

# Year 5 Number and Place Value

## Place Value to One Million

<b>M</b> Millions 1 000 000	<b>Hth</b> Hundred Thousands 100 000	<b>Tth</b> Ten Thousands 10 000	<b>Th</b> Thousands 1000	<b>H</b> Hundreds 100	<b>T</b> Tens 10	<b>O</b> Ones 1	<b>t</b> Tenths 0.1	<b>h</b> Hundredths 0.01	<b>th</b> Thousandths 0.001

## Count Forwards and Backwards through 0

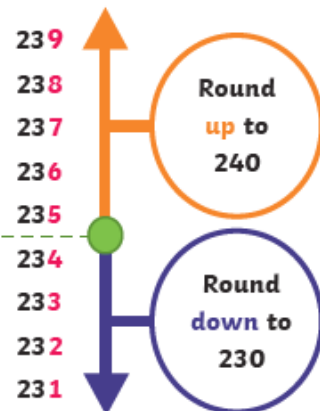


## Roman Numerals to 1000

- I = ONE
- V = five
- X = ten
- L = fifty
- C = hundred
- D = five hundred
- M = thousand

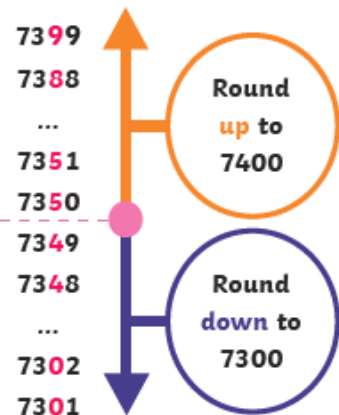


### Rounding to Nearest 10



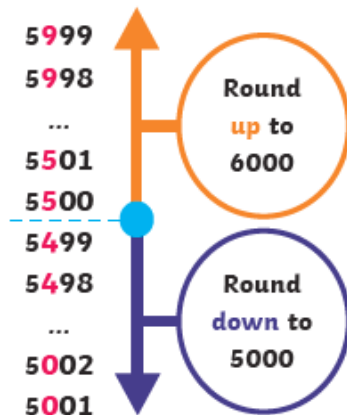
**Remember:** The red digit is the one to consider.

### Rounding to Nearest 100



**Remember:** The red digit is the one to consider.

### Rounding to Nearest 1000



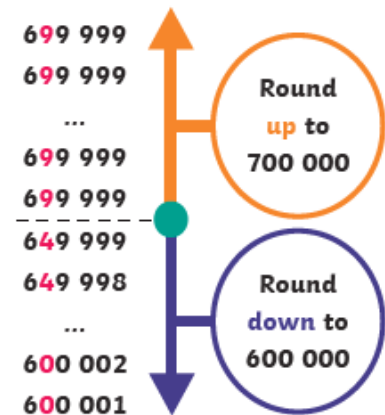
**Remember:** The red digit is the one to consider.

### Rounding to Nearest 10 000



**Remember:** The red digit is the one to consider.

### Rounding to Nearest 100 000



**Remember:** The red digit is the one to consider.

# Year 5 Addition

## Addition: 5-digit numbers

sum

1

$$\begin{array}{r} 85683 \\ +45978 \\ \hline \end{array}$$

Place the numbers one on top of the other, lining up the hundreds, tens and

2

$$\begin{array}{r} 85683 \\ +45978 \\ \hline 1 \end{array}$$

Add the ones and write the answer.

3

$$\begin{array}{r} 85683 \\ +45978 \\ \hline 1 \end{array}$$

Carry any tens to the tens column.

4

$$\begin{array}{r} 85683 \\ +45978 \\ \hline 61 \end{array}$$

Add the tens including any tens you have carried. Carry any hundreds to the hundreds column.

difference

counting on

5

$$\begin{array}{r} 85683 \\ +45978 \\ \hline 661 \end{array}$$

Add the hundreds including any hundreds you have carried.

6

$$\begin{array}{r} 85683 \\ +45978 \\ \hline 1661 \end{array}$$

Add the thousands including any thousands you've carried.

7

$$\begin{array}{r} 85683 \\ +45978 \\ \hline 131661 \end{array}$$

Add the tens thousands including any thousands you've carried.

8

$$\begin{array}{r} 85683 \\ +45978 \\ \hline 131661 \end{array}$$

Check your answer.

counting back

minus

less

### Rounding to Check Answers

Rounding is a great way to make a number simpler while keeping it close to the value that it was. Rounding can be used to help check answers to calculations.

