri-	three	triangle		
quad-	four	quadruple, quadrilateral		
penta-	five	pentagon, pentameter		
hex-	six	hexagon		
septem-	seven	September		
oct-	eight	octal, octopus, octosyllabic		
deci-/deca-	ten	decimal, decade		
multi-	many	multiracial, multilingual		

Other prefixes

PREFIX	MEANING	EXAMPLES
pro-	for/before	pro-American, prologue
auto-	seif	automatic, autobiography
Co-	together	co-ordinate, co-operate, collaborate
neo-	new	neo-classical
pan-	all	Pan-American, panorama

Exercise 1. Match the words below with the prefixes.

after, against/opposite, around, cell, change, extremely/more than, for/in favour of, green, half/partly, original, beyond/outside, together, two(2), very/outside, large, very large, very small, water.

1. anti-	11	
	11. mega	
2. bi	12. meta-	
3. chloro-	13. micro-	
4. circum-	14. post-	
5. contra-	15. pro-	-
6. cyto	. 16. proto	• • • • • •
7. di	17. ecto-	_
8. extra-	18. semi-	-
9. hydro	19. ultra	-
10. таху	20. syn	_

SUFFIXES

NOUNS	VERBS	ADJECTIVES	
ADVERBS -ance -ence -or -er -ist -ness -tion	-ize -ate -fy -en	-able -ible -less -ic -ical -ish -ive	-ly

Now study these tables.

Noun-forming suffixes	MEANING	EXAMPLES
SUFFIX		performance, disturbance
ance	state	independence
-ence	quality of	programmer, operator
-er, -or	a person who a thing which	emulsifier, stabilizer
-tion	the act of	pollution, action, solution, conversion
-ion -ist	a person who	dentist, chemist, scientist analyst
-yst	condition of	cleanliness, kindness
-ness	activity	hair-colouring, cleaning, washing
	state, action	measurement, development
-ment	state, quality	electricity, identity
-ity -ian	a person who belongs to or deals with an area	electrician, musician, Christian Italian, Egyptian
-ism	condition/state	magnetism, communism freedom, kingdom
-dom	domain/condition	relationship, partnership
-ship	condition/state	friendship
-hood	condition/state	motherhood, brotherhood, likelihood

Adjective-forming s	MEANING	EXAMPLES	
SUFFIX al ar	having the quality of	essential, original, chemical circular, polar ionic, organic, synthetic	
able	capable of being	comparable divisible	
ible ous	like, full of	dangerous religious	
ious ful	characterized by	powerful, useful, careful	

-less	without	careless, tactless
-ish	like	vellowish bluish
-ed	having been done/affected with	integrated, complicated
-ant/-ent	able to	resistant, persistent
-ive	quality of	interactive, relative
-ing	to make or do/causing	
noun, e.g. a certain chemi components Verb-forming suffixes SUFFIX	l", "ant" and "ent" may sometimes be f cal, mathematical logic, propellants in s	pray cans, various
-ize	MEANING	EXAMPLES
-ate -fy -en	to make	polymerize, magnetize automate, activate simplify, liquefy/liquify harden, widen, lengthen, strengthen
Adverb-forming suffix		
SUFFIX	MEANING	EVANDY EG
ly		EXAMPLES electronically, chemically
That book has been very to I think that it is necessary	to do something to stop air pollution.	
	ure <u>increases</u> unprecedented in human hi	story.
The solubility of solids ch	anges when the temperature increases.	·
Temperature <u>changes</u> influ The solubility of solids <u>ch</u>	ence the solubility of solids. (anges when the temperature increases.)
Crude oil <u>needs</u> to be refin Oil in Italy is not sufficient	ed. () tfor its <u>needs.</u> ()	;
A <u>light</u> beam is shone throu Helium is a very <u>light</u> subs	igh the sample. ()	<u>)</u>
Air pollution is due to <u>dissc</u> The gas has been <u>dissolved</u>	olved_gases. () in the liquid. ()	

Exercise 3. Give the opposite of the following words using the prefixes below:

a- an- dis- il- im- in- i	1. 101
agree	aerobic
agreebelievable	efficientexhaustible
approval	measurable
approvar	regularity
legalitypolluted	stop
- ·	_
septic	mands to match the following definitions:
Exercise 4. Use the prefixes below to make	words to materials
a- de- fore- mal- mis- out	- over- re- under-
a- de- fore- mai- mis- out	
$\dot{\mathfrak{e}}$	
1. lacking symmetry:	
o 1 desamong USC:	
. cc '+ maxtedtlOT'	
t oct benavioui	
6. not sufficiently estimated:	
a corol of forests!	
8. using again:	
a distant in advance:	,
Exercise 5. Use the suffixes below to charmatching the definitions: -able -ed -ent -ful -	•
•	
1. (without) colour:	
o (consing) harm:	
a (ing) interest:	
	
5. (without) weight:	
6. (able to) absorb: 7. (affected with) interest; 8. (have the quality of) truth:	
7. (affected with) interest:	
8. (have the quality of) truth:	
carred below to the	ange the following nouns, verbs or adjectives
Exercise 6. Use the sumixes below to say	
into abstract nouns:	
-dom -hood -ability -r	
1, ĉḥild;	
1, eniid;	
2. king	
4. happy:	•
5. weightless:	
6. reduce:	<u>-</u> .
U. 1000071	

UNIT 17

LINKING WORDS

Linking words connect concepts within the same sentence or between one sentence and another.

Match the following linking words with their function. Then translate the words into Italian.

	TD ADION A TON	
	TRANSLATION	<u>FUNCTION</u>
		4-10-1011
after		
	*************************	1)giving example
already	*************************	2) indicating time == ==
also	***************************************	2)indicating time sequence3)listing
although	*************************	A)india-ti
and .	************************	4)indicating cause and effect
as well as		5)contrasting
as	*****************************	6)giving definition
because of	******************************	7)adding information
because	***************************	8)comparing
before	************************	, 1
but	*********************	•
	401410000000000000000000000000000000000	•
consequently	*414*********************	
despite	4************************	
due to	********************	
earlier	1410017412224444444	1
finally	*************************	
firstly		
for example (e.g.)	*******************************	
for instance	******************************	
furthermore	***************************	
hence	*************************	·
however	*************************	•
in other words	······	1

in spite of	***************************************	•
indeed	*******************************	,
in spite of		
like	491714444444444444444	
meanwhile	***************************************	
moreover		
nevertheless	******************************	·
next	************************	
on the contrary	**************************	.,
on the contrary	**********	,
on the one hand	***************************************	
on the other hand	******************************	
once	***************************************	
otherwise	***************************************	
owing to	***************************************	
regardless of		
since	***************************************	
	431141444444444444444444444444444444444	

so that	***************************************		
so			
soon	************		•
such as	***********************		
that is (i.e.)	***************************************		
then	***************************************		
thereby	******	•	
therefore	447774447432344444444444444444444444444		
this/that means	***************************************		
thus	***************************************		*
too	*************		
until (till)	***************************************		
when	*************		
whereas	***************************************	•	
while	******************************	•	
vet	***************************************		, i
	ng words are used in different context	s:	
N.B The following linki	ng words are used in sale		•
AS:	equivalence and non-equivalence		
1. For comparisons of	equivalence and non equi-		
Talam in of ISH MS.	L CLULI		
Deter is not as Cit	SVEL AS SCIENCE	M	
- 1!-1-marrm 06	a niavovy, u_{-}	when/while"	T t
2. For parallel actions	a playboy. in time sequence sentences, to mean "v a home I met Mary. = When/While I wa	ıs walking hom	ie i mei
e.g. As I was walkin	in time sequence sentences, to mean we ghome I met Mary. = When/While I was		•
3 f = s			
2 For sentences of cau	se and effect, to mean "because/since" of he got in for half price. = Because/Sin	ce he is a stude	ent he got
a a As he is a stude	se and effect, to mean "because/since" nt he got in for half price. = Because/Sin		
in for half price.	•		
III IOI IIII I			
SINCE:	sontence	·s	
1 To indicate a point	in past time in time sequence sentence	· =	
2 For sentences of ca	use and effect, to mean "because/as" eard the story before, I don't want to hear	it again. = Bed	cause/as I
2. For Since I have he	ard the story before, I don't want to nou	1	
have heard the	story before, I don't want to hear it again	, ,	
Have zero			
337901 .E.	40 magn	"when/as"	•
Townsellel action	is in time sequence sentences, to mean	on = When/As	I was
1. For partition was co	is in time sequence sentences, to mean booking my son was watching the television.	0111	
· acoking MV S0	II was watching	t/orbere25"	
.a For contrasting Co	on was watching television. oncepts or facts, to mean "although/but prosts food while others don't have enough	γh = some neo	ple waste
a g Some neonle '	waste lood that and another		*
food although	waste food white others don't have enough. /but/whereas others don't have enough. athize with your point of view, I cannot a	ecept it. = Alth	ough I
While I sympa	thize with your point of view, I calmot a		-
sympathize wi	th your point of view, I cannot accept it.		
5		,	
YET:			
r r ! h-mogative 9	and negative time sequence sentences	•	
TT T(01) T(1)1	enen voul nome vere jeer .		
G.g. Have you ma	finished yet	and the second second	
TAO' I HITAOH			

this/nevertheless" e.g. They are ugly and expensive, yet people buy them. = They are ugly and expensive, however/in spite of this/nevertheless people buy them.						
Exercise 1. Now group 1) Giving example:	Exercise 1. Now group all these linking words according to their function:					
	•	e en en a a	•			·
2) Indicating time sequen	ıce:					
	·					
3) Listing:				•		
		·		,		
4) Indicating cause and eff	èct:					
5) Contrasting:			•		• .	
6) Giving definition:						
· ·						
7) Adding information:					·	
			·			
8) Comparing:						
			THE LIBERTY STREET, THE PARTY OF THE PARTY O			•

Consider the following connectives commonly used in mathematics. Write an example using each connective. CAUSE AND EFFECT because _____ due to _____ in view of _____ on account of ______
given that _____ it follows that _____ therefore _____ CONTRAST alternatively _____ although _____ though _____ but ____ except _____ on the other hand nevertheless _____ despite/in spite of _____ conversely _____ rather than _____ instead of _____ STATING CONDITIONS if.....belong to____ if and only if..... whether or not_ provided (providing) that____

it is necessary and sufficient that/for_

since....has no....then.....

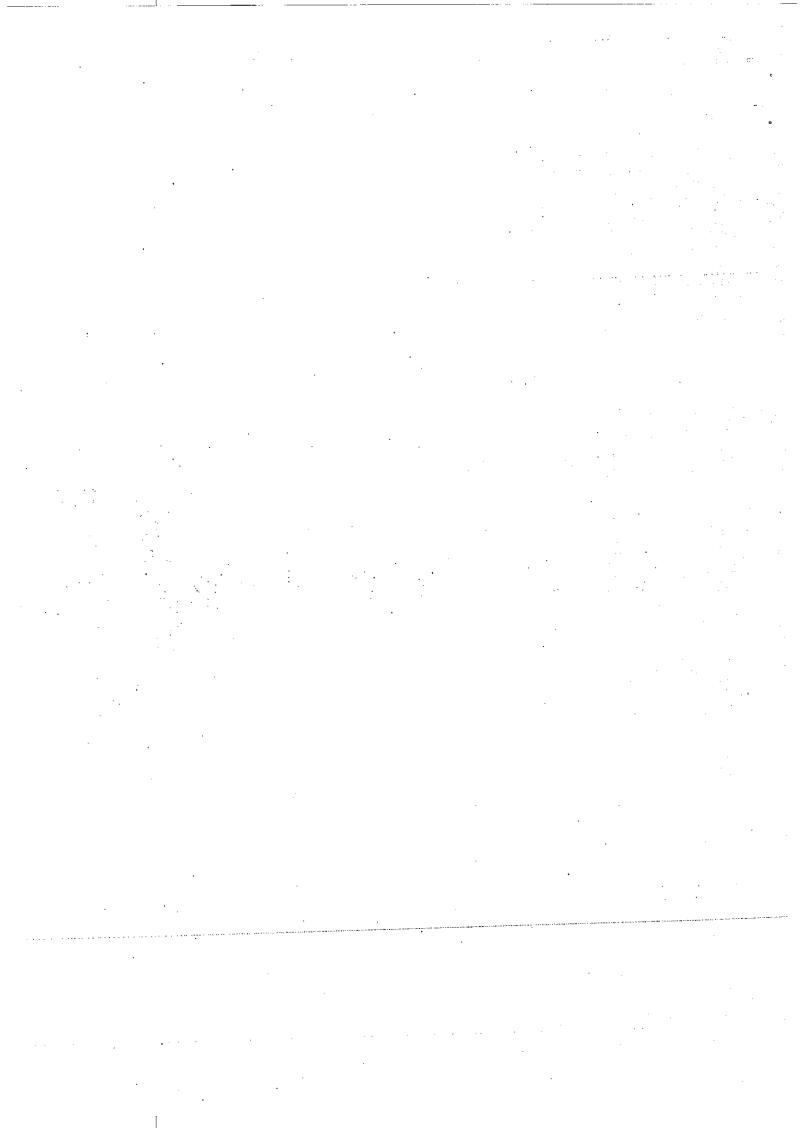
let....then____

DEFINITIONS

Letdenote This means that	•
This means that Thisis based on	
This is based on	
Thisis based on We say that	
We say that	
We define by	
Ais calledif	
Exercise 3. LINKING WODDS	
Fill in the gans with a guitable if	,
giving example agus a vice linking word	and write its function in brackets (contrasting,
once in different contents and effect, time seques	and write its function in brackets (contrasting, ace etc.). Some linking words are used more than
Use these linking to	words are used more than
well as a well as a street when	eas, since, moreover instant and
wen as, such as, yet, therefore)	eas, since, moreover, instead of, in other words, as
1) Computers remove many cut	
1) Computers remove many of the routine and we have more time for interesting creative world A small computer many terms.	boring tasks in our lives.
2) A small computer many t)
2) A small computer may take several steps to plarger machine may do the same thing with one 3) People used the abacus well into the 16th cent	perform an operation
3) People used the share thing with one	instruction. (
without knowing beauty well into the 16th cent	instruction. (it could be understood
4)	.)
and amount the 1960s the compu	ter industry has been compelled to make smaller
5) G	ter industry has been compelled to make smaller their predecessors because they use transistors
5) Second generation computers work faster than	their predecessors bear
6) The CPU,, the central which directs the manipulations of information.	bredecessors because they use transistors
which directs the manipulations of information. (7) Conventional computers are limited since they	a processing unit, is that part of the computer
7) Conventional computers are limited since they they cannot recognize	handle information and its
they cannot recognize s	lightly different in a methodically.
8)the text has been comp	oleted it about 1
)	neted, it should be saved.
9) Computers can do many useful tasks	
allu Tuhors /	controlling medical instruments
10) The computer's results are given back in a hour	
10) The computer's results are given back in a hunwords.	nan readable form, including charts and graphs
11) My friends speaks English	· · · · · · · · · · · · · · · · · · ·
(2) I haven't finished the exercise	me. ()
3) The computer can help us in may routine tasks.	
leductive decisions (it cannot make
leductive decisions. (4) He prepared the	SABIN JOHNSO
4) He prepared the program,	he put it into operations
5) If y equals 2 and	7 - 1011D,
5) If x equals 2 and y equals 4,	X plus v equals 6
5)	
I was walking home ye	sterday evening I met my cousin.
7)	The state of the s
I mentioned before, the	computer is a very useful machine.
)	
I'm very tired, I'm goin	Thoma (
	D MOITIN,
the control of the co	

///

Taxision Mainanaide Sudanis



Lesson 1.

