



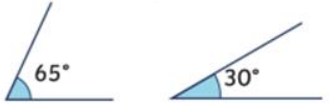
# Angles

An angle is created when two straight lines meet at a point or an intersect.

**Right angle**  
The intersection of perpendicular lines creates a right angle.



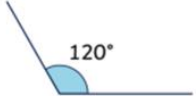
**Acute angle**  
Any angle measuring more than 0 degrees and less than 90 degrees is acute.



**Reflex Angles**  
Any angle that measures greater than 180° is called a reflex angle.

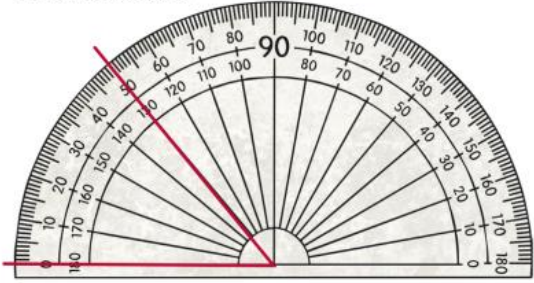


**Obtuse angle**  
Any angle measuring more than 90 degrees but less than 180 degrees is obtuse.

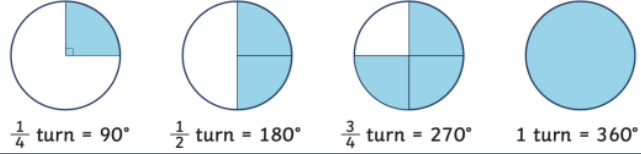


# Year 5 Shape and Angles

**Measuring and Drawing Angles**  
To measure angles, we use a protractor. Look carefully at how the numbers on the scale count from 0° to 180° in both directions.

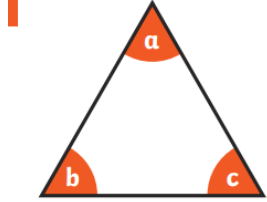


Multiples of 90° can be used as descriptions of a turn.

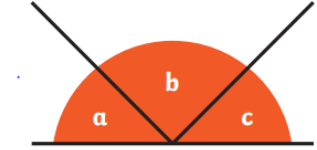


## 2D Shape

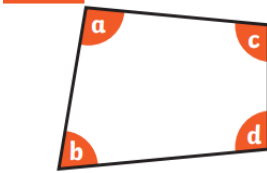
A polygon can have three or more sides.	3 sides	4 sides	5 sides	6 sides	7 sides	8 sides
	Triangle	Quadrilateral	Pentagon	Hexagon	Heptagon	Octagon
<b>Regular Polygons</b> <i>all sides are equal length and all internal angles are equal</i>						
<b>Examples of Irregular Polygons</b> <i>any polygon that is not regular</i>						



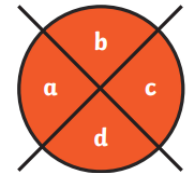
Angles in a triangle add up to 180°



Angles on a straight line add up to 180°

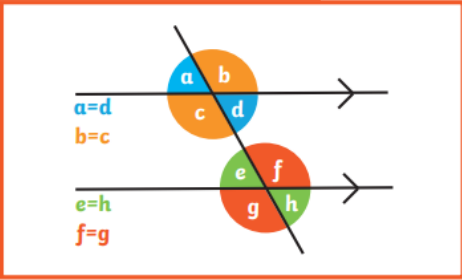


Angles in a quadrilateral add up to 360°



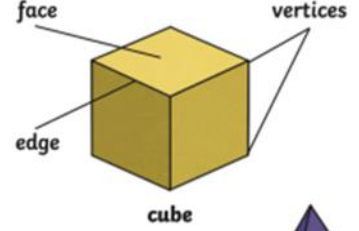
Angles around a point add up to 360°

### vertically opposite angles



**Vocabulary**  
degrees turn angle  
acute obtuse right angle reflex angle  
360 full turn 180 half turn 90 quarter turn 270  
3/4 turn clockwise anti-clockwise  
angle on a straight line angles round a point  
greater than less than  
protractor position vertex scale  
length perimeter compound shape regular  
irregular polygon sides  
3D shapes faces vertices edges

