Time

Level 2

I can use and interpret electronic and paper-based timetables and schedules to plan events and activities, and make time calculations as part of my planning. **MNU 2-10a**

I can carry out practical tasks and investigations involving timed events and can explain which unit of time would be most appropriate to use. **MNU 2-10b**

Using simple time periods, I can give a good estimate of how long a journey should take, based on my knowledge of the link between time, speed and distance. **MNU 2-10c**

Level 3

Using simple time periods, I can work out how long a journey will take, the speed traveled at or distance covered, using my knowledge of the link between time, speed and distance. **MNU 3-10a**

Level 4

I can research, compare and contrast aspects of time and time management as they impact on me. **MNU 4-10a**

I can use the link between time, speed and distance to carry out related calculations. **MNU 4-10b**

12 Hour / 24 hour Clock

In order that pupils confidently read timetables and schedules it is essential they are able to read both 12 hour and the equivalent 24 hour clock. It is important they recognise that bus, train and plane timetables will normally be written in 24 hour clock.
Examples:

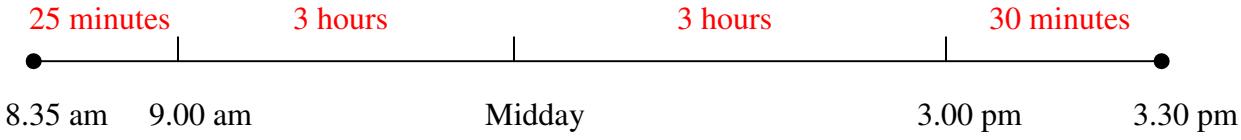
12 Hour Time	24 Hour Time
3am	03:00
11am	11:00
Midday	12:00
2pm	14:00
10pm	22:00
Midnight	00:00

Simple rule: After midday add 12 to the hour to convert from 12 hour to 24 hour time. Or to convert from 24 hour to 12 hour subtract twelve if the hour is greater than 12 (not equal to).

Time Intervals

It is best to use a 'timeline' to calculate a time interval. For example:

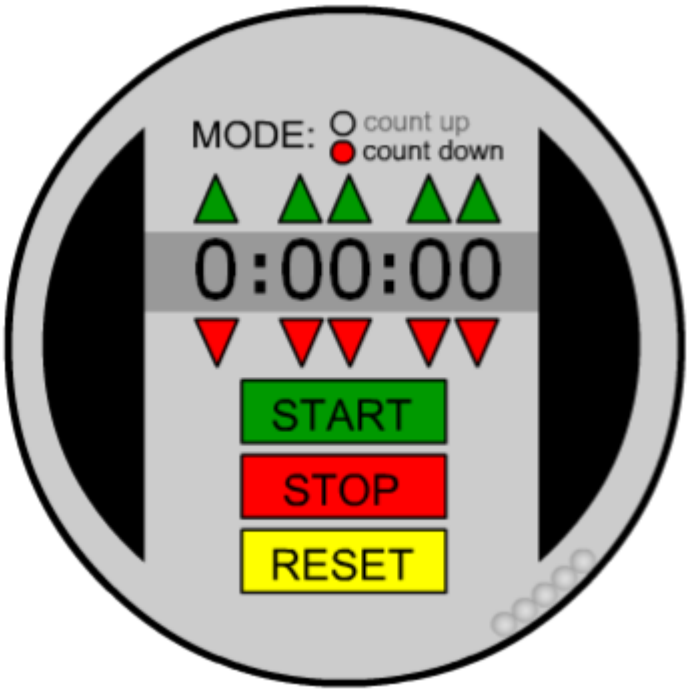
How long is the school day?



Total time = 6 hours 55 minutes

Stop Clocks

Within science, experiments are conducted which make use of **stop clocks**.



The stopwatch displays:

'minutes : seconds : tenths and hundredths of seconds'

Some pupils read the value straight off the stopwatch but in science, time is generally recorded in seconds for experiments. Therefore, we need to convert minutes to seconds and add the remaining seconds to this value. Normally pupils would round to the nearest second.

For Example: 2:40:75 = 161 seconds

'Distance, Speed, Time'

Before carrying out speed or distance calculations it is essential to consider the units of time. In particular, the need to convert from hours and minutes into decimal hours.

To do this, divide the minutes by sixty to write as a decimal.

E.g. 1 hour 42 minutes = 1.7 hours

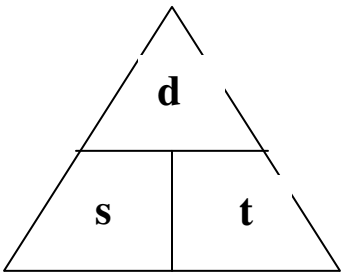
$42 \div 60$

To convert back from decimal hours into hours and minutes when calculating time simply multiply only the decimal by sixty to calculate the minutes.