For example:  $3487 + 2725 = 6212$

$3500 + 2700 = 6200$

# Year 5 Multiplication and Division

## Factors and Multiples

A multiple is a number that can be divided evenly by a given number.

For example,  $12 \times 1 = 12$ ,  
 $12 \times 2 = 24$ ,  $12 \times 3 = 36$

The multiples of 12 include: 12, 24, 36, 48...

A factor is a number that is multiplied by another number to get a product.

For example,  $12 \div 1 = 12$ ,  
 $12 \div 2 = 6$ ,  $12 \div 3 = 4$

The factors of 12 are: 1, 2, 3, 4, 6 and 12.

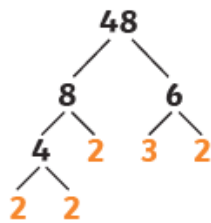
## Prime Numbers

A natural number greater than 1 with no divisors other than 1 and itself.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

## Prime Factors

Prime factors are the factors of a number that are prime. They can be found using a diagram like this:



## Common Factors

A common factor is a number which is a factor of two or more other numbers. For example, 3 is a common factor of 6 and 9.

## Multiplying and Dividing by 10, 100 and 1000

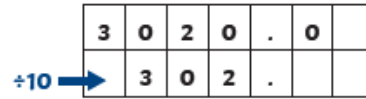
When dividing a number by 10, 100 or 1,000 the value of each digit is divided, sometimes giving a decimal point.

$$3020 \div 10 = 302$$

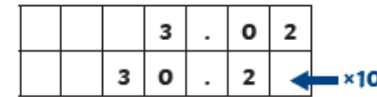
When multiplying a decimal number by 10, 100 or 1000, the value of each digit is multiplied.

$$3.02 \times 10 = 30.2$$

Each digit moves the necessary number of places to the right because dividing by 10 decreases the number.



Each digit moves the necessary number of places left because multiplying by 10, 100, or 1000 increases the number.



## Square and Cube Numbers

$$1^2 = 1 \times 1 = 1$$

$$2^2 = 2 \times 2 = 4$$

$$3^2 = 3 \times 3 = 9$$

$$4^2 = 4 \times 4 = 16$$

$$5^2 = 5 \times 5 = 25$$

$$6^2 = 6 \times 6 = 36$$

$$7^2 = 7 \times 7 = 49$$

$$8^2 = 8 \times 8 = 64$$

$$9^2 = 9 \times 9 = 81$$

$$10^2 = 10 \times 10 = 100$$

$$11^2 = 11 \times 11 = 121$$

$$12^2 = 12 \times 12 = 144$$

$$1^3 = 1 \times 1 \times 1 = 1$$

$$2^3 = 2 \times 2 \times 2 = 8$$

$$3^3 = 3 \times 3 \times 3 = 27$$

$$4^3 = 4 \times 4 \times 4 = 64$$

$$5^3 = 5 \times 5 \times 5 = 125$$

$$6^3 = 6 \times 6 \times 6 = 216$$

$$7^3 = 7 \times 7 \times 7 = 343$$

$$8^3 = 8 \times 8 \times 8 = 512$$

$$9^3 = 9 \times 9 \times 9 = 729$$

$$10^3 = 10 \times 10 \times 10 = 1000$$

$$11^3 = 11 \times 11 \times 11 = 1331$$

$$12^3 = 12 \times 12 \times 12 = 1728$$

## 4-digit $\times$ 2-digit

carrying not shown

$$\begin{array}{r}
 5368 \\
 \times 24 \\
 \hline
 21472 \\
 107360 \\
 \hline
 128832
 \end{array}$$

Write the numbers above each other in columns.

Multiply  $5368 \times 4$

Multiply  $5368 \times 20$

Add the products

## Short Division

$$84 \div 6$$

1 Partition 84 into tens and ones.

Work out how many 6s divide into 80 so that the answer is a multiple of 10. In this case, the highest multiple of 10 divisible by 6 is 60. Partition 84 into 60 and 24 then divide each number by 6.