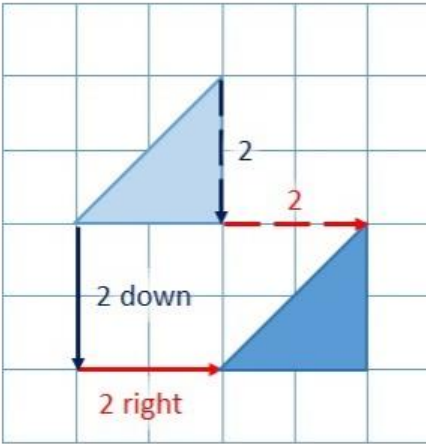
## Describe 3d shapes



Name	Surfaces		Edges		Vertices	Picture
	Flat	Curved	Flat	Curved		
sphere	0	1	0	0	0	
cube	6	0	12	0	8	
cuboid	6	0	12	0	8	
cone	1	1	0	1	0	
cylinder	2	1	0	2	0	
square-based pyramid	5	0	8	0	5	
tetrahedron	4	0	6	0	4	
triangular prism	5	0	9	0	6	
pentagonal prism	7	0	15	0	10	
hexagonal prism	8	0	18	0	12	
octagonal prism	10	0	24	0	16	
octahedron	8	0	12	0	6	



# Translation

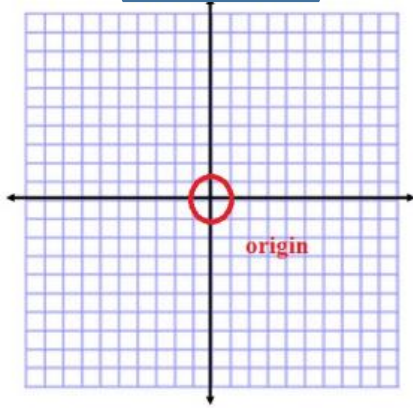


Points can be translated **up**, **down**, **left** and **right**

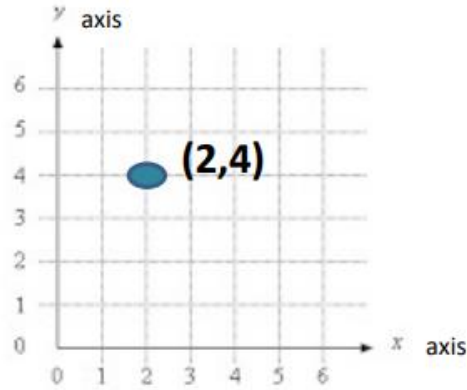


# Year 5 Position and Direction

## Coordinates



## Coordinate Grid



Remember, when plotting points, we use the **x-axis first**, then **y-axis!**

Along the corridor and up the stairs!



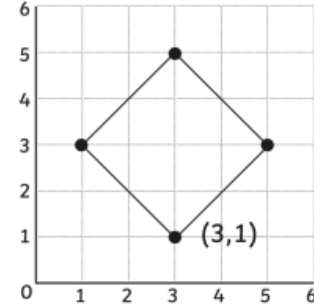
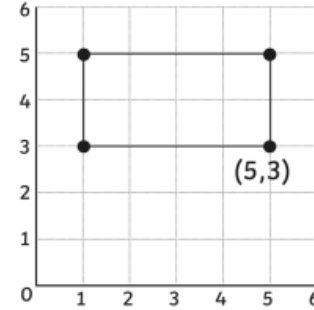
Along the X axis first



Up the Y axis second

## Plotting 2d shapes

Each vertex (corner) of a 2D polygon can be represented as a co-ordinate on a 2D grid.