E.g. 2.8 hours = 2 hours 48 minutes

0.8×60

'Distance, Speed, Time' – using formula



$$d = st$$

$$s = \frac{d}{t}$$

$$t = \frac{d}{s}$$

The triangle can be used to generate the formula using the cover up method. For example if we cover the 'd' we can see that 's' and 't' sit next to each other and under normal algebra laws this indicates a multiplication calculation. If we cover "s" we see that "d" sits o top of "t" which indicates a division.

AD / BC

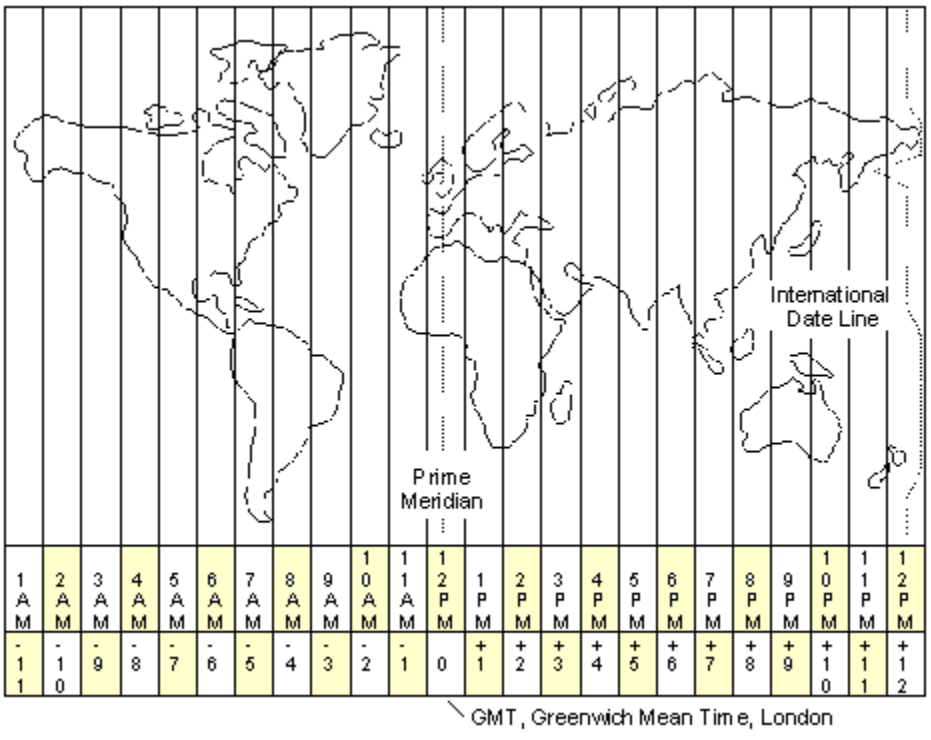
The History department make use of the terms AD and BC when discussing the timing of events.

BC – 'Before Christ'

AD – "anno domini" which means "in the year of our Lord."
- more commonly thought of as 'After Death'

World Time

The map below illustrates time differences across the world.



Measure

Level 2

I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure. **MNU 2-11a**

I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems. **MNU 2-11b**

I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object. **MNU 2-11c**

Level 3

I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task and using a formula to calculate area or volume when required. **MNU 3-11a**

Level 4

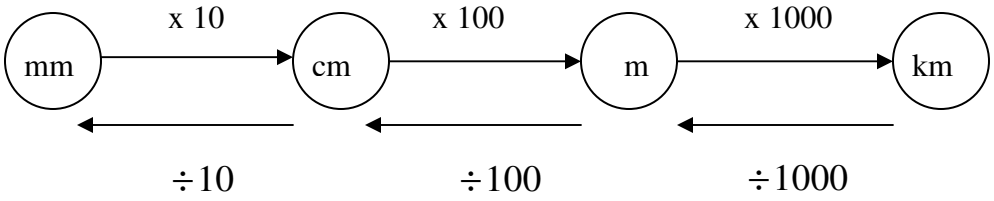
I can apply my knowledge and understanding of measure to everyday problems and tasks and appreciate the practical importance of accuracy when making calculations. **MNU 4-11a**

Length

Only metric units of length should be taught. Units of length are as follows:

- Millimetre (mm)
- Centimetre (cm)
- Metre (m)
- Kilometre (km)

To convert between the units the following number machine can be used:



Area

Area of square = $1cm^2$ (one squared cm)

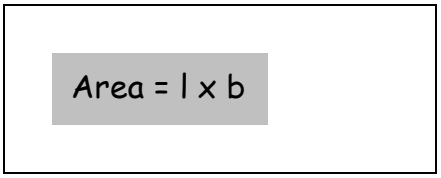
Area is measured in square units. Commonly used units of area are:

- Squared Millimetre (mm^2)
- Squared Centimetre (cm^2)
- Squared Metre (m^2)
- Squared Kilometre (km^2)

Large areas, on farms for example, are still measured in acres.