MATHEMATICAL OPERATIONS

Addition means summing up several numbers into one whole. Suppose we have to sum up the numbers: 325 + 454 + 366 = 1145 (sum or answer). We begin with the column on the right hand and sum the figures up from below. Then we take the next column and so on, saying: 6 and (or plus) 4 are 10, and 5 are 15; put down 5 and carry 1; etc. The total will be one thousand one hundred and forty-five. The same result will be found if we begin to sum up from the top downwards.

Subtraction is the name of the operation by which a smaller number is taken from a (2)greater. The difference between the greater and the lesser number is called the remainder. Suppose we have to subtract (or deduct) the number 522 from 895. We write down the greater number 895 (which is called the minuend) from which the smaller number called the subtrahend is to be subtracted.

From. Deduct Remainder

Beginning from the right we say thus: 2 from 5 leaves 3, etc. In order to prove that the result is right, add the remainder to the subtrahend and the total must reproduce the

minuend. Thus subtraction is proved by addition.

The number to be multiplied is named the multiplicand; the one which denotes how many times the given number is to be taken is denominated the multiplier. The multiplicand and the multiplier are also called factors; the result of the operation of multiplying two numbers is called the product. In order to be good at multiplication, a thorough knowledge of the "Multiplication Tables" is absolutely necessary. Each figure of the multiplicand must be multiplied by each figure of the multiplier. After summing up the products, the total product is obtained. Multiplication is only an abridged addition.

Division is the operation by which one finds how many times one number, called the (4) divisor, is contained in another, called the dividend. The result of division is denominated the quotient. Thus, 24 divided by 6 is 4, or in other words: 6 goes into 24 four times. Sometimes there will be a remainder, for instance: 23 divided by 5 is 4, and 3 is the remainder. In order to prove that the result is right, multiply the quotient by the

divisor, and add the remainder; the total must reproduce the dividend.

The remainder, three-fourths (34), is a vulgar (common or simple) fraction, consisting of (5) the numerator 3 and the denominator 4. The denominator tells us how many equal parts the unit is divided into. The numerator shows us how many of these parts are taken. A vulgar fraction is called a proper fraction when its numerator is less than the denominator. It is called an improper fraction when its numerator is equal to or larger than the denominator. A mixed number is a whole number and a fraction written together; for example, 21/2 is a mixed number. A complex fraction is a fraction having another fraction in the numerator, or denominator or both (1/4/7)

There are also decimal fractions. A decimal fraction is merely a fraction having a (6) denominator (not written) of 10, 100, 1000, or some similar multiple of 10. A decimal fraction is written by first putting down a period or decimal point and then writing the numerator of the fraction after the decimal point, in such a manner that the denominator can be understood (.5 = five tenths; .05 = five hundredths; .005 = five thousandths, etc.).

Everything that comes after the decimal point (to the right of it) is a fraction. All figures to the left of the decimal point are whole numbers or integers. 1.62 is read: one point six

- two. 5.34 is read: five point three four; 0.007 is read: point nought (zero) nought (zero) seven.
- (8) The square of 7, or 7 squared, is 7 times 7 or 49; the cube of 7 or 7 cubed is 7 x 7 x 7 = 343; the twentieth power of seven is the product of 7 multiplied twenty times by itself. On the other hand, 7 is the square root of 49, and 7 is also the cube root of 343. Equally, On the fourth, fifth, etc. roots may be extracted from any number. All the above-mentioned the fourth, fifth, etc. roots may be extracted from any number. All the above-mentioned operations are frequent in algebra, especially in solving equations.

Phrasal Verbs putting down write down sum up

Exercise 1. DEFINING MATHEMATICAL TERMS Supply each term with its appropriate definition.

Cupp-7			
Remainder			
Sum	·		
Subtrahend	 		
Minuend	 ·		
Multiplicand			
Multiplier	 		
Product	 		
Divisor			
Dividend			
Numerator	 		
Denominator		,	

Exercise 2. QUESTION FORMATION

With reference to the text, formulate questions to the following answers using question words

such as: what, which, how, etc.

a) Computers are not replacing mathematicians.

b) It means multiplying a number by itself.

c) An example is 5³/₄.

d) It can be proven by multiplying the quotient by the divisor and adding the remainder.

e) It is called a quotient.

Exercise 3. FOCUS

Match the words in Column A with their grammatical functions in Column B.

Column A	Column B
a) summing up (line 1)	1. noun-forming suffix
b) must (line 30)	2. comparative form
c) multiplied (line 49)	3. gerund
d) lesser (line 8)	
e) called (line 10)	4. present participle as adjective
f) multiply (line 29)	5. past participle as adjective
g)solving (line 52)	 present participle substituting relative phrase future tense
h) consisting (line 31)	
i) written (line 36)	8. passive form
j) mixed (line 37)	9. adjective-forming suffix
	10. present perfect tense
,	11. imperative form
	12. defective verb
Exercise 4. LINKING WORDS	past participle in elliptical relative phrase
Define the function of the linking advants	
Define the function of the linking adverb	ials in bold type from the following list:
l. adding information	
2. time sequence	
3. listing	•
4. indicating cause and effect	
5. contrast	
6. giving example/definition	
S- 12-8 - 12-14 to the time to	·
a) The square of 7 is 49 whereas 7	to the second se
b) Because he was too busy, he did	is the square root of 49.
c) In addition to their speed some	not draw the graph.
d) In other words, 8/5 is an improg	outers are accurate and can do repetitive operations.
e) For instance a nentagon magnin	per fraction.
e) For instance, a pentagon means	a five-sided figure,
mathematician.	hematics therefore she decided to become a
g) I like geometry, however, I do no	ilke mathematical statistics.
maybe months, to do the same ope	problem in seconds while man would take weeks,
ATTENDITION TO GO THE DUTTE OFFI	CIALIONS.
i) To sum up annaly of earlier co	omputers was not as large as those of today.
	the figures in the right-hand column, then we take
are next column and do the same.	
k) Thus, subtraction is proved by ad-	dition.

Exercise 5. NUMBERS Read and write in words the following expressions.

	•	 	
1. 3	,829		
2 2	$5 \div 5 = 5$	 	
3. 3	8 - 21 = 17		 . · ·
	12/5		
5. ().33		
ნ. 4	4+2+3+7=16		
.7.	$\frac{4+2+3}{2,512+1,320} = \frac{3,832}{2,512+1,320} = \frac{3,832}{2,512+1$		
8.	0.12 + 3.22 = 3.34		
9.	(7+2)+6=20	 	
7.0	0.2 10 = 13	 	
11.	74 - 10 + 3 = 67		
10	3/4		
13.	$4 \times 8 + 5 = 37$	 	
14.	1555.05		
15.	$\frac{1}{4} + \frac{3}{4} = \frac{4}{4} = \frac{1}{1}$	 	
16.	13 + 33 + 12 + 0 = 58		

Exercise 6. NUMBERS

Read and write in words the following expressions.

1. 10½	
2. 4.364	
2 4 3 6 5	
4. 52 ÷ 6 = 8.66666	
5. 765.74	
6. 83	
7. √64	
8. 282	
9. $4 \times 5 \times 7 = 140$	
10. 3√343	
11. 22 + 51 - 10 = 63	
$12.81 \times 11 = 891$	
13. 136,848	
14. x ⁿ⁻¹	
15. 1867 - 1108 = 759	
16, 579 - 262 = 317	

Lesson 2.

LOGICAL PRINCIPLES AND MATHEMATICAL CONNECTIVES

- In proving mathematical propositions or theorems, it is necessary to accept certain (1)logical principles or rules. For the most part these are familiar to the reader through frequent usage. One of these principles, the so-called law of the excluded middle, is to the effect that any meaningful statement is either true or false. For example, the. statement "if $a \neq 0$, then $a^2 > 0$ " has been proved true while the assertion "an integer 'a' exists such that 0 < a < 1" has been shown to be false. Acceptance of the principle of the excluded middle forces the conclusion that a proposition is true if it has been shown to be not false and that it is false if demonstrated to be not true. The principle of noncontradiction is also assumed; that x is a statement, cannot be both true and false. If an assertion has been shown to be true, then it may not also be false; if false, then it is not true.
- Generally, theorems or propositions we wish to prove (or disprove) will be in the form (2)of "ifthen" statements. For example, "if a > 0, then -a < 0, or "if a and b are integers, then (-a/b) = -(a/b)". Such propositions may be represented symbolically in the form of "if p, then q" or "p implies q", where p and q stand for certain assertions. In the first example, p is the assertion "a > 0", while q is "-a <0". Conventionally, p is called the hypothesis of the proposition and q the conclusion. Regarding the propositions "if p, then q", three questions may be asked: Is p true?, Is q true?, Is the proposition itself true? Usually it is with the last that we are concerned. As far as axioms are concerned, we shall say that they are true in the sense that they are self-evident and we simply accept them as such. We assert them to be the basic truths upon which all that follows may be justified. In this sense then all consequences of the axioms, for example 0<1,
- In mathematical discourse and elsewhere, one constantly encounters declarative (3) sentences which have been formed by modifying a sentence with the word "not", or by connecting sentences with the words "and", or, "if....then", and "if and only if". These five words or combinations of words are called mathematical connectives.
- A sentence which is modified by the word "not" is called the negation of the original (4) sentence. For example, "2 is not a prime", is the negation of "2 is a prime". The word "and" is used to join two sentences to form a composite sentence or conjunction of the two sentences. For example, the sentence "The sun is shining and it is cold outside" is the conjunction of the sentences "The sun is shining" and "it is cold outside". A sentence formed by connecting two sentences with the word "or" is called the disjunction of the two sentences. From two sentences we may construct one of the "if....., then" forms; this is called a conditional sentence. The sentence immediately following "if" is the antecedent, and the sentence immediately following "then" is the consequent. (5)
- There are several other idioms in English which we shall regard as having the same meaning as "if P, then Q" (where P and Q are sentences): for example, "P implies Q"; "P only if Q"; "P is a sufficient condition for Q"; "Q provided that P"; "Q if P"; "Q is a necessary condition for P". The words "if and only if" are used to obtain a biconditional sentence from two sentences. We regard the biconditional "P if and only if Q" as having the same meaning as "if P, then Q", and "if Q, then P".

Exercise 1. LOCATING INFORMATION With reference to the text, answer the following questions. What must we accept in proving mathematical theorems?	
b) What is the definition of the law of the excluded middle?	
independent axioms true?	
d) What does the principle of non-contradiction mean?	
At a would you define a biconditional sentence?	
f) What is the difference between conjunction and disjunction?	
g) What do p and q stand for?	
Exercise 2.COMPREHENSION Match each term with its appropriate definition axiom hypothesis hypothesis proposition assertion lemma corollary conjecture axiom a) result that follows from a theorem often without further proof b) a postulate; truth is either self-evident or to be assumed b) a postulate; truth is either self-evident or to be assumed c) proposed possible explanation for a phenomenon c) proposed possible explanation for a phenomeno	
Exercise 3. 'ING' FORM Define the underlined "ing" form (present participle as adjective, gerund, present participle in Define the underlined "ing" form (present participle in progressive form, preposition) in the following elliptical relative phrase, present participle in progressive form, preposition) in the following phrases.	
a) She is good at counting numbers. b) During the 17 th and 18 th centuries, many easy ways of calculating were devised c) We are looking forward to studying new books on the theory of numbers d) The first calculating machine appeared in the early 1800s. c) We insisted on the experiment being repeated. e) We insisted on the experiment being repeated. f) Defining the precise coordinates of x and y is the task of algebraists. f) Defining the precise coordinates use of a continuously varying signal to represent data	
f) Defining the precise coordinates of x and y is the task of algebraists. f) Defining the precise coordinates of x and y is the task of algebraists. g) The analog computer makes use of a continuously varying signal to represent dat	

Exercise 4. FOCUS

Match the words in Column A with their grammatical functions in Column B.