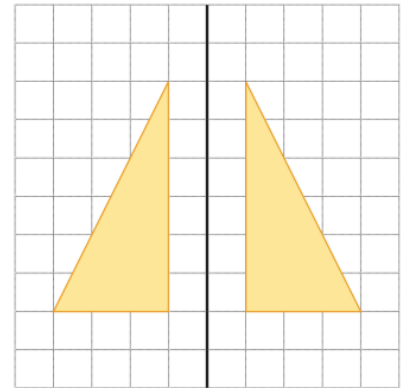


- coordinates
- axis
- plot point
- translation
- translate
- vertex
- direction
- line of symmetry
- symmetrical
- horizontal
- vertical
- diagonal
- reflection

## Reflection

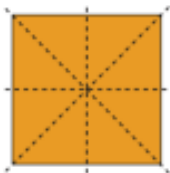
A shape is reflected when it is flipped over a mirror line.

The reflected image is identical to the original. This means that the measurements of the sides and angles have not changed. Each point of the reflected shape is the same distance from the mirror line as the original shape.

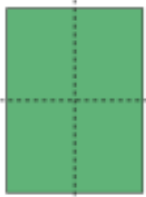


## Lines of symmetry

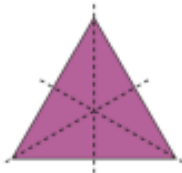
A square has four lines of symmetry.



A rectangle has two lines of symmetry.



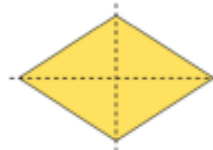
An equilateral triangle has three lines of symmetry.



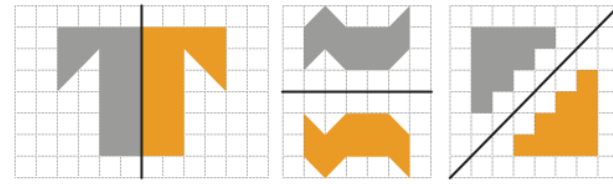
An isosceles triangle has one line of symmetry.



A rhombus has two lines of symmetry.



Patterns and shapes can be reflected in a mirror line. Mirror lines can be vertical, horizontal or diagonal.





Multiplying and dividing by 10, 100 and 1000

Tenths, hundredths and thousandths

# Year 5 Decimals

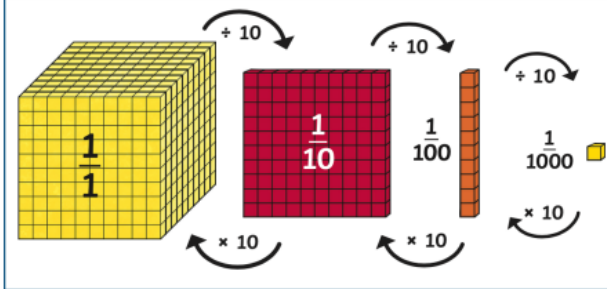
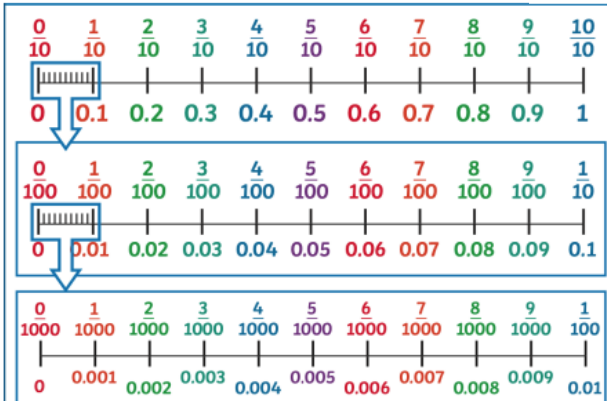
Sequences

**Vocabulary**  
 addition subtraction  
 tenths hundredths  
 compliments  
 number bonds  
 partition  
 decimal point  
 decimal places  
 column exchange  
 increasing  
 decreasing value  
 multiply divide

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
	3	8		
3	8			

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
	0	3	8	
3	8			

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
	0	0	3	8
3	8			



Write the rule for each sequence.

