

Chapter1: Measurement:

In this unit we look at some of the different ways of expressing the functions of measurement in English as measurement is fundamental to science.

There is nothing complicated about this function. Measurement is expressed mainly by means of the lexis. However, it must be remembered that there are four different ways of expressing height, width, length, depth, etc.

Lexis: all the words and phrases of a particular language.

Synonym: vocabulary.

Measurement : 1 Language , 2 Structures, 3 Approximate measurements, 4 Use of prepositions

1-Language :

1.1 Adjectives , 1.2 Nouns ; 1.3 Verbs

1.1 Adjectives

Long, short, high, low, deep, shallow, wide/broad, heavy, light, thick, thin, fast, slow, far, average, mean, typical, standard, random, even, odd, accurate ...

1.2 Nouns

Length, height, depth, width/breadth, radius, weight, thickness, size, area, speed, amount, extent, survey, rate, scale, level, step, stage, span, root, cross-section ...

1.3 Verbs

To measure, to count, to calculate, to enumerate, to work out, to weigh, to check, to monitor, to plot, to reach, to attain, to range, to increase, to decrease, to drop, to fall, to rise ...

Lexis

Accurate	Quartz watches are extremely accurate	Exact
Amount	A large amount of money The amount of a substance is measured in mole	Quantity.
Average	The average velocity is 10m per sec	Mean
Breadth	What is the breadth of the Mississippi?	Width
Deep	The Pacific Ocean is the deepest	Profound
Even	The road is not even 2, 4, 6 are even numbers.	Smooth. Divisible by 2.
Far	It is not far to the town centre.	Distant.
Height	What is the height of the Eiffel tower?	A vertical extension
Length	What is the length of a tennis court?	The distance of the longest side
Length	200 meters above sea level.	A horizontal plane
Random	The position of gas molecules is random.	Unplanned.
Shallow	The Mediterranean is a relatively shallow sea.	Not deep.
Short	To be short of money.	Not having enough.
Size	What is the size of your shoes?	The dimensions.
Weigh	The car weighs 900 kg.	To measure in kg.

2 Structures

Dimensions can be expressed by for (04) different constructions:

- 1- It is 10 cm (Wide, high, long, thick, deep ...)
- 2- It is 10 cm (in width, in height, in depth, in diameter...)
- 3- Its (radius, thickness, length, depth, weight ...) is x cm/kg/ ...
- 4- It has (a length, a circumference) of x cm

Note: Questions are regular in construction

- How high is the Eiffel tower?
- What is the length of the Limpopo River?

3. Approximate measurements

These can be expressed by means of adverbial modifiers:

It is (almost...nearly ; roughly...more or less ; approximately...about ; a little over ; slightly under) 5 cm long

Note: The word 'over' has many different meanings. For our purposes three are important:

- It is over 6 cm long. (more than)
Over the last 5 months he has been studying at Brighton. (during)
The experiment is over. (Finished)

4. Use of prepositions

Prepositions and postpositions are widely used to express measurement:

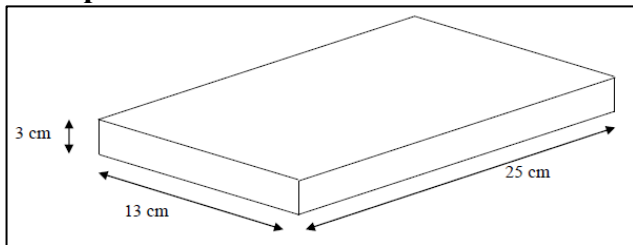
To at by from between up to above

- Methane freezes at minus 164°C.
- To count up to thirty.