Column A	Column B
a) proved (line 5)	1) gerund
b) to be false (line 6)	2) present participle as adjective
c) shown (line 7)	3) present participle in elliptical relative phrase
d) modifying (line 25)	4) progressive form
e) called (line 33)	5) past tense
f) meaning (line 38)	6) past participle as adjective
g) shining (line 31)	7) past participle in passive form
h) excluded (line 7)	8) past participle in eliptical relative phrase
i) connecting (line 26)	9) infinitive
j) formed (line 33)	10) noun-forming suffix
	11) irregular verb
	12) adjective-forming suffix
onditional passivexercise 6. CONDITIONAL FORM	for the following sentence and transform them into the
	n mathematical terms, you will obtain the following
•	
•	
· · · · · · · · · · · · · · · · · · ·	
·	
f you divide a cone, you will get a di	fferent geometrical figure. Type
f you divide a cone, you will get a di	
f you divide a cone, you will get a dit	fferent geometrical figure. Type
f you divide a cone, you will get a dit	fferent geometrical figure. Type
f you divide a cone, you will get a dir	fferent geometrical figure. Type

Lesson 3.

THE LANGUAGE OF MATHEMATICS

- (1) It has been said that mathematics is a language; this contention is a little difficult to support if we accept any of the ordinary descriptions of language. However, it is true that there is a standard sort of terminology in mathematics that is much more concise and much briefer than the garden variety of English. All of mathematics can be performed without using this shorthand notation, but its incredible usefulness makes it, practically speaking, a necessity.
- (2) The notions of number, addition, and multiplication are undefined. One of the axioms of algebra, called the distributive axiom, is usually stated:

(1). $x(y+z) = (x \cdot y) + (x \cdot z)$

The proposition can be stated: for any three numbers, the product of the first with the sum of the second and third is equal to the sum of the products of the first with the second and the first with the third. Of course, since we have all studied some algebra, the statement (1) seems considerably simpler than the translation into vernacular which we have just given. And this is one of the points we want to emphasize: the mathematical language is not only The proposition in (1) certainly does not require this x-y-z sort of language; the shorter, it is easier to understand.

- (3) Generally, we shall not abbreviate our statements to quite the extent that (1) is abbreviated. We shall usually include the qualification that is supposed to be understood in (1), and we shall write
 - (2) For all numbers x, y and z

$$x(y+z) = (x \cdot y) + (x \cdot z).$$

Instead of "for all" we may frequently use "for every", or we may write "for each number x, each y, and each z". These different expressions are supposed to mean the same thing. What we are really asserting is that if, in the expression " $x \cdot (y + z) = (x \cdot y) + (x \cdot z)$ ", we replace "x", "y", and "z" by numbers, then the resulting statement is always correct.

- (4) There is another important fact about this mathematical language which should be noticed.
 - (3) For all numbers a, b, and c

$$a(b+c) = (a \cdot b) + (a \cdot c)$$

and

(4) For all numbers a, r, and x

$$a(r+x) = (a \cdot r) + (a \cdot x)$$

state precisely the same fact that is stated by (2). That is, the particular letters that are used in a statement of this sort are inconsequential and can be varied almost at random.

- (5) There is another sort of statement which will occur frequently in our work. Consider the following:
 - (5) There is a number x such that x + 2 = 5.
 - (6) For some number a, a + 2 = 5.
 - (7) There exists a number r such that r + 2 = 5.

Clearly, all of these statements assert the same fact: there is a number which, when added to 2, yields 5. It is sometimes said that the statements of the form "x + 2 = 5" are conditional equations, and the statements of the form "x + y = y + x" are identities. We shall not use this technical sort of jargon.

(6) There is one more question of meaning which we would like to discuss before ending this linguistic introspection. In just what sense is equality used? If, in a discussion of arabic and roman numerals, we assert that 4 = IV, what is to be inferred from this

statement? We shall always use equality in the sense of logical identity, and the assertion, "4 = IV" is simply to mean that "4" and "IV" are both names for the same object. One object may have many names, and we may use the names interchangeably. Anything which can be said about 4 can be said with the same amount of truth about IV.

- There are several statements about equality which are sometimes taken as axioms: for there are several statements about equality which are sometimes taken as axioms: for example, "each thing is equal to itself", "things equal to the same thing are equal to each other" and "if, in an equation, equals are substituted for equals, the results are equal". Because we use equality only in the sense of identity, we can accept such statements (and many more precise statements of this kind) as part of our natural conception of the notion of identity. Of course, 4 = 4 since each object is identical with itself. We may infer that 2 + 2 = 4 if we know that 2 + 2 = 3 + 1 and 3 + 1 = 4. These last two equalities tell us that "2 + 2" and "3 + 1" are names for the same object; we simply have three different names for the same number, and quite evidently 2 + 2 = 4. A statement of equality is always to be considered intuitively as an assertion that the symbols on the left of the equality sign name the same thing that is named by the symbols on the right.
- We shall use letters "x", "y", etc, as if they were names. Strictly speaking, they are not names, although one frequently finds in mathematics books such statements as "let x denote a fixed but arbitrary number...". Actually we use letters in much the same way that pronouns are used, and just as pronouns are used in sentence structure like nouns, so letters are used in mathematical structures like names. Similar rules of "grammar" are to be used for letters and for names. Thus, if x is a number and x + 5 = 7, we take the view that "x + 5" names the same number as is named by "7", and hence infer that (x + 5) + (-5) = 7 + (-5). In more detail, we might phrase the reasoning as follows. It is true that 7 + (-5) = 7 + (-5) because each thing is identical with itself. If x + 5 = 7, then "x + 5" and "7" are names for the same thing, and we may replace "7" in "7 + (-5)", using the other name "x + 5", and so find that (x + 5) + (-5) = 7 + (-5).

Exercise 1. FOCUS

Match the words in Column A with their grammatical functions in Column B

Column A	Column B
a)resulting (line 25)	1) present participle as adjective
b)ending (line 44)	2) interrogative pronoun
c)what (line 46)	3) present participle in progressive form
21 - (11 OA)	4) gerund
11 to 10 10 10 10 10 10 10 10 10 10 10 10 10	5) possessive adjective
e) anything (line 49)	6) simple future
f)can be said (line 50)	7) past participle in passive form
g)using (line 5)	8) present participle in elliptical relative phrase
h)its (line 5)	9) possessive pronoun
i)called (line 8)	-
j)shall include (line 18)	10) adverb
k)undefined (line 7)	11) relative pronoun
1	12) quantitative pronoun
•	13) past participle as adjective
	14) past participle in elliptical relative phrase
	15) modal verb

Exercise 2. LINKING WORDS

Match the following linking words with their function. Then translate the words into Italian.

a) although (line 63) b) because (line 54) c) that is (line 33) d) so (line 66) e) instead of (line 22) f) but (line 64) g) however (line 2) h) then (line 25) i) for example (line 51/52) j) since (line 12) k) thus (line 67) l) hence (line 68)	TRANSLATION	FUNCTION 1) giving example 2) indicating time sequence 3) listing 4) cause and effect 5) contrasting 6) defining 7) adding information 8) comparing
Exercise 3. VERB FORMATION Transform the following passive ve		
PASSIVE FORM a) has been said (line 1) b) can be performed (line 4) c) is stated (line 8) d) should be noticed (line 26/27) f) are used (line 33/34) g) can be varied (line 34) h) is said (line 41) i) is to be inferred (line 46) j) is to be considered (line 60) k) is named (line 68)		TIVE FORM
Now, transform the following active values of the ACTIVE FORM a) we shall use (line 43) b) we may use (line 49) c) we can accept (line 54) d) we would like to discuss (line 44) e) one finds (line 63) f) we are asserting (line 24) g) we have studied (line 12)	PASS	SIVE FORM
	-	

Exercise 4. OUESTION FORMATIO	Evereice 4	OUESTION	FORMATION	1
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With reference to the text, formulate questions to which the following could be answers, using the question words (who, whom, whose what, when, how, etc).

a)			
We define a system as a set of fixed rules.			
b) The importance of this statement was first recognized by von Mises.	<u> </u>		
c)			-
d)		of el	astic solids
e)			

Exercise 5. WORD FORMATION

Complete the following table with by adding the appropriate suffix.

NOUN	NAME OF PERSON	ADJECTIVE	VERB
analysis			
		economic	
,			industralize
organization			
			lead
employment			
Onipioj.mozi.		•	appoint
		educated	
			program
	performer		
supervision			
operation		<u> </u>	

GEOMETRY

- (1) Geometry is originally a branch of mathematics that deals with the measurement, properties, and relationships of points, lines, angles, planes, and solids. Broadly speaking, the term also refers to the study of properties of given elements that remain constant under specified transformations.
- Points are the basis of all Geometry. They are geometrical elements which have position but no magnitude, i.e. their size is zero. There are four main definitions of a point because over the years many mathematicians have had their own ideas as to what a point should be, and all are equally true. Therefore we have the dot, the exact location, the ordered pair, and the node. Dots have no height, width and length but are only a position in space. Probably, the best example of dots today would be pixals, that is, the tiny spots of color that make up a computer screen. The exact location is the perfect example of the normal, zero-dimensional point. In real life, it is used by mapmakers to measure distances between two cities; as some cities are large, an exact location must be chosen from which to measure. The third definition is the ordered pair which was discovered by Fermat and Descartes. The first number is a point on the x-axis which intersects with a point on the y-axis to identify a precise position on a coordinate plane. Lastly, nodes are vertices which exist in networks or graphs.
- (3) A line is made up of an infinite number of points and is a one-dimensional figure having only length but no width or height. It may be curved or straight and every line is either horizontal, vertical or oblique. In space, vertical lines never meet because they just go straight up and down but it is possible for horizontal lines to meet, for example, the edge of the two walls in the corner of the ceiling. Lines can be identical, intersecting, parallel, perpendicular or skew. Identical lines are lines that coincide. Therefore, they are the same line. Intersecting lines have a point in common. Parallel lines never intersect and are everywhere equally distant from each other. A horizontal line is a line parallel to the horizon while a vertical line is a line straight up and down. Perpendicular lines are lines that intersect in one point and form a 90° angle. Skew (oblique) lines are two straight lines in three-dimensional space that do not intersect and are not parallel.
- (4) Planes are two-dimensional. A plane has length and width, but no height, and extends infinitely on all sides. Planes are thought of as flat surfaces, like a table top. A plane is made up of an infinite amount of lines. Two-dimensional figures are called plane figures. An infinite number of planes make up space which is the set of all points. Figures in space are called solids or surfaces. A solid, volume, or body is that which has extension in length, breadth, and thickness.
- (5) An angle is the figure formed by two lines having the same point, called the vertex, as their common origin. A right angle (90°) is formed by lines which are perpendicular to each other; an acute angle is less than a right angle, and an obtuse angle (between 90° and 180°) is greater than a right angle.
- (6) A polygon is a plane figure bounded by straight lines called the sides of the polygon. A figure of three sides is called a triangle. Quadrilaterals are polygons having four sides and four angles, and include a trapezoid, a parallelogram, a square, a rectangle and a rhombus. Polygons of five sides are called pentagons, those of six sides, hexagons and so on. A circle is a plane figure bounded by a curved line which is called the circumference. All points of the circumference are equidistant from a fixed point called the center. The circumference of a circle is equal to its diameter multiplied by 3.14159 (pi;π). The diameter of a circle is a line passing through its center and terminating at

both ends on the circumference. An arc of a circle is any portion of the circumference. A chord of a circle is a straight line connecting any two points on the circumference.

(7) Polyhedrons are solid, three-dimensional figures bounded by planes. A prism is a polyhedron with two end faces that are polygons lying in parallel planes called bases, connected by sides which are parallelograms intersecting in parallel lines. A cylinder is much like a prism, but has a circle or any other curved figure as a base. A pyramid is a solid figure formed by a polygon called the base and a series of triangles meeting at a common point called the vertex. A cone is much like a pyramid but has a circle for a base.

Exercise 1. COMPREHENSION

Match the terms in Column A with the definition in Column B.