$+ 0.3$     $+ 0.3$   
 $0.4, 0.7, 1, 1.3, 1.6$    Add 0.3  
 $+ 0.3$

$- 0.05$     $- 0.05$   
 $3.45, 3.40, 3.35, 3.30, 3.25$    Subtract 0.05  
 $- 0.05$

Compliments to 1

100	
21	79

1	
0.21	0.79

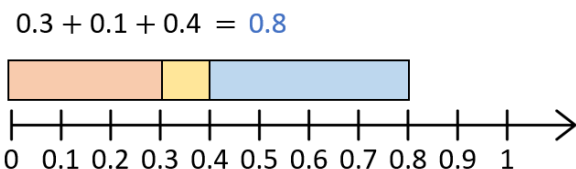
Decimals as fractions

$$0.71 = \frac{71}{100} = \frac{7}{10} + \frac{1}{100}$$

$$0.37 = \frac{37}{100} = \frac{3}{10} + \frac{7}{100}$$

Adding and subtracting decimals

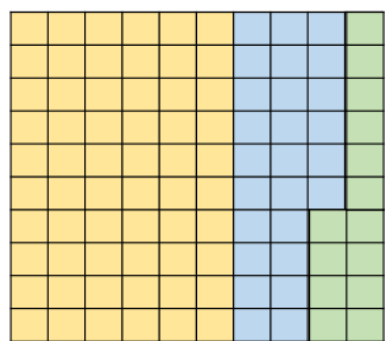
$0.8 + 0.001 = 0.801$
$1.031 - 0.23 = 0.801$
$0.4005 + 0.4005 = 0.801$



$0.7 + 0.3 = 1$

$1 = 0.08 + 0.92$

$1 = 0.6 + 0.14 + 0.26$





# Year 5 Negative Numbers

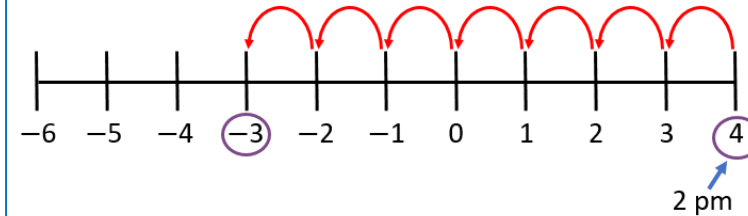
What is a negative number?

A number that is less than 0

At 2 pm, it is 4 degrees Celsius.

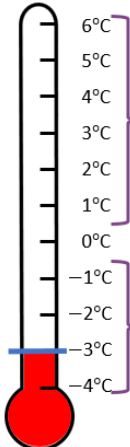
At 2 am, it is 7 degrees colder.

What is the temperature at 2 am?



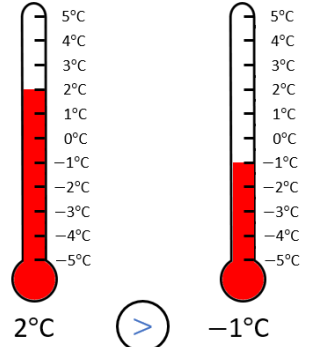
-3°C Negative 3 degrees Celsius

**Vocabulary**  
negative  
forwards  
backwards  
sequence  
temperature  
difference zero  
ascending  
descending



Numbers greater than zero are called positive numbers.

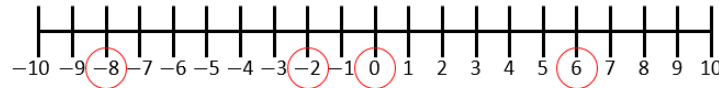
Numbers less than zero are called negative numbers.