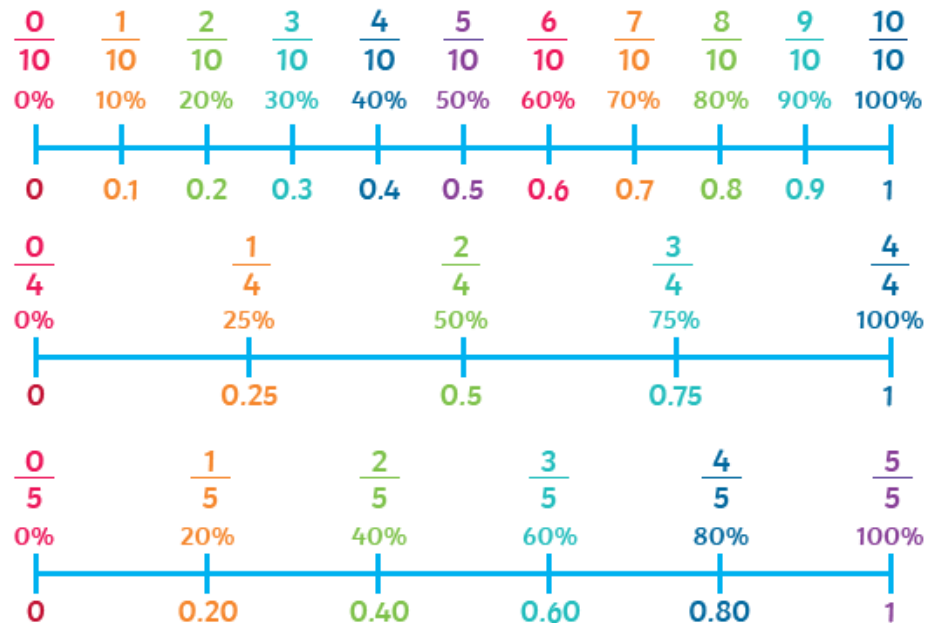
2 Combine the totals.

$$\begin{array}{r}
 10 + 4 \\
 6 \overline{) 60 + 24}
 \end{array}$$

3 This can be shortened to:

$$\begin{array}{r}
 14 \\
 6 \overline{) 84}
 \end{array}$$

# Year 5 Fractions



Percent: Number of parts per 100.

1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
11%	12%	13%	14%	15%	16%	17%	19%	19%	20%
21%	22%	23%	24%	24%	26%	26%	28%	29%	30%
31%	32%	33%	34%	35%	36%	37%	38%	29%	40%
41%	42%	43%	44%	45%	46%	47%	48%	49%	50%
51%	52%	53%	54%	55%	56%	57%	58%	59%	50%
61%	62%	63%	64%	65%	66%	67%	68%	69%	70%
71%	72%	73%	74%	75%	76%	77%	78%	79%	80%
81%	82%	83%	84%	85%	86%	87%	88%	89%	90%
91%	92%	93%	94%	95%	96%	97%	98%	99%	100%

## Equivalent Fractions:

Fractions which have the same value.

## Adding and

### Subtracting Fractions:

When the denominators are the same, you simply add or subtract the numerators.

$$\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$$

When the denominators are not the same, find the lowest common denominator and rewrite the fractions. Then, add or subtract the numerators.

$$\frac{2}{5} + \frac{1}{10} = \frac{4}{10} + \frac{1}{10} = \frac{5}{10} = \frac{1}{2}$$

## Multiplying Fractions:

When multiplying a proper fraction, multiply the numerator by the multiplier.

$$\frac{2}{3} \times 5 = \frac{10}{3} = 3 \frac{1}{3}$$

## Round to the nearest whole

**number:** Round to a number which has no digits beyond the ones place holder. For example, 2, 45, 70.

## Round to one decimal place:

Round to a number which has no digits beyond the tenths place holder. For example, 2.3, 45.1, 70.4

## Round to two decimal place:

Round to a number which has no digits beyond the hundredths place holder. For example, 2.31, 45.19, 70.44

## Mixed Numbers

Mixed numbers contain a whole number and a fraction.

$$2 \frac{1}{4}$$

$2 \frac{1}{4}$  is a mixed number.

The whole number is 2.

The fraction is  $\frac{1}{4}$ .