Column A 1) dot 2) exact location 3) ordered pair 4) quadrilaterals 5) intersecting lines 6) skew lines 7) polygon 8) right angle 9) obtuse angle 10) circumference 11) diameter 12) pyramid 13) arc 14) prism 15) perpendicular lines	Column B a) any part of the circumference of a circle b) an angle greater than 90° but less than 180° c) 3-dimensional figure with polygons as ends and parallelograms as sides d) a pixal e) lines crossing with a specific point in common f) lines forming a 90° angle when crossing g) a figure bounded by straight sides h) perimeter of a circle i) A chord passing through the center of a figure j) a point on the x-axis which corresponds to a point on the y axis. k) deviated lines l) a polygon with four sides and angles m) the point used by mapmakers n) a 90° angle o) 3-dimensional figure with polygon as base
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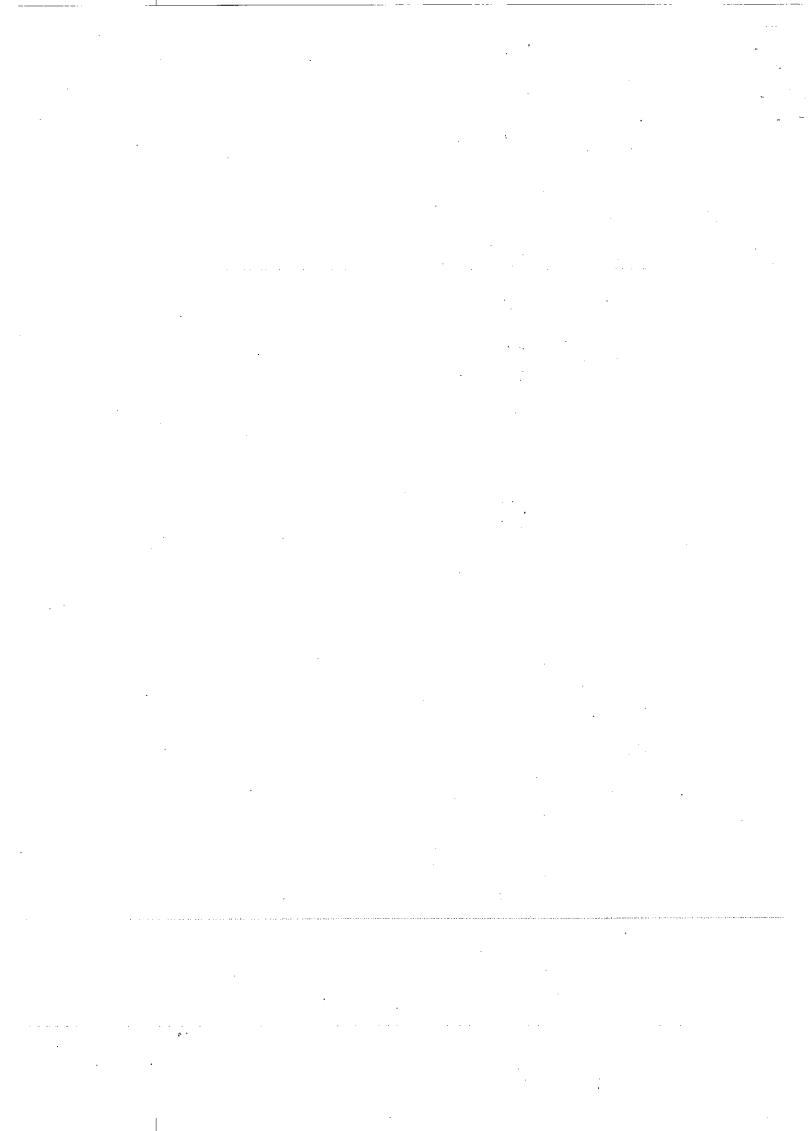
Exercise 2. FOCUS Match the words in Column A with their grammatical functions in Column B:

Column A a) ordered (line 9) b) having (line 35) c) passing (line 46) d) had (line 7) e) should (line 8) f) used (line 12) g) fixed (39) h) made up (line 18) i) intersecting (line 24) j) called (line 33)	Column B 1) present participle in elliptical relative phrase 2) conditional mode 3) past participle as adjective 4) simple past 5) past participle in elliptical relative phrase 6) past participle in passive form 7) gerund 8) past participle in present perfect tense 9) past participle in past perfect tense 10) present participle as adjective 11) present participle in progressive form 12) phrasal verb
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Exercise 3. VOCABULARY STUDY

Refer back to the text and find the synonyms and antonyms for the following words:

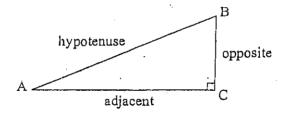
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Lesson 5

TRIGONOMETRY

- (1) Trigonometry is a branch of mathematics that deals with the angles and sides of triangles, their relations to one another and their measurement. It is invaluable to the surveyor and draftsman and is used in all kinds of accurate calculations. This subject is applied, among other things, to building projects, surveying, civil engineering, navigation, and astronomy. It is also a powerful theoretical tool in the hands of mathematicians. The nametrigonometry is derived from the Greek words: trigönon = a triangle, metron = measure. It is widely accepted that the true foundation of trigonometry was laid by Hipparchus, a renowned Greek astronomer.
- (2) Trigonometry is based on certain 'functions' of the relations of angles and their use in 'solving' triangles, i.e. finding unknown lengths, angles and areas, when adequate 10 information is provided. A function is a quantity which depends on another quantity or 'variable' for its value. Any quantity that depends on an angle for its value is a function of that angle. If a right-angled triangle is constructed with an angle A at one vertex, there will be certain relations between the ratios of any two sides of this triangle and the angle A.



- (3) In any right-angled triangle, the two lines that meet at the right angle are called the sides, 15 and the line opposite the right angle is called the hypotenuse. In the diagram, when we consider functions of the angle A, we call AC the adjacent side and BC the opposite side. The ratio of the opposite side to the adjacent side is called the tangent of the angle. The word 'tangent' is usually abbreviated to 'tan'.
 - Hence, tan A = (opposite side): (adjacent side) = BC/AC The inverse of this ratio, which is (adjacent side): (opposite side), of AC/BC, is called the cotangent of A, which is usually shortened to cot A.
- (4) The other basic trigonometrical ratios or functions are the sine, the cosine, the secant and the cosecant. The short mathematical forms of these words are sin, cos, sec and cosec. Each of these trigonometric functions has two forms, depending upon whether degrees or 25 radians are used. In elementary work, angles are measured in degrees where one revolution measures 360 degrees. However, in more advanced work, it is essential that angles are always measured in radians. A radian is a unit of angular measurement in which the central angle of a circle is determined by an arc equal in length to the radius of the circle. Sometimes authors do not make the distinction between the functions in degrees or radians so, for 30 example, $\cos x = \cos x^{\circ}$. In reality these are different functions, but are related since $\cos x^{\circ} = \cos (\pi x/180^{\circ})$.



Read aloud the following relations between these functions.

 $\tan A = \sin A/\cos A$ $\cot A = 1/\tan A$ $\sin^2 A + \cos^2 A = 1$ $2 \sin A \cos A = \sin 2A$

EXERCISE 1.	
Reading for detail	
With reference to the text, indicate whether the follow statements are TRUE or FALSE.	
1) In trigonometry, angles are measured in minutes. 2) A function depends on a variable. 3) The lines which meet at a right angle are called sides. 4) The tangent of an angle is the ratio between the opposite side and the hypotenus 5) The field of trigonometry was founded by the astrologer Hipparchus. 6) A radian is an angular measure used in basic or introductory work.	;e.
EXERCISE 2.	
Cloze test	
Fill in the spaces of this version of the text using the following words: at, of, it, from, between, if, their, solving, who, which	
The branch of mathematics concerned with relationships existing 1) sides angles of triangles and 2) measurement is called trigonometry. It incluses study of trigonometric functions and their uses in 3) triangles. A function quantity 4) depends on another quantity or variable for its value of the properties of a sight-angled triangle is constructed with an angle A 6) one very there will be certain relations between the ratios of any two sides 7) this triangles.	is a lue.
and the angle A. Among other things, the field of trigonometry is applied to navigation, astronomy and c engineering; 8) is also a powerful tool for mathematicians. The originate word comes 9) the Greek language and, in fact, it was a Greek astrono laid the foundation for this branch of mathematics.	n ot

EXERCISE 3.		;*	
Question form	ation .		
		to the fellowine and	wers using question words
such as who, when,	why, where, what, how,	s to the following ansi	wers using question words
		2011 x222233 4101	
a) The draftsman and	surveyor.		
* \$ \pi . * . * . * . * . * . * . * . * . * .	<u> </u>		
b) It is a quantity whi	ch depends on another q	uantity or variable for	r its value.
c) He was a renowned	Greek astronomer	<u>:</u>	
-) 220 7740 4 2010 17110	2 Older abatomonion		
d) It is opposite the ri	ght angle.		
\ T. 1			·
e) It is a unit of angul	ar measurement.		
f) A trigonometric fun	ction has two forms.		
EXERCISE 4.			•
Word formation	· (A)		
•		C 41 C-11	
Complete the chart wi	th the part of speech requ	lested for the following	ng words:
NOUN	ADJECTIVE	VERB	ADVERB
	10000011715	7 15100	ADVERS
<u> </u>		control	
suitability			<u> </u>
	variable		
			needfully
		change	conclusively
attraction		, charigo	
<u> </u>	different		
consideration			
		notice	
	expectant		· · · · · · · · · · · · · · · · · · ·
		obtain	
Nam form all satings	Carrier Alex C. Harrier and inc		
Now, form adjectives	from the following nour	15:	
essence .	·	angle	
structure		line	
crisis		circle	
substance.	· · · · · · · · · · · · · · · · · · ·	pole	
horizon		nucleus	
experiment	···	sun	
symmetry		analogy	

١	EX.	סם	CI	TD.	5
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	Sentence	formatio
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Transform the following phrase into the tenses requested:

The scientific press devoted many articles to its description.

· ·

EXERCISE 6.



Word formation (B)

Complete the chart with the following parts of speech requested and their translation.

ADJECTIVE	VERB	TRANSLATION	NOUN	TRANSLATION
hot				
warm	·	·		
weak				
cold				
deep				
high				
long	- <u> </u>			
wide				
thick				
strong				
tough				
soft				
hard				
smooth				
rough			·	

Lesson 6

MATHEMATICAL STATISTICS

- (1) The extraction of knowledge from large masses of data can be accomplished by mathematics. One of the simplest mathematical devices is the average. Suppose that the employees of a small business firm receive the following weekly salaries in dollars: 20, 30, 40, 50, 50, 50, 60, 70, 80, 90, 100, 1000, 2000. What is the average weekly salary? Usually we would take the sum of all these salaries and divide it by the number of salaries. 5 In this example the sum is 3,640 and the number of salaries is 13. Hence, the average is 280. This type of average is called the arithmetic mean. It is clear that this mean is not very informative. No single person actually earns this salary. Moreover, out of thirteen people, only two earn as much or more. The others earn far less. In other words, the arithmetic mean is not a representative figure if some of the quantities included are very 10 large compared to the others.
- (2) Another frequently used average is the median or measure of centrality i.e. the figure for which there is an equal number of cases below and above it when arranging observations in ascending order. In our example there are thirteen cases and therefore, the median salary is 60 because there are six people earning less and six earning more. The median seems to 15 be a more representative figure, but it too, fails to tell the whole story. If the wages of the six people below the median were much less than the above figures, and the wages of the six above the median were much higher, the median would be the same. Such a gross disparity in earning would not be reflected in the median figure of 60. Thus, also the median is often not a representative figure.
- (3) Another average in common use is the mode. This is the figure among the data that is the most frequent. In our example, the mode of the salaries is 50 because the largest number of people earn this salary. However, even though it gives some indication of the salary distribution, it may be inadequate.
- (4) Each of these averages fails to illustrate the distribution of data above and below it. What 25 is needed is some indication of the data dispersion around the average. For this purpose, statisticians use a quantity called the standard deviation which is denoted σ (sigma). Briefly stated, the standard deviation of a set of data is the square root of the mean of the squares of the individual deviations from the mean of the data.
- (5) Even two representative figures such as the mean and standard deviation do not say as 30 much as the data themselves, although they can be helpful. An alternative to remembering the entire set of data or to using these representative figures is a graph using the Cartesian coordinate system. Anyone who reads a daily newspaper has observed that a graphical presentation of data makes facts stand out that otherwise would be far from obvious. Graphs of the rise and fall of the cost of living or stock market rates are common examples. This 35 graphical approach to data, however, has provided results far more important than a simple rise or fall, increase or decrease. For instance, if we plotted the heights of men as the abscissa (x-axis) and their corresponding frequencies as the ordinate (y-axis), we would obtain the graphic distribution of these frequencies which is called the normal frequency curve or normal distribution (Gaussian distribution). Due to the symmetry of the graph 40

resulting from a normal frequency curve (bell curve), the mode, median and mean coincide. The importance of the distribution lies in the fact that many experiments produce data that are approximately normally distributed. Therefore, in addition to its key role in the normal distribution, it can be used to make inferences regarding variables in a non-normal

EXERCISE 1.
Reading for detail
Decide whether the following statements are true or false by referring to the text. If TRUE, put a cross on "T" and give a full numerical line reference; if FALSE, put a cross on "F" and rewrite the statement given in the exercise to make it true.
a) The Gaussian distribution produces a bell curve in which only the mode and mean coincide.
"T" Line reference
"F" Corrected statement
b) The normal frequency curve is also used for making deductions concerning variables in a
non-normal population.
"T" Line reference
"F" Corrected statement
c)The arithmetic mean is calculated by multiplying the sum of the data by the total number of
data.
"T" Line reference
"F" Corrected statement
d) The average is the number which most frequently occurs in a sample.
"T" Line reference
"F" Corrected statement
e) The median is the number for which there is an equal number of observations above and
below it.
"T" Line reference
"F" Corrected statement
f) The mode provides evidence of the dispersion of data around the average.
"T" Line reference
"F" Corrected statement
g) The standard deviation is calculated by the cube root of the mean of the squares of the individual

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similarities from the mean. "T" Line reference_

> "T" Line reference "F" Corrected statement

'F' Corrected statement____

h) Data represented in the form of a graph impedes the comprehension of facts.

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Linking words

With reference to the text, provide the translation in Column B and function in Column C of the following linking words.

1) contrasting 2) giving example 3) time sequence 4) listing 5) cause and effect 6) defining 7) adding information 8) comparing

EXERCISE 3.



N Focus

With reference to the text, match the words in Column A with their grammatical functions in Column B.