Positive numbers are greater than negative numbers.

Ordering negative numbers

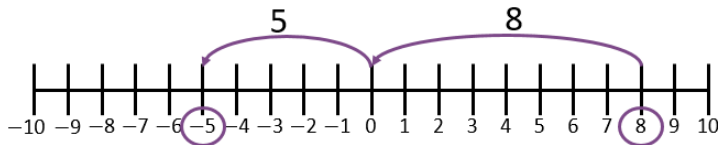
Use the number line to write the numbers in ascending order.



-8   -2   0   6

Finding the difference

Use 0 to help find the difference between 8 and -5



The distance from 8 to zero is 8


The distance from zero to -5 is 5

So the difference between 8 and -5 is 13




Eva has £10 in her bank account and buys a coat for £15  
She now has -£5

**Ascending**  
smallest to largest



Ascending means going up

**Descending**  
largest to smallest



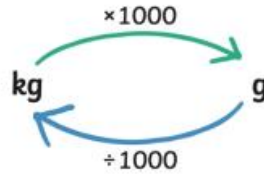
Descending means going down



### Converting mass



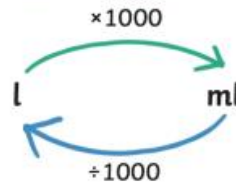
1000g = 1kg  
 $\frac{1}{10}$ kg = 0.1kg = 100g  
 $\frac{1}{4}$ kg = 0.25kg = 250g  
 $\frac{1}{2}$ kg = 0.5kg = 500g  
 $\frac{3}{4}$ kg = 0.75kg = 750g



### Converting capacity

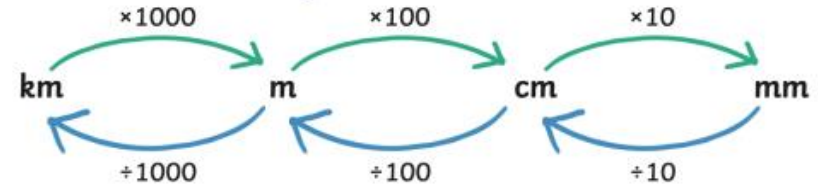


1000ml = 1 litre  
 $\frac{1}{10}$ l = 0.1l = 100ml  
 $\frac{1}{4}$ l = 0.25l = 250ml  
 $\frac{1}{2}$ l = 0.5l = 500ml  
 $\frac{3}{4}$ l = 0.75l = 750ml  
 $\frac{1}{100}$ l = 0.01l = 10ml



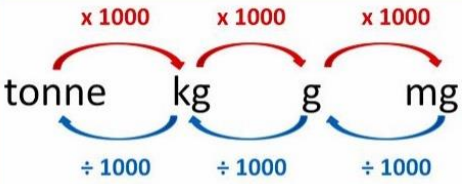
## Year 5 Converting Units

### Converting length

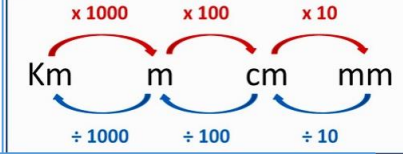
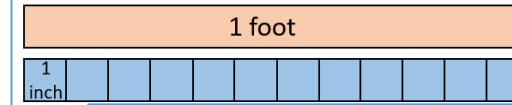


1000 metres = 1 kilometre  
 100cm = 1m  
 10mm = 1cm  
 $\frac{1}{10}$ km = 0.1km = 100m  
 $\frac{1}{4}$ km = 0.25km = 250m  
 $\frac{1}{2}$ km = 0.5km = 500m  
 $\frac{3}{4}$ km = 0.75km = 750m

**Vocabulary**  
 mass  
 Kilogram  
 kilometre  
 millimetre  
 millilitres  
 length  
 metric  
 imperial  
 units  
 convert  
 approximately equal to  
 inches  
 lbs  
 pints  
 seconds  
 minutes  
 hours  
 timetable