## Improper Fractions

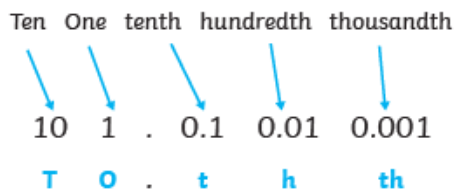
An improper fraction is a fraction where the numerator is greater than or equal to the denominator.

$$\frac{5}{3}$$

← numerator

← denominator

## Tenths, Hundredths and Thousandths:



# Year 5 Measurement

## Length

- 1 kilometre = 1000 metres
- 1 metre = 100 centimetres
- 1 centimetre = 10 millimetres
- 1 kilometre = 0.62 miles
- 1 metre = 1.09 yards
- 1 metre = 3.28 feet
- 1 centimetre = 0.39 inches
- 1 foot = 12 inches
- 1 yard = 3 feet



km  
m  
cm  
mm

km  
m  
yd  
ft

cm  
in  
ft  
yd

## Capacity

- 1 litre = 1000 millilitres
- 1 centilitre = 10 millilitres
- 1 litre = 35.19 fluid ounces
- 1 litre = 1.75 pints
- 1 litre = 0.21 gallons
- 1 gallon = 8 pints



l  
cl  
ml

l  
fl oz  
pt  
gal

A **rectilinear** shape is one which is bound by straight lines and can be divided into rectangles or triangles in order to find its area.

## Mass

- 1 tonne = 1000 kilograms
- 1 kilogram = 1000 grams
- 1 gram = 1000 milligrams
- 1 gram = 0.035 ounces
- 1 kilogram = 2.2 pounds
- 1 stone = 14 pounds
- 1 stone = 6.35 kilograms



t  
kg  
g  
mg

g  
oz  
kg  
lb  
s

## Temperature

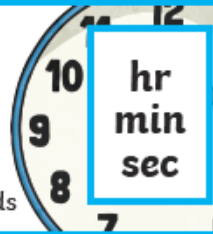
- 1° celsius = 33.8° fahrenheit
- 0° celsius = 32° fahrenheit



°C  
°F

## Time

- 1 day = 24 hours
- 1 hour = 60 minutes
- 1 minute = 60 seconds



hr  
min  
sec

## Currency

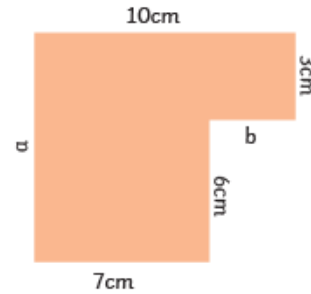
- 1 pound = 100 pence



£  
p

## Finding the perimeter of a Rectilinear Shape

You can calculate the perimeter of a rectilinear shape by adding together the length of each side. **You may need to calculate the length of any sides not given.**



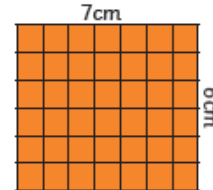
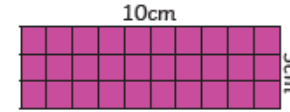
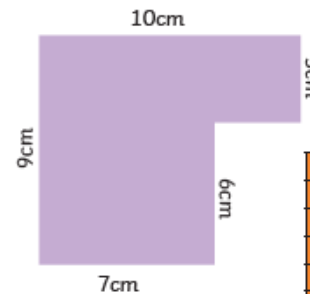
$$a = 6\text{cm} + 3\text{cm} = 9\text{cm}$$

$$b = 10\text{cm} - 7\text{cm} = 3\text{cm}$$

**The perimeter:**

$$10\text{cm} + 3\text{cm} + 3\text{cm} + 6\text{cm} + 7\text{cm} + 9\text{cm} = \mathbf{38\text{cm}}$$

You can calculate the area of shapes made up of rectangles by breaking them down into individual rectangles.



**The area:**

$$10\text{cm} \times 3\text{cm} = \mathbf{30\text{cm}^2}$$

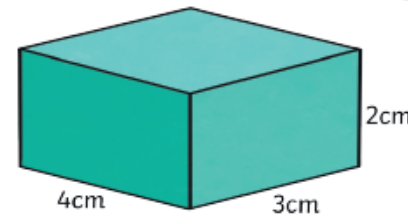
$$6\text{cm} \times 7\text{cm} = \mathbf{42\text{cm}^2}$$

$$30\text{cm}^2 + 42\text{cm}^2 = \mathbf{72\text{cm}^2}$$

## Volume

3D shapes have volume.

**length × height × depth = volume**



$$4\text{cm} \times 2\text{cm} \times 3\text{cm} = \mathbf{24\text{cm}^3}$$

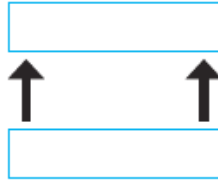


# Year 5 Position and Direction

## Translate / Translation

A shape is translated when it is moved without rotating or resizing.