COLUMN A

1) included (line 10)
2) using (line 32, first)
3) representative (line 10)
4) observed (line 33)
5) corresponding (line 38)
6) resulting (line 41)
7) called (line 27)
8) ascending (line 14)
9) anyone (line 33)
10) what (line 4)
11) simplest (line 2)
12) using (line 32, second)

COLUMN B

- a) present participle as adjective
- b) present participle in elliptical relative phrase
- c) superlative form
- d) quantitative pronoun
- e) past participle as adjective
- f) past participle in passive form
- g) past participle in elliptical relative phrase
- h) question word
- i) comparative form
- j) relative pronoun
- k) present participle in progressive form
- m) quantitative adjective
- n) adjective-forming suffix
- o) gerund
- p) past participle in present perfect tense
- q) noun-forming suffix

Lynn Ruda - Mary T dutene Datis	
EXERCISE 4.	
Contextual reference	
With reference to the text, find out what these words refer to:	
a) one (line 2) b) it (line 5)	
c) two (line 9)	
f) it (line 23) g) its (line 43)	
EXERCISE 5. Phrasal verb "take"	
Complete the sentences with one of the following prepositions: after, back, down, in (2), off, on, out on, over, u	
1) If you don't believe me, you can take the matter with the rai 2) I'll take your name and address and you can pay the compar 3) It's no use taking it the ticket collector. He doesn't make the 4) We ought not to take the poor man's time. He's busy. 5) You can see from his nose that he takes his father. 6) The plane is just going to take 7) He's far too busy to take any more work.	ny later.
 8) His company has been taken by a larger firm. 9) If you speak slowly and clearly, the students will take the m 10) I'm going to take golf next year. 11) When I visited Farley again, it took me to my childhood. 	
12) I'm afraid you've been taken This pound note is not genui	ne.
EXERCISE 6.	
Word forms	
Choose the appropriate form of the words to complete the sentences. "s" to form the 3 rd person singular of the verb or for a plural noun.)	(You may need to add an
1) divide, division, divisor, dividing, divided, divisible a) It is often difficult for students to their time relaxing. b) Are all numbers by three? c) There is always a of labor within	e between studying and
c) There is always aof labor within	a factory.
	•

1,3,4

2) calculate, calculator, calculating, calculated, calculation, calculus
a) A computer can perform many kinds of quickly and accurately
a) A computer can perform many kinds of quickly and accurately b) is a branch of mathematics for making
without the use of a
c) It is practically impossible to the speed at which a computer executes
a mathematical problem.
3) addition, add, added, adding, additional, additionally, additive
a) and subtraction are two basic mathematical operations.
b) When buying a new car, often there is no charge for service.
c) Fractions can be by finding a common denominator and then
a) and subtraction are two basic mathematical operations. b) When buying a new car, often there is no charge for service. c) Fractions can be by finding a common denominator and then the numerators.
4) measurement, measure, measured, measurable, measuring
a) The number of employees in a particular company can often be used as a
of its success.
h) In mathematics, various types of may be defined.
b) In mathematics, various types of may be defined. c) More refined techniques of have followed the evolution of man.
<u></u>
5) difference, differ, different, differently, differential, differentiate
a) There are many computer manufacturers today, and a buyer must be able to between the advantages and disadvantages of each.
be able to between the advantages and disadvantages of each.
b) The opinions of mathematicians regarding the best way of solving a problem often
greatly,
c) A solution of a equation is a function that, when substituted for the dependent variable in the equation, leads to an identity.
d) The value which is obtained by subtraction is called the
u) The value which is obtained by subtraction is called uite
EXERCISE 7.
Conditional "IF" clauses
Indicate the type of conditional phrase for the following sentence, and transform it into the other
two conditional types.
.wo containant types
1) If we plotted the heights of men and their corresponding frequencies, we would obtain the
graphic distribution.
(Type)
Type)
Type
2) He's only nineteen but he wants to leave school at the end of the term. If he (leave) now he
be) sorry afterwards.
Type)
Type
Type

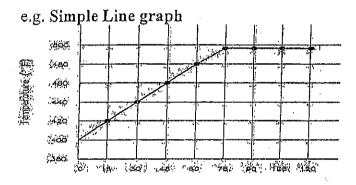
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GRAPHS, TABLES, CHARTS and

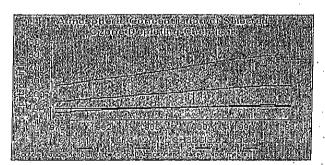
Illustrations such as graphs, tables and charts are used to present information, to make a point and to highlight results in reports. They are used to pictorially show and visually explain data obtained. They help organize and assist comprehension of the information given. Graphs, tables and charts are tools which enable the reader to make comparisons and to draw quick conclusions because information can be seen at a glance.

A graph is a diagram, usually a line or curve, which shows how two or more sets of numbers or measurements are related. It is made up of three important parts: the vertical axis, the horizontal axis and the diagonal line. The components being compared or measured are called variables which can be dependent or independent.

The dependent variables are what can be seen to be changing in relation to the particular levels of the independent variables. It is a convention to put the dependent variables on the horizontal (x) axis and the independent on the vertical (y) axis. Graphs are used for continuous variables.



A multiple line graph can effectively compare similar items over the same period of time. e.g. Multiple line graph



A table presents facts and figures in a compact form. It shows a set of data elements, called values, which is organized using a model of vertical columns (which are identified by their name) and horizontal rows. A table has a specified number of columns, but can have any number of rows.

Each row is identified by the values appearing in a particular column subset which has been identified as a candidate key. A table helps organize information and makes it is easier to see patterns and relationships. If a variable is continuous the table reveals much more information since it may show the range, the interval and the number of readings, it is table is useful in organizing numerical information.

A table has a title and column headings. It gives a general idea of the type and the purpose of the information presented.

Ozone Depleting:Substances

प्रस्तिक पारा स्था । जिल्ला स्था	தவர்கு வர்க்கிக்கிக்கில்	जिल्लाहरू स्थापनितित्र । अपन्य स्थापन
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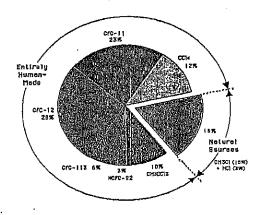
A pie chart (or circle graph) is a circular chart divided into sectors, illustrating proportion.

In a pie chart, the arc length of each sector (and consequently its central angle and area) is proportional to the quantity it represents. The sectors create a full disk. It is named for its resemblance to a pie which has been sliced. The earliest known pie chart is credited to William Playfair's Statistical Breviary of 1801.

The pie chart is perhaps the most ubiquitous statistical chart used in the business and the mass media worlds. However, it has been criticized, since it is difficult to compare different sections of a given pie chart, or to compare data across different pie charts. These can be an effective way of displaying information, in particular if the intent is to compare the size of a slice with the whole pie, rather than comparing the slices with each other. They are not very common in scientific literature.

A pie chart is constructed by converting the share of each component into a percentage of 360 degrees.

e.g. Pie Chart

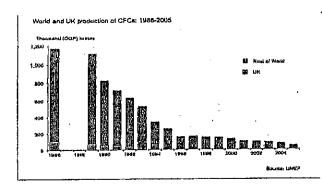


A bar chart (or bar graph) is a chart with rectangular bars of lengths proportional to the values which they represent. The bars can be plotted vertically or horizontally. Bar charts are used for plotting discrete (or 'discontinuous') data, i.e. data which have discrete values and are not continuous.

Bar charts, like pie charts, are useful for comparing classes or groups of data. In bar charts, a class or group can have a single category of data, or it can be broken down further into multiple categories for greater depth of analysis.

The following figure shows a vertical bar chart. The bar chart or bar graph compares two series of data.

e.g. Bar Chart



A histogram, not to be confused with a bar chart, is a summary graph showing a count of the data points falling in various ranges. It displays statistical information which uses rectangles to show the frequency of the data items in successive numeral intervals of equal size. In the most common form of histogram, the <u>independent variable</u> is plotted along the horizontal axis and the <u>dependent variable</u> is plotted along the vertical axis. The data appear as coloured or shaded rectangles of variable area. The groups of data shown are called classes and in the context of a histogram they are known as "bins", because they can be thought of as containers that accumulate data and "fill up" at a rate equal to the frequency of that data class.

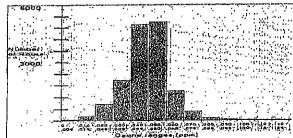
The histogram provides important information about the shape of a distribution. According to the values presented, the histogram can be either highly or moderately skewed to the left or right.

A symmetrical shape is also possible, although a histogram is never perfectly symmetrical. If the histogram is skewed to the left, or negatively skewed, the tail extends further to the left.

In statistics, a histogram is a graphical representation, showing a visual impression of the distribution of data. It is an estimate of the probability distribution of a continuous variable and was first introduced by Karl Pearson.

A histogram is similar to a vertical bar graph, but when the variables are continuous, there are no gaps between the bars. When the variables are discrete, however, gaps should be left between the bars.

e.g. Histogram



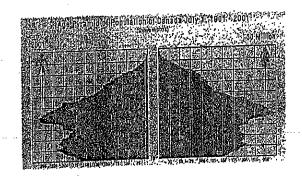
A vertical bar graph and a histogram differ in the following ways:

- In a vertical bar graph, frequency is measured by the height of the bar.
- In a histogram, frequency is measured by the area of the column.

A population pyramid or age—sex pyramid is commonly used to present statistical information on the composition of a population.

Below is a chart of an age—sex pyramid from the 2001 annual population estimates. It shows statistical information on Canada's population by age-group, sex and the aging of "Baby Boomers." Canada's total population was 30,007,088 in 2001.

e.g. Population pyramids



Describing Trends

Trends are changes or movements. Trends in English can be described in various ways.

The three basic trends are:

upward movement : 3

no movement : →

downward movement : 3

Indicating upward movement: 3

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(fo) ousupputstepuio	(fro) (CO/DE NO)	
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Indicating no movement:

Verbs	TIS I
Than slides are all Marel 200 solds.	
(clio)) Free provisical plicate a renoma control les tellollesses	
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Indicating downward movement: 🔌

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Describing Trends

A lack of movement can also be described using expressions such as 'remain stable' or 'stay constant'.

· e.g. The demand for gold has remained stable since the beginning of the year.

Other Useful Expressions

To fluctuate

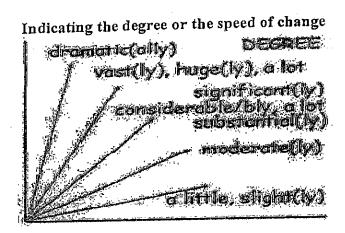
- This expression is used to describe when there has been a series of changes both up
- e.g. Prices have fluctuated wildly since the beginning of the year.

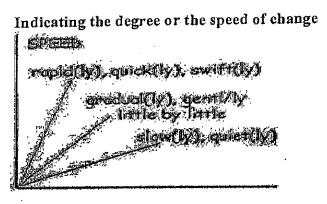
To stand at

- This expression is used to focus on a particular point, often before talking about the trends of movement.
- e.g. At the beginning of the year, sales in India stood at €200,000.

To reach a peak

- This expression is used to talk about the highest point of a trend.
- e.g. Late last year, sales of our new product reached a peak of 12,000 units.





Exercise 1. Interpret the graph

A pie chart displays the

size of each part as a

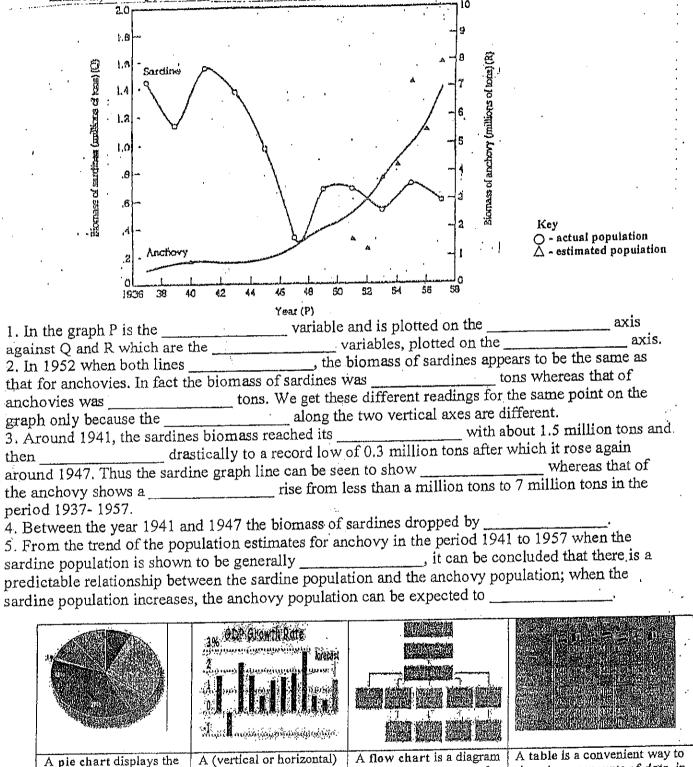
percentage of a whole.

bar chart is used to

compare unlike

(different) items.