12 inches is equal to 1 foot



1 inch is approximately equal to 2.5 cm

12 months = 1 year

Month	Number of Days
January	31
February	28 (non-leap) 29 (leap)
March	31
April	30
May	31
June	30
July	31
August	31
September	30
October	31
November	30
December	31

### Some key vocabulary - v

Milli	one thousand
Centi	one hundredth
Kilo	one thousand

### Minute

1 minute = 60 seconds



### Hour

1 hour = 60 minutes



### Day

1 day = 24 hours



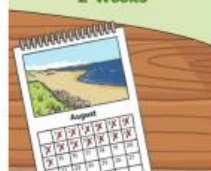
### Week

1 week = 7 days



### Fortnight

1 fortnight = 2 weeks



### Month

January = 31 days  
 February = 28 days (29 on a leap year)  
 March = 31 days  
 April = 30 days  
 May = 31 days  
 June = 30 days  
 July = 31 days  
 August = 31 days  
 September = 30 days  
 October = 31 days  
 November = 30 days  
 December = 31 days



### Year

1 year =  
 12 months =  
 52 weeks =  
 365 days



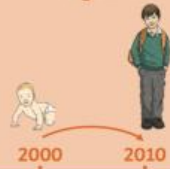
### Leap Year

1 leap year =  
 366 days



### Decade

1 decade =  
 10 years



### Century

1 century =  
 100 years



### Millennium

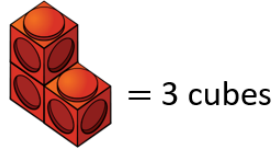
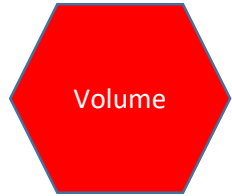
1 millennium =  
 1000 years





# Year 5

## Volume and Capacity

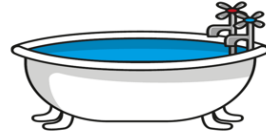


= 3 cubes

Volume = 3 cubes

**Volume** is the amount of space an object or liquid takes up.

The volume of a small bath is 250,000 cm<sup>3</sup>



Estimate the volume of



A microwave

36,000 cm<sup>3</sup>



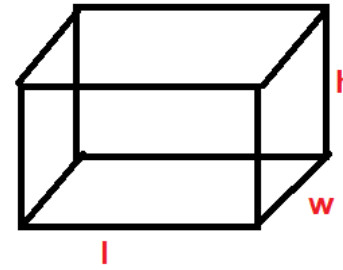
A rucksack

42,000 cm<sup>3</sup>



A water bottle

1,000 cm<sup>3</sup>

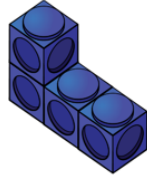
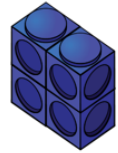


l: Length  
w: Width  
h: Height

Volume of cuboid = length \* width \* height

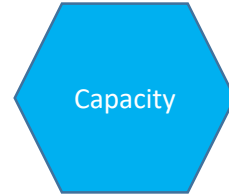
## Vocabulary

Volume  
cubic  
centimetres  
estimate  
compare  
capacity



The volume of each 3-D shape is 4 cubes.

The cubes have been arranged differently.



## Capacity

How much a container can hold.

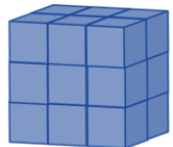


The capacity of Wembley Stadium is 90,000

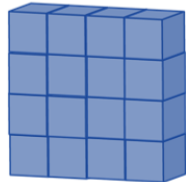
## Volume

The amount of space an object occupies.

18 cubes



16 cubes



Each container has the same amount of juice in it. Which container has the greater capacity?



A



B

Container A has the greater capacity as it can hold more liquid.