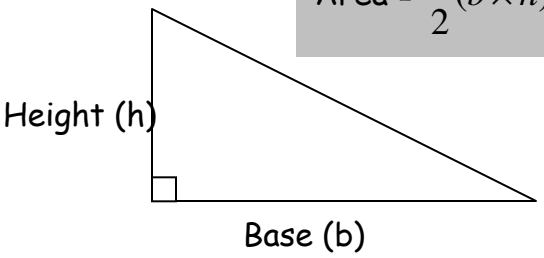
Calculating the area of 2D shapes

1. Rectangle / Square

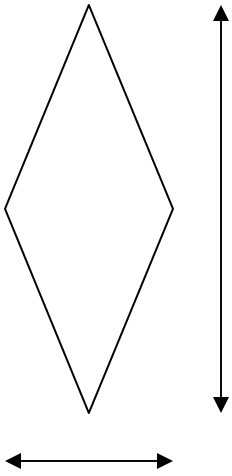


2. Triangle

Area = $\frac{1}{2}(b \times h)$

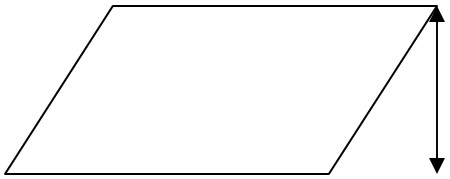


3. Rhombus / kite



Area = $\frac{1}{2}(d_1 \times d_2)$

4. Parallelogram

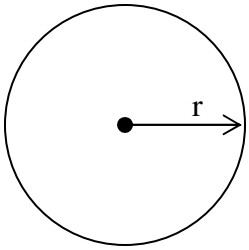


Area = $(b \times h)$

5. Trapezium

Area = $\left(\frac{l_1 + l_2}{2}\right) \times h$

6. Circle



Area = πr^2

Perimeter

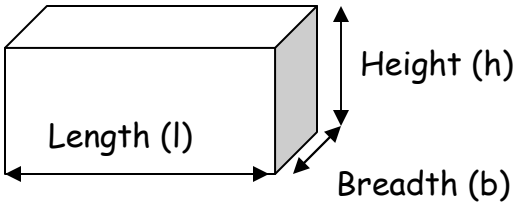
The perimeter of a 2D shape is simply the sum of each side. Pupils are taught to 'walk round' the shape and add each side. Formulae can be generated for the perimeter of a rectangle:

Perimeter of a rectangle = L+B+L+B
= 2L+2B
= 2(L+B),

where L represents the length and B represents the breadth.

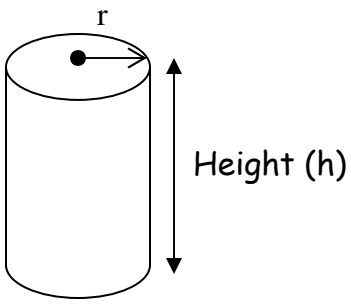
Volume

1. Cube / Cuboid



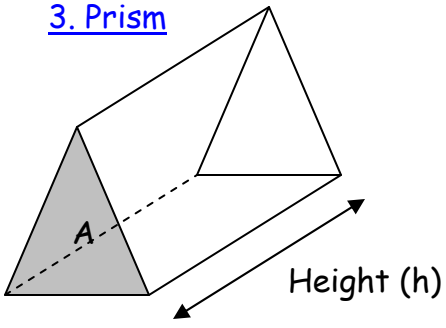
Volume = l x b x h

2. Cylinder



Volume = $\pi r^2 h$

3. Prism



Volume = A x h

(Where A represents the cross-sectional area)

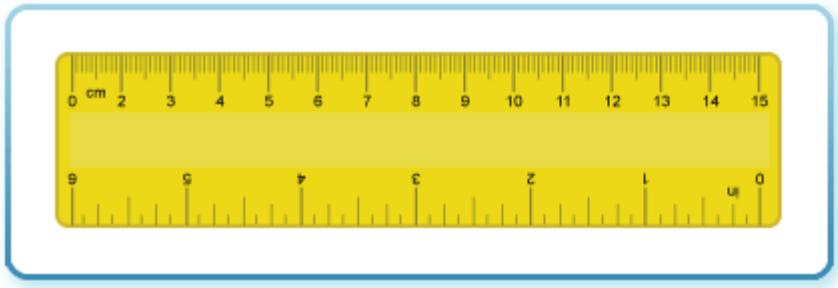
Reading Scales

Measuring capacity

Capacity or **volume** is a measure of how much space something takes up. Measuring spoons or measuring jugs can be used to measure capacity.

Measuring length

Length is a measure of how long or wide something is. Rulers and tape measures can be used to measure length.



Measuring mass

Mass is a measure of how **heavy** something is. Scales can be used to measure mass.

Reading measurement scales

To read a scale, first work out how much each mark or division on the scale represents.

For Example:

- There is one mark between each 100ml, so each 100ml is **divided** into 2 parts.
- 100 divided by 2 = 50.
- So each mark must represent 50ml.