Study the graph below carefully and then complete the 5 statements with the appropriate given words: x; scales; 0.6 million; peak; dropped; fluctuations: 1.2 million tons; y; 3 million; steady; falling; intersect; decrease; independent; dependent



showing the progress of

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of operations in a complex activity.

show large amounts of data in

1.7:

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A HISTORY OF ZERO

- 1. Who discovered zero? Actually, this question is quite difficult to answer because Zero makes many vague appearances throughout history only to vanish again as if mathematicians did not recognize its fundamental significance.
- 2. The first thing to say about zero is that there are two uses of zero which are both extremely important but different. One use is the empty space indicator in our place-value system. Hence, in a number like 2106, the zero is used so that the positions of the 2 and 1 are correct. The second use of zero is as a number itself. Neither of these uses has an easily described history. Moreover, numbers in early historical times were much more concrete than the abstract concepts which are our numbers today. There are giant mental steps from 5 horses to 5 'things' and then to the abstract idea of "five".
- 3. One might think that once a place-value number system came into existence, then the 0 as a empty place indicator would be necessary, yet the Babylonians used this system without this feature for over 1000 years. The Babylonians' notation for numbers was quite different from ours, and they did not distinguish between 2106 and 216 (the context would have to show which was intended).
- 4. The ancient Greeks began to contribute to mathematics around the time that zero as an empty place indicator was coming into use in Babylonia, but the Greeks however, did not adopt a positional number system. Why did they not use the advantages of the Babylonian place-value system? Basically, the Greek mathematical achievements were based on geometry and therefore, they did not need to name their numbers since they worked with numbers as lengths of lines. Although Euclid's Elements contains a book on number theory, it is based on geometry. However, the Greek astronomers used O indicating the notation of zero. Ptolemy in the Almagest, written around 130 AD, uses the Babylonian sexagesimal system together with the empty place-holder O.
- 5. The scene now moves to India where it can be said that numerals were born which evolved into the highly sophisticated system in use today. In fact, by around 500 AD, Aryabhata devised a number system which had no zero, yet it was a positional system using the word "kha" which would later be called zero. There is also evidence that a dot had been used in earlier Indian manuscripts to denote an empty space and, interestingly, also to indicate an unknown, as we might use x. The first record of the Indian use of zero on a stone tablet is dated 876. Then three important Indian mathematicians tried to answer the problems arising when one tries to consider zero and negatives as numbers. Brahmagupta (7th century) attempted to give rules for arithmetic involving zero. Mahavira (830 AD) tried to improve on Brahmagupta, while Bhaskara (1300 AD) correctly stated other properties of zero, such as $0^2 = 0$, and $\sqrt{0} = 0$. These brilliant concepts were transmitted to the Islamic and Arabic mathematicians further west. In fact, al-Khwarizmi described the Indian placevalue system of numerals based on 0 to 9 and Ibn Ezra, in the 12th century, wrote three treatises describing the decimal system for integers. The Indian ideas spread east to China as well. In 1247 the Chinese mathematician Ch'in Chiu-Shao wrote Mathematical treatise in nine sections which used the symbol O for zero.
- 6. An important link between the Hindu-Arabic number system and the European mathematics is the Italian mathematician Fibonacci who described the nine Indian symbols together with 0 in around 1200, but they were not widely used for a long time after that. It was not until the 1600s that zero came into widespread use but only after encountering a lot of resistance.

Exercise 1. COMPREHENSION

Match the various peoples in Column A with their contributions to Mathematics in Column B.

Column A	Column B		
1) Babylonians	a) decimal system for integers		
2) Greeks	b) number theory based on Geometry		
3) Indians	c) used O for zero		
3) Indians4) Chinese5) Italians	d) place-value system		
5) Italians	e) zero and negatives as numbers		
6) Arabs	f) described Indian system		
Exercise 2. FOCUS			
Match the words in Column A with the	neir grammatical functions in Column B.		
Column A	Column B		
1) described (line 8)	a) present participle as adjective		
2) used (line 6)	b) past participle as adjective		
3) coming (line 17)	c) past participle in past perfect tense		
3) coming (line 17) 4) concrete (line 8) 5) worked (line 20) 6) using (line 27)	d) past participle in passive form		
5) worked (line 20)	e) past participle in elliptical relative phrase		
6) using (line 27)	f) present participle in progressive form		
7) indicating (line 22)	g) gerund		
7) indicating (line 22) 8) written (line 23)	h) present participle in elliptical relative phrase		
9) encountering (line 44)			
9) encountering (line 44)	i) simple past tense		
	j) comparative form of adjective		
	k) superlative form of adjective		
Exercise 3. SENTENCE FORMATI			
Put the following sentence into the ter			
The Greeks used Geo	metry to express their number theory		
Past perfect affirmative			
Past interrogative			
Future progressive affirmative			
4) Present perfect progressive interrog	ative		
5) Simple past passive			
6) Present conditional			
affirmative			
7) Present perfect negative			
Exercise 4. WORD FORMS			
Choose the appropriate form of the wo	rds to complete the sentences. (You may need to add an		
's" to the 3 rd person singular of the ver	b or to form a plural noun,)		
	•		
l) production, producer, produce, p	productive, productivity, product		
a) More efficient methods of	a) More efficient methods of are required to lower costs.		
of crude oil			
c) The use of animals in testing dr	The use of animals in testing drugs and cosmetic is prohibited.		
d) The drug terrible effects on children.			
e) The Union rules on safety migh	t also slow down		
, and an out of this is	A COUNTY OF STATE OF		

2)	development, develop, developing, develo	world have difficulties regulating traffic
	a) Most cities in theb) The land would have a high commercial	world have difficulties regulating datife.
	b) The land would have a high commercial	value II II were sold to
	c) The countries are th	e poorer, less mousuranzed nations.
	d) A stable family is essential to the psych	ological or a chira.
	e) We had high hopes of	tourism on a big scale. an island in the Danube with housing
	f) The scheme includes plans to	an island in the Dantoe with housing
3)	characterize, characteristic, characteristic	cally, character, characterized.
-,	a) What is the most important	of a computer?
	b) The relationship between them was	by tension and anxiety.
	c) Unfortunately, there was another side to	his
	d) He proposed a	brilliant solution.
Ex	tercise 5. LINKING WORDS	the function and translation in
	ith reference to the text on "The History of Ze	ro, give the function and translation in
CO	ntext of the following words: TRANSLA	TION FUNCTION
	·	1) giving example
a)_	hence (line 6)	2) timo goguence
	moreover (line 8)	2) 11 a+1 m a
	since (line 20)	1) n n d - ffo at
d) .	although (line 21)	4) cause and effect
e) _	yet (line 12)	5) contrasting
		6) giving definition
		7) adding information
		8) comparing
Ex	ercise 6. PHRASAL VERB "come"	
Co	mplete the sentences with one of the following	g prepositions:
	about, across, in for, off, on, out, out	with, over, round, up, up against
	•	
1)	How does it comethat w	e still need a society like the NSPCC
	(National Society for the Prevention of Cruel	ty to Children) in a civilized country?
2)	At the time, inspectors continually came	children who had been ill-
	treated.	•
3)	A computer should be programmed to warn n	nanagement of problems as soon as they
	come .	
4١	Computers have come a lot	of criticism from people who do not really
1)	understand their purpose.	1 1
5)	I think that she's fainted. Perhaps she'll come	if we throw water on her face.
2) 2)	We tried various methods of solving problem	s before installing the computer but none of
6)	we tried various methods of solving problem	s detate instanting the compater out notice of
~ \	them came The NSPCC come new p	roblema every day
7)	The NSPCC comenew p	woolens every day.
0)	railly infill tho wing his difficion the front i	Other Carrette Court Cou
9)	His new book has just come	and the film version of his last one is almost
	finished.	44
	At first she was too upset to tell us what had h	nappened but then she cameit
	all at once.	

Lost in Numbers, Obscuring Our Selves

Numbers and rankings are everywhere, We add up our Twitter followers and Facebook friends. We use standardized test scores to evaluate teachers and students.

"Numbers make intangibles tangible," said Jonah Lehrer, a journalist and

author of "How We Decide." "They give the illusion of con-

ALINA TUGEND

ESSAY

Many people shopping for y cars, for example, get fixated on how much horsepower an engine has, though in most

cases it doesn't matter, Mr. Lehrer said.

We want to quantify everything," he went on, "to ground a decision in fact, instead of asking whether that variable matters."

We often do need to find ways to measure and evaluate people and as objectively as possible. The trouble, though, is when we mindlessly rely on those numbers to tell us everything, said Sherry Turkle, director of the Massachusetts Institute of Technology's Initiative on Technology and Self.

Numbers become not just part of the way we judge and assess, but the only way.

"One of the fantasies of numerical ranking is that you know how you got there," said Professor Turkle, who is the author of "Alone Together: Why We Expect More From Technology and Less From Each Other." "Butthe problem is if the numbers are arrived at in an irrational way, or black-boxed, so we don't understand how we got there, then what use are they?

My colleague Michael Winerip recently wrote an article about an excellent middle. school teacher, with terrific performance evaluations. But a formula used by the New York Department of Education put the teacher in the seventh percentile of her teaching

The formula used 32 variables plugged into in a statistical model that "appears transparent, but is clear as mud," Mr. Winerip wrote.
And even if we understand the numbers,

they aren't always helpful.

Robin Black, author of the short story collection "If I Loved You, I Would Tell You This wrote a blog post on how fretting about the different ways of measuring her book's success has overshadowed why she wrote it in the first

"I go to a place where everything has a num-ber," she told me. "How many advance copies, how many reviews, how many sales.'

At Amazon authors can check how many books they've sold and, using interactive maps, even zero in on how many sales occurred in which cities.

Once, she said, "maybe every Sunday you looked at The New York Times best-seller list. Now you can torture yourself 24 hours a day, seven days a week."

And the statistics really tell us almost

nothing. Amazon's rankings, for instance can vary wildly based on the sale of very few

All those numbers help us lose sight of why we're really doing what we're doing. Ms. Black, for instance, said her books were largely about loss. "I'll get a letter from someone who says, 'My daughter died, and reading your book really helped,' "Ms. Black said." That's so meaningful. How do I measure that against 500 Twitter followers?"

Eric Frankel is founder of a company called 10 Minutes to Change, which figures out how

to improve workers' performance.

He's also a certified public accountant, so he knows the importance of numbers. But, he said: "Just because we have the skills and ability to put metrics on everything, doesn't mean we should. People are ever-changing, fascinating and incredibly frustrating.

This reliance on numbers is to some extent generational, said Howard Gardner, a professor of cognition at Harvard Graduate School of Education.

"For almost anybody in the United States

When the number of Web hits trumps the value of content.

under the age of 25, the only models are quantifiable rankings," he said.

So when students are researching a paper, he said, they often look at which articles or papers online have the most hits.

Should it be that whatever has the most hits or the most editors makes it better than someone who spent his life studying Kant? he asked.

The obsession with numbers, he said, means we don't trust or even look for the intangibles that can't be measured, like wisdom, judgment and expertise.

We also lose a sense of ourselves as anything but a rank, and start feeling bad if our numbers don't measure up to others.

In a blog post, Mr. Lehrer wrote: "What I'm most troubled by is the desire of individuals (especially myself) to constantly check up on these numbers, and to accept these measurements as a measure of something meaningful." He went on, "That's why I wish there was a popular social platform that didn't measure

anything." It would, he wrote, "be a relief." (By the way, 320 people "liked" that blog

post.)

Or as Ms. Black put it: "I have to stop worrying about numbers. I have to reclaim the ambiguous part of my own intelligence."



ADDANIDIOS



MATHS SECTION 1

✓ CARDINAL NUMBERS:

```
zero/nought
 0
 1
                one
 2
                two
 3
                three
                four
 4
 5
                five
6
                six
7
                seven
8
                eight
9
                nine
10
                ten
                eleven
11
                rwelve
12
                thirteen
13
                fourteen
14
15
               fifteen
               sixteen
16
17
               seventeen
18
               eighteen
19
               nineteen
               twenty
20
               twenty-one
21
30
               thirty
               thirty-five
35
40
               forty
50
               fifty
60
               sixty
70
               seventy
               eighty
80
90
               ninety
               a/one hundred
100
               a/one hundred and one
101
               two hundred
200
               two hundred and twenty
220
1,000
               a/one thousand
               a/one thousand and one
1,001
               a/one thousand, two hundred and twenty-one
1,221
               a/one million
1,000,000
              a/one million, three thousand and thirty
1,003,030
```

NOTICE HOW THE NUMBER WITH A DECIMAL POINT IS INTERPRETED:

1.221

one point two two one

AS OPPOSED TO:

1,221

one thousand, two hundred and twenty-one

A. Now write	the following numbers in fu	ıll and 👫 practise reading them aloud:	:
23 =	39 =	44 =	
72 =	99 =	121 =	
1,666 =	1,100	,110 =	
1.666 =	7,268	=	

✓ ORDINAL NUMBERS:

```
1 st
                         first
 2^{nd}
                         second
 34
                         third
 4<sup>th</sup>
                         fourth
 5<sup>th</sup>
                         fifth
 Сth
                        sixth ·
7<sup>th</sup>
                        seventh
 8ф
                        eighth
9th
                        ninth
 10^{\text{th}}
                        tenth
11<sup>th</sup>
                        eleventh
12^{\text{th}}
                        twelfth
13<sup>th</sup>
                        thirteenth
14^{\text{th}}
                        fourteenth
15^{th}
                        fifteenth
16^{\rm th}
                        sixteenth
17<sup>th</sup>
                        seventeenth
                        eighteenth
18<sup>th</sup>
19<sup>th</sup>
                        nineteenth
20^{\text{th}}
                        twentieth
21st
                        twenty-first
30th
                        thirtieth
35<sup>th</sup>
                        thirty-fifth
40^{\text{th}}
                        fortieth
50<sup>th</sup>
                        fiftieth
60th
                        sixtieth
70^{th}
                       seventieth
80<sup>th</sup>
                       eightieth
90<sup>th</sup>
                        ninetieth
100<sup>th</sup>
                       a/one hundredth
101**
                       a/one hundred and first
```

200 th	two hundredth
220 th	two hundred and twentieth
1000 th	a/one thousandth
1001 st	a/one thousand and first
1221 st	a/one thousand, two hundred and twenty-first
1,000,000 th	a/one millionth
1,003,030 th	a/one million, three thousand and thirtieth

N.B.

The number 0 after a decimal point is usually read "nought", but zero can also be used:

8.04 = eight point nought four or eight point zero four

Integer or whole number = A complete entity, a whole not a fractured number: 10 is an integer

Digit = Any of the figures from 0 to 9: 12,365 is a five digit number Odd Numbers = Not divisible by two without leaving a remainder: 1, 5, 9, 15 are odd

Even Numbers = Numbers divisible by two: 2, 4, 6, 8 are even numbers

ALGEBRA

MATHEMATICAL OPERATIONS

These signs indicate mathematical processes. What nouns and verbs are used to talk and write about them?