Bibliography: [1] Minimum Competence In Scientific English

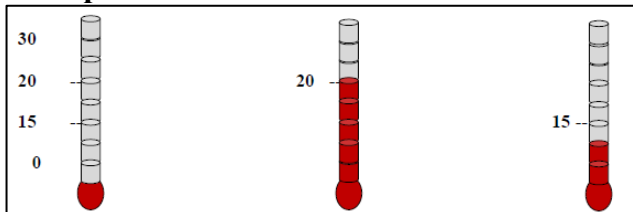
Examples:

Example 1



- ✓ The block is 25 cm long but it is only 13 cm in width. It is 3 cm deep.
- ✓ The volume is 975cm . This figure can be worked out by multiplying the length by the width by the depth.
- ✓ The surface area of the cross-section is 39 cm².

Example 2



- ✓ Sea water freezes at slightly under 0°C.
- ✓ The temperature rose to 20°C.
- ✓ The temperature fell from 20°C to 15°C.
- ✓ The temperature fell by 10°C.

Exercise 1

- ✓ Complete the text by filling the blanks with an appropriate word according to the context.
- ✓ Mount Everest is 8848..... H:
- ✓ The plane flew at aof 9,000metres as it crossed the Atlantic. H:
- ✓ After heavy rains theof the Amazon often reaches 50 kilometres. L:
- ✓ If the rectangle is 3 cm across and 5 cm long, then itsis 15 cm². C:
- ✓ How.....is the Eiffel tower? H:
- ✓ He livesfrom the town centre. F:
- ✓ The circumference of a circle is obtained by multiplying theby two and then multiplying the result by Pi. R:
- ✓ South Africa exports a large.....of uranium. Quantity
- ✓ Computer simulations forecast that the planet's temperature will.....by between 3°F and 9°F by the year 2000. Go up
- ✓ A supplement must be paid on air France planes if luggage.....more than 20 kg. To measure heaviness

Solutions:

Mount Everest is 8848 **meters** high.

The plane flew at a **altitude** of 9,000 meters as it crossed the Atlantic.

After heavy rains, the **width** of the Amazon often reaches 50 kilometers.

If the rectangle is 3 cm across and 5 cm long, then its **area** is 15 cm².

How **tall** is the Eiffel Tower?

He lives **far** from the town center.

The circumference of a circle is obtained by multiplying the **radius** by two and then multiplying the result by Pi.

South Africa exports a large **quantity** of uranium.

Computer simulations forecast that the planet's temperature will **go up** by between 3°F and 9°F by the year 2000.

A supplement must be paid on Air France planes if luggage **exceeds** more than 20 kg.

Exercise 2

1. Give the five different measurements (including weight/mass) of this zirconium block (density 6.5) Lenth 4.9 cm large 4.2 cm, deep 1.1 cm

- ✓ Its top surface area is cm².
- ✓ It is 4.9 cm.....
- ✓ It has a width ofcm.
- ✓in height.
- ✓is 22.64 cm .
- ✓147.15 g.

Top Surface Area: The top surface area is 20.58 cm².

Length: It has a length of 4.9 cm.

Width: It has a width of 4.2 cm.

Height: It is 1.1 cm in height.

Volume: The volume is 22.649 cm³.

Weight/Mass: The weight/mass is 147.14 .

2. Give the approximate measurements of the block (use alternative expressions of measurements).

- ✓ Its length is slightly.....
- ✓of a little more than 4 cm.
- ✓ It is roughly 1 cm.....
- ✓almost 21 cm².
- ✓ It weighs just.....

Its length is slightly...

Its length is slightly under 5 cm.

...of a little more than 4 cm.

The length is just a bit over 4 cm.

It is roughly 1 cm...

It is approximately 1 cm deep.

...almost 21 cm².

The top surface area is close to 21 cm².

It weighs just...

It weighs just under 150 g.

Exercise 3:

Give the four different measurements of this zirconium block

- ✓ It is 4.9 cm.....
- ✓ It has a width ofcm.
- ✓in height.
- ✓147.15 g.

Four Different Measurements:

It is 4.9 cm...

It measures 4.9 cm in length.

It has a width of...

The width is approximately 4.2 cm.

...in height.

Its height is roughly 1.1 cm.

...147.15 g.

The weight is approximately 147.15 g.