F	3.T	Verb	Results
Sign	Noun	V ELD	
+			
-			
х		, .	
<u>.</u>			

$18 - 5 = 13$ $4 \times 9 = 36$	sixteen plus seven equals/is equal to twenty-three eighteen minus five equals/is equal to thirteen four times/multiplied by nine equals/is equal to thirty-six twenty-seven divided by three equals/is equal to nine
---------------------------------	--

A. Write these operations in full and read them aloud:

		•		
1,000 + 2,555 = 3,555				_
1.68 - 0.48 = 1.20				
25 x 4 = 100			·	
$130 \div 10 = 13$				_
150 + 10 - 15			_	
		• .		
These signs () are called			•	
These signs [] are called	·			
These signs{ }are called		<u> </u>	letters.	
ABC	letters; def are	<u></u>	1000001	
How do we read and write:	$R_{\mathbf{x}}$?		, i	

a +	b=c	B, Hov	v are the	se form	ulae sp	oken? \ _a×b=	Write th = <i>e</i>	em out	first.	
а –	b = d _			:		$-\frac{a}{b} = j$	f		 	·
We	can also	say:								
a×	b=e					$-\frac{a}{b} = J$	·			
√	FRACT.	IONS					·		·	
	A. Ho	w are th	ese frac	tions sp	oken i	n Englis	sh?			
	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{3}$	3 16	1/4	$\frac{3}{4}$	1/8	<u>8</u> 5		
$\frac{1}{2} = $	<u>.</u>			·····		$\frac{1}{4}$	== 			
$\frac{1}{3} = $:		$-\frac{3}{4}$	=		··-	
,						,				
3 =						<u>8</u>				

B. Write these fractions in full and read them aloud:

C. Read out these equations. Write them out first:

1.
$$x = \frac{a+b}{c}$$
 4. $y = y + at$

	A	E The man man	
2. >	: + y =	 5. $Ft = mv - mu$	
	a-b	 ,	

3.
$$I = a + (n - 1) d$$
 6. $\frac{I}{R} = -\frac{M}{EI}$

$$7. V = IR \underline{\hspace{1cm}} 9. \frac{Q}{z} = -q \underline{\hspace{1cm}}$$

8.
$$\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$$
 10. $E = T + P - c + e$

*	D. How are these values spoken? Write them	out first.
		a 1

x^2	. 37	X n-1		
x^3	- Comment of the Comm	х -п	v^n√x	<u>`</u>
$\mathbf{x}_{\mathbf{u}}$		\sqrt{x}	a ^½ _	

E. Practise reading these expressions:

$$1. x^{-p} = \frac{1}{x^p}$$

$$2. x^{\frac{p}{q}} = \sqrt[q]{x^p}$$

3.
$$x^2 - a^2 = (x + a)(x - a)$$

$$4. y = ae^{kx}$$

$$5. \qquad x = \frac{nx_2 + mx_2}{m + n}$$

6.
$$y-y_2 = \left(\frac{y_2-y_1}{x_2-x_1}\right)(x-x_1)$$

7.
$$\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$$

8.
$$d = \sqrt{\left(x_1 - x_2\right)^2 + \left(y_1 - y_2\right)^2 + \left(z_1 - z_2\right)^2}$$

9.
$$b^2 = a^2(1-e)$$

10.
$$x^2 + y^2 + 2gx + 2fy + c = 0$$

SECTION 2



READING MORE COMPLEX FORMULAE



Read the following common mathematical signs.

Symbol	Meaning	Example	spoken
= =====================================	Equivalent to	x≡y	x is equivalent to y
	Not equal to	x ≠ y	x is not equal to y
≈ ≅	Approximately equal to	x ≈ 10	x is approximately equal to 10
\rightarrow	Tends to	$x \rightarrow 0$	x tends to nought
<	Less than	x < 5	x is less than five
>	Greater than	x > 5	x is greater than five
«	Much less than	y ≪ 5	y is much less than five
»	Much greater than	y ≫ 5	y much greater than five
	Less than or equal to	x ≤ 10	x is less than or equal to 10
≥	Greater than or equal to	y ≥ 10	y is greater than or equal to 10
∞ċ	Proportional to	_ x ∝ y	x is proportional to y
∞	Infinity	x → ∞	x tends to infinity
±	Plus or minus	$x = \pm 2$	x equals plus or minus 2
	Therefore	. x = 0	therefore x equals nought
	Per	km/hr	kilometres per hour
d	Differential	dx	differential of x
	Since	∵ x=3	since x is equal to 3

A. Write down the symbols for these expressions:

Ø	Example: Appr	oximately equal	ã			
						· · · · · · · · · · · · · · · · · · ·
3.	Tends to	** ,				· · · · · · · · · · · · · · · · · · ·
8.	Proportional to					
10.	Less than or equ	ual to				
				······································	·····	

B. What do these symbols mean in English? Give an example of each one:

•	2. ≠
1. =	4. →
3. ≅ ≈	6. >
	8. »
7. «	10,≥
9. ≤	. 12. ∞
13. ±	14. :
	16. d
15./	

GREEK ALPHABET

Prime after a syllable indicates primary accent; double prime secondary accent, as in secretary (se krą ta"ri) (American pronunciation). (Br) indicates that the pronunciation is used chiefly outside the USA.

- A, lpha Alpha, pronounced ăl' fą
- B, β Beta, pronounced bâ' tà
- Γ, γ Gamma, pronounced ga' mą
- Δ, δ Delta, pronounced dël' tą
- E, ε Epsilon, pronounced ĕp' sąląn (Note that the symbol ∈ for elementhood is not epsilon)
- Z, ζ Zeta, pronounced za' tà
- H, η Eta, pronounced â' tà
- Θ , θ Theta, pronounced thâ' tà
- I, t Iota, pronounced îô' tà
- K, κ Kappa, pronounced kăp' ą
- Λ, λ Lambda, pronounced lăm' dą
- M, μ Mu, pronounced mû
- N, v Nu, pronounced nû
- Ξ, ξ Xi, pronounced ksç
- O, o Omicron, pronounced ô' mikron
- Π , π Pi, pronounced pî
- P, ρ Rho, pronounced rô
- Σ , σ Sigma, pronounced sëg' ma
- Τ, τ Tau, pronounced like cow
- Υ, υ Upsilon, pronounced oop' sąląn
- Φ, φ Phi, pronounced fi
- X χ, Chi, pronounced kî
- Ψ, ψ Psi, pronounced psç
- Ω , ω Omega, pronounced ô mà' gà

C. Write down the following Greek letters (in small letters):

Example: Alpha α		
1. Beta	6, Tau	
2. Gamma	7. Mu	
3. Delta	8, Pi	
4. Theta	9. Sigma	
5. Lambda	10. Omega	

D. Practise reading out these expre	ssions:
$1. \ f = \frac{1}{2\pi\sqrt{LC}}$	6. $C = \frac{L}{R^2 + \varpi^2 L^2}$
2. $E = \delta T^4$	$7. \ v_2 = \sqrt{\left(\frac{2e}{m}V_2\right)}$
3. $W_s = \frac{2\pi f}{P}$	$8. \ \delta = \frac{\frac{1}{2} \sigma_b^2}{K}$
4. $\gamma = \frac{W_x}{4\pi R} F$	$9. \ \sigma = \frac{Myc}{1} + \frac{P}{A}$
5. $\mu_0 = 4\pi \times 10^{-7} Hm^{-1}$	$10. \gamma = \frac{4Q}{3\pi R^2} \left(R^2 - \gamma^2 \right)$

E. Write down the formulae you hear.

✓ PERCENTAGES

21/2% two and a half per cent 50% fifty per cent 6.25% six point two five per cent

>	A. Now write the following percentages in full:
1.	99%
2,	3 1/5%
3.	25.75%
4,	9 2/3%
5.	7.5%
6.	5 1/4%

DICTATION

1.
$$\frac{V}{I} = R$$

2.
$$P_1V_1 = P_2V_2$$

3.
$$\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$$

$$4. \quad F = \frac{mv^2}{r}$$

$$5. \ \frac{1}{R} = \frac{M}{EI}$$

$$6. \ \frac{\sigma}{Yn} = \frac{M}{AhR_f}$$

7.
$$A = 2\pi R_c \left[R_c - \sqrt{R_c^2 - \frac{d^2}{4}} \right]$$

8.
$$\tau = \frac{4Q}{3\pi R^4} \left(R^2 - \gamma^2 \right)$$

9.
$$F \propto \frac{M_1 M_2}{R^2}$$

10.
$$\frac{T^2}{R^3} = \frac{4\pi^2}{GM}$$

V. over I equals R (all capital letters)

P subscript one times V subscript one equals P subscript two times V subscript 2 (all capital letters)

one over u plus one over v equals one over f (all small letters)

capital F equals small m small v squared all over small r

one I over R equals M over EI (all capital letters)

sigma over capital Y small n equals capital M over capital A small h capital R subscript small f

capital A equals two pi capital R subscript small c open square brackets capital R subscript small c squared minus the square root of open round brackets capital R subscript small c squared times minus small d squared over four, close parentheses, round brackets, close square brackets.

tau equals four time capital Q over three pi capital R to the power of four, all times open round brackets capital R squared minus gamma squared, close parenthesis round brackets.

F is proportional to M subscript one M subscript two all over R squared (all capital letters)

T squared over R cubed equals four pi squared over GM (all capital letters)

SECTION 3

D	S	
Ø	DRILL	

What are the processes shown here?

Ð	Example:	$\frac{x}{y}$	division
		_	

- 1. ab
- 2. 32 x 10⁻¹
- 3. $a^2 + b^2 + c$
- 4. $y x^2$
- 5. 73.2a 9.27a a

DRILL 2

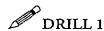
Put the correct words in these expressions.

Ð	For	example:	$\frac{x}{y}$
---	-----	----------	---------------

- 6. 34 x 7
- 7. $x^2 x$
- 8. $\frac{a^2b}{c}$
- 9. 3b + 2c
- 10. ab

- Divide x by y
- ______ 34 _______ 7 ·
- _____x ____x²
- _____a²b_____c
- ______3b _______2c
- _____a ____b

SECTION 4



Write out in full the following expressions.

Example: a squared plus b squared equals c

1. $a^2 + b^2 = c$ ______

 $a^2 = \frac{(b-c)^2}{a}$

 a_1 $7.6 \times 10^{-3} \, ms^{-1}$

 $\frac{x^{-1/2}}{a^2+b^2}=1$

6. $\left(\frac{y}{a} - \frac{x}{b}\right)^2$

8. $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

DRILL 2

Make questions from the following expressions.

Example: What is the square root of x? 12 What is y to the power of 4? 3.78

 $1 \sqrt{x=12}$

 $2. y^4 = 3.78$

158

5. $d^{1/4} = 2.5$

6. $a^{-n} = 0.721$

7.
$$y^{3/2} = 721.5$$

9.
$$y^{n-1} = z$$

11.
$$x^{-7} = 91$$

: *

10.
$$\sqrt[3]{z} = 7.29$$



Write a question that requires the answer "NO" plus the correct statement for the following expressions.

For example:	Is x equal to y? Is α proportional to β^2 ?	No, x is greater than y. No, α is equal to β^2
1. $x > y$	4. $a \approx b^2$	7.γ≥45
2. $d \rightarrow \infty$	5. $z \cong 50$	8.α≠β
3. $\mu = \pm 30$	6. $\theta \le 90^\circ$	9.f∝ d²

*	X	Read out	these	expressions.	Write them	out first
	(Read out	mese	expressions	WILL CICIL	OFF

1. τ > 90°	$9. : E \equiv 1 + \Delta$	
2. x →∞	10. λ > 1	,
3. e ∝ T	11. 73/4	
4. α = β	$12. \ \frac{1}{2} + \frac{2}{3} + \frac{3}{16}$	·
5. a ₁ ≠ b ₁ .	$13. \frac{1}{2}(24+9) = x$	
6. θ ≅ 0.5°	14. 15	
7. E ≤± 0.32	$\frac{4}{3}\pi r^3$	
o u 5 2	16. p » q	<u>,</u>

BASIC GEOMETRY intions of the lines and angles given below:

-	escriptions of the mo			
1) This line is (A	line.)			
This line is		Because in the control of the contro	В	
2) The line BC is BCY is a	to the l	ine XY. X	<u> </u>	E
3) EF is	to FG		F 45°	G
4) HÎJ is HÎJ is HI is	93°.	. 1 7 32.	3	
B. What kind of a	ngles are these?	_	<90°	
An angle >90° is called	an and	_angle.	>900	>180
C. Completely des	cribe these angles:			
A C D E	130°12' F N 83°11' K	O R 333	G F36 I	Н .
D. What sort of tri			X	
DEF is a	triangle,	B /-	1	н
GHI is an	triangle.		G C	
JKL is an	triangle.	1		I
MNO is an	triangle.	K	L	

E. What sort of lines are these?

AB and CD are _____lines

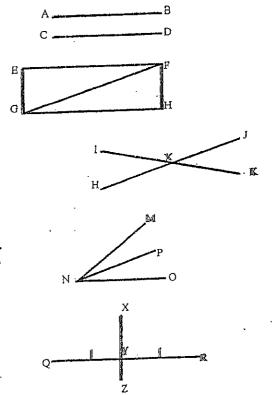
FG is a _____line.

IK and JH are lines.
Lines IK and JH at X.

The line PN the angle MNO.

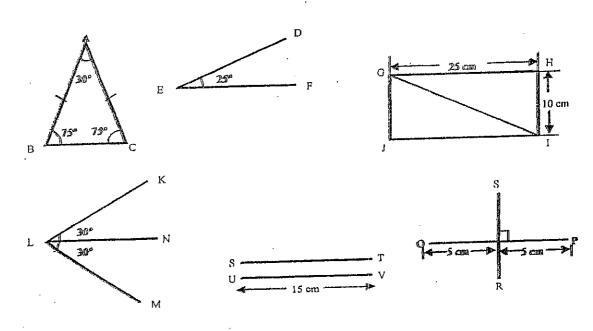
PN is the of the angle MNO.

The line XZ the line QR at Y.
The line XZ is the of line QR.



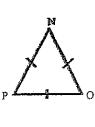
F. Describe these angles as fully as possible.

For example, ABC is an isosceles triangle which has one angle of 30° and two angles of 75°.

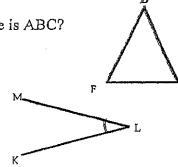


Drill 1

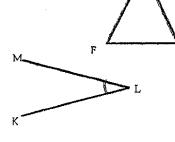
For example: What sort of angle is ABC? It's an obtuse angle

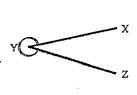


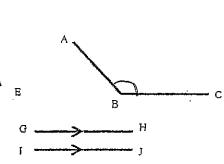


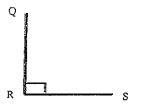


<u>Drills</u>



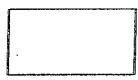






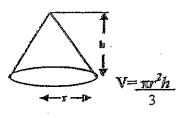
Drill 2

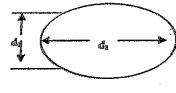
For example: What is πr^2 ? πr^2 is the area of a circle



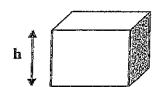


$$A = bh$$

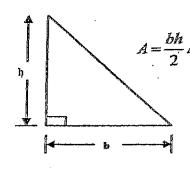


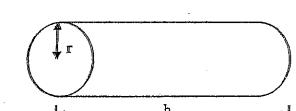




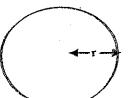








$$V = \pi r^2 h$$



$$A = \pi r^2$$

Drill 3.

Here is the formula for calculating the volume of a cylinder:

$$V=\pi r^2 h$$

Now read through this simple calculation:

A is a solid metal cylinder of height 16.3 cm and diameter 6.7 cm. Calculate its volume.

$$V = \pi r^{2}h$$

$$\pi = 3.142$$

$$r = \frac{d}{2}$$

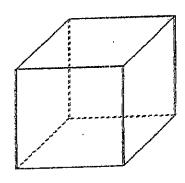
$$= \frac{6.7}{2} = 3.35cm$$

$$h = 16.3 \text{ cm}$$

$$V = 3.142 \times 3.35^{2} \times 16.3$$

$$= 574.75 \text{ cm}^{3}$$

Calculate the volume of the cube below which has a side of 7 cm.

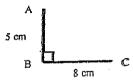


Wooden cube

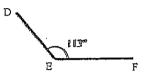
Exercises

Exercise 1. Fill in the missing words in these statements.

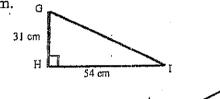
1. AB is a v s line of l 5 cm. AB is at a r a to BC, which is a h 8 cm.



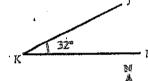
2. DEF is an o_____ a ____ of 113°.



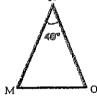
3. GHI is a r a triangle having a h of 31 cm and a l of 54 cm.



4. JKL is an a _____ of 32°.



5. MNO is an i_____ triangle, having an angle MNO of 40°.

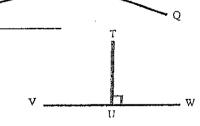


The lines PQ and RS i _____ at X.

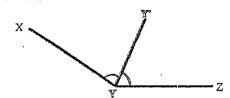
The value of the o ____ angle is 105° and P = that of the ____ angle is 75°

of the o_____ angle is 105° and P_____ sthe ____ angle is 75° _____ X Q

_____ line TU is p_____ T



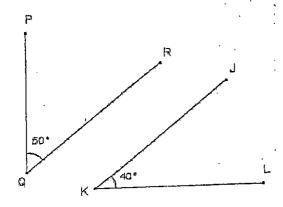
7. The s line YY' b the



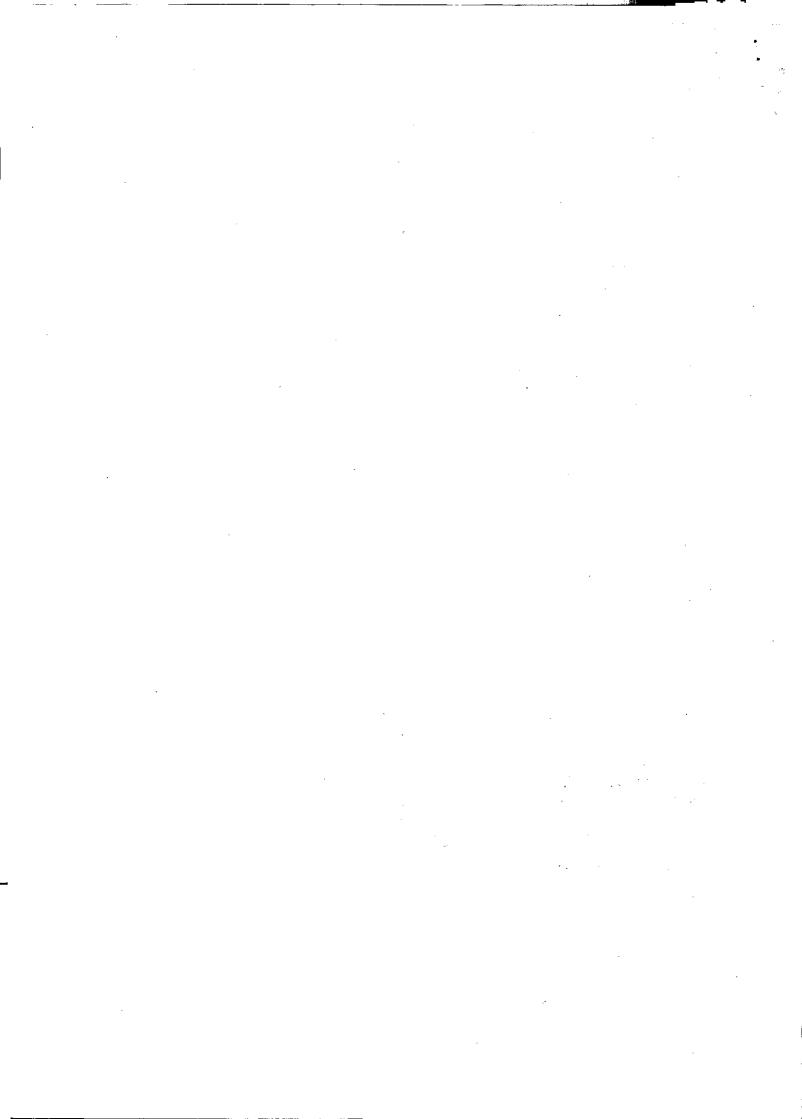
6. The v

to the h

8. Angle PQR is a ____ Angle JKL is a ____ Angle PQR is ____ angle.
than angle JKL.



Just for fun © Teacher: If the size of an angle is 90°, we call it a right angle. Pupil: Then teacher, should we call all other angles wrong angles?



SECTION 1 numbers and dimensions

A Read out these numbers.

1234567	3 14 40 93 102 231	8 9 10 11 12 13	1.053 2.279 10.874 12.00 100.302 1.000.000 82.985	15 16 17 18 19 20	153:87 73:5 90:005 19:31 44:829 80:75
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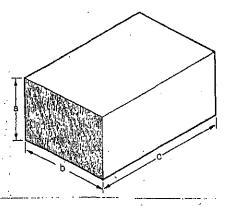
B Put in the decimal point, eg 12.00, or the comma, eg 1,000, when you hear these numbers.

8593 27149 3852	
10301 91349 7283 281 7219	- 0006

C Write down the names of these units: mm, m, cm, km.

D Write down the twelve values you hear.

E What are these dimensions called?



F Use these patterns to ask and answer questions about objects in your classroom, eg window, door, table, etc.

How	high wide long	is 7
-----	----------------------	------

high. ... is ... wide. long.

The	height width length	of is
	i saugui	

, ls in		height. width. length.
has a	height width length	of

Height, width and length are all nouns " High, wide and long are all adjectives

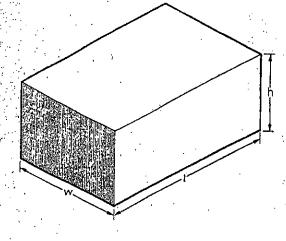
Height, width, length are l_____dimensions.

G Make a table of adjectives and the corresponding nouns like the one below. When you meet new pairs of adjectives and nouns, add them to the list.

Adjective	Noun	
high	height	

H Describe this block, using the dimensions given:

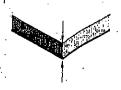
w=0.95 m	2	w = 34.24 cm	3	w=0·23 m
h = 1.02 m		h =18·75 cm		h =0·09 m
1 =2·75 m		I =72·31 cm		1 = 0.85 m



SECTION 2 describing objects

A Write down the names for these dimensions.

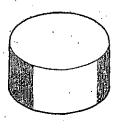
2

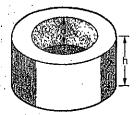


3 This object is ...

4 This object is ...

h is an _____ dimension, d is an _____ dimension.

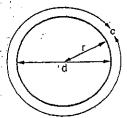




5 The adjective to describe a circle is c______ or

A circle has dimensions of:

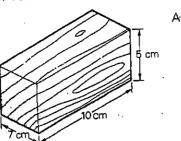
d_____,
r_____
and .
c_____



B Study the descriptions below.

A is a solid wooden block 5 cm high, 10 cm long and 4 cm wide.

A is a solid wooden block. It has a height of 5 cm. a length of 10 cm and a width of 4 cm.



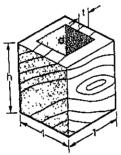
There are three other ways of writing this description:

A is a solid wooden block which has a height of 5 cm, a length of 10 cm and a width of 4 cm. A is a solid wooden block having a height of 5 cm, a length of 10 cm and a width of 4 cm. A is a solid wooden block of height 5 cm, length

10cm and width 4cm.

Now make similar statements about the following objects:

h=10 cm 1 = 8 cmt = 1 cmd=9 cmwood



В

r=20 cm t=0.25 cm plastic

 $t = 0.03 \, \text{m}$

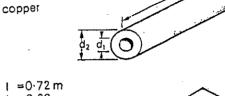
w = 1.0 m

 $I = 5.0 \,\mathrm{m}$

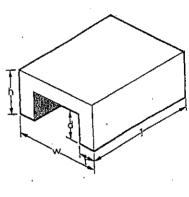
steel



copper



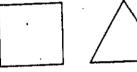
h = 0.20 m $d = 0.28 \, m$ $t = 0.04 \, \text{m}$ $w = 0.32 \, \text{m}$ aluminium

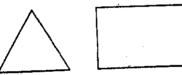


D

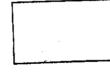
E

C Here are some shapes which you must learn the names of:











Now complete these descriptions of flat threedimensional objects.

_ plate of side . Object A is a -__.0·01 cm.

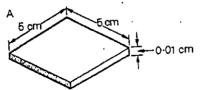


plate of side Object B is a. 1 · 2 cm. and _

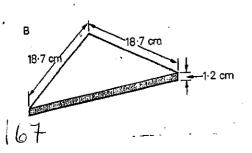
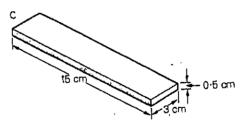


plate having a . Object C is a ___ ___ of 3 cm and a . of 15 cm, a. . 0·5 cm.



_ plate of . Object D is an --2:1 cm.

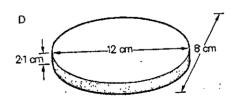
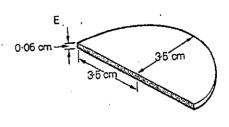


plate which has a Object E is a. ____ of 0.05 cm. of 3.5 cm and a ...



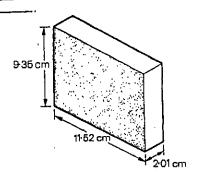
D Here are some important 3-dimensional shapes: E Now describe these objects. For example, F is a solid steel cube of side 5 cm/having a side c 5 cm/which has a side of 5 cm. cube: solid steel block: solid wood ball: hollow rubber If the objects are made of the following materials, make statements about them as in this example: metal A is a metal cube. steel iron (hollow) plastic (hollow) I cup: hollow В wood. silver rubber glass (solid) copper (solid) The block is _ exercise 2 Complete the descriptions of these objects. A is a ... 39·1 cm and ... __ 9·3 cm. 1\$+9 cm 9-3 cm _ is the block? _ copper _ What's the I. _ of the block? $_$ of 21 cm, an $_$ How h___ is the block? of 55 cm and a. ... of 93·2 cm. What's the w_ --- of the block? __ is the block?

65 cm 21 cm

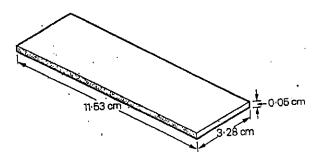
exercises

exercise 1 Complete these descriptions by giving the dimensions required.

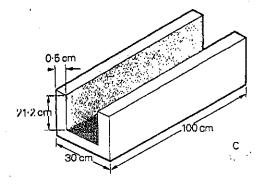
1 The block has a h_____ of ____, a l____ of ____ of



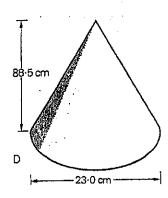
2 The l____ of the block is ____, the w___ is ___ and the h___ is



t the im aluminium _____ which has a ____ of 21-2 cm, a ____ of 0.5 cm, a ____ of 30 cm and a ____ of 100 cm.



A The cone D has a _____ of 88.5 cm, and a _____ of 23.0 cm.



6 F is a ...

Describe these objects in the same way.

5 E is a ...