Every point of the shape moves the same distance in the same direction.



## Reflect / Reflection

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



Every point of the shape is the same distance from the mirror line as the same point on the reflected shape.

## Parallel

Parallel lines are always the same distance apart and never touching.



## Vertex / Vertices

The corner of a shape is called a vertex.

The plural is vertices. A triangle has 3 vertices.

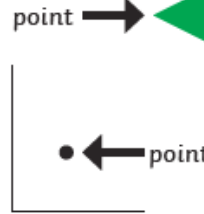
vertex



## Point

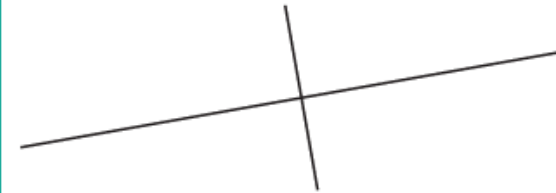
A point is an exact location.

It has no size, only position. They are shown by dots or parts of a line, but they have no size.



## Perpendicular

Perpendicular lines meet at a right angle.

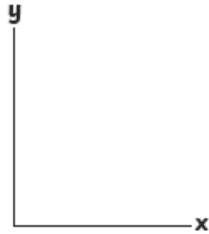


## Axis / Axes

A coordinate grid has axes.

The x axis is horizontal.

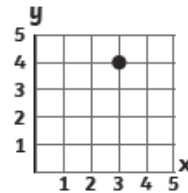
The y axis is vertical.



## Coordinates

Coordinates mark the location of a point on a coordinate grid.

The coordinates are written in brackets in the format (x,y) where x is how far along and y is how far up.



left



right



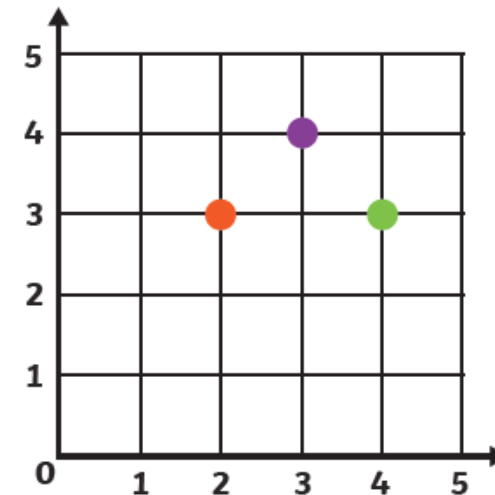
up



down

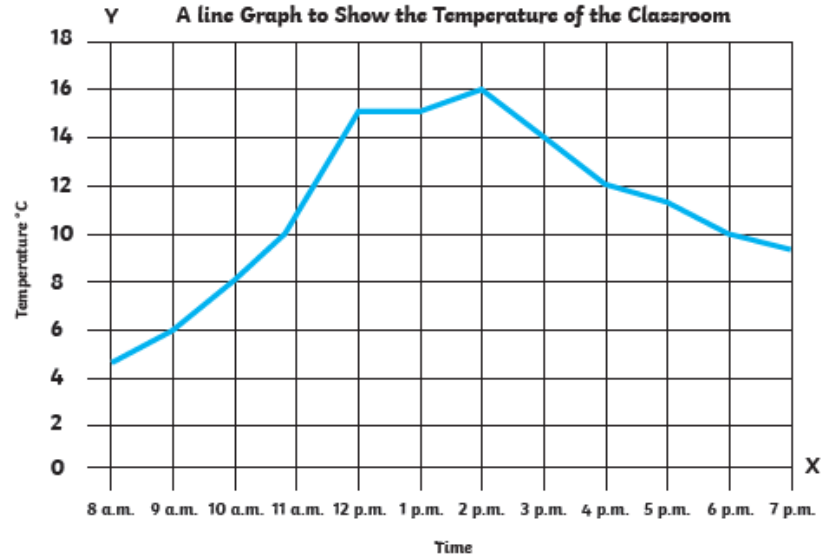


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# Year 5 Statistics

## Line Graph Comparison, Sum and Difference Problems



**Compare:** Look at two or more points on the graph and identify similarities or differences.

**Sum:** Finding the total of two or more points.

**Difference:** Finding the numerical difference between two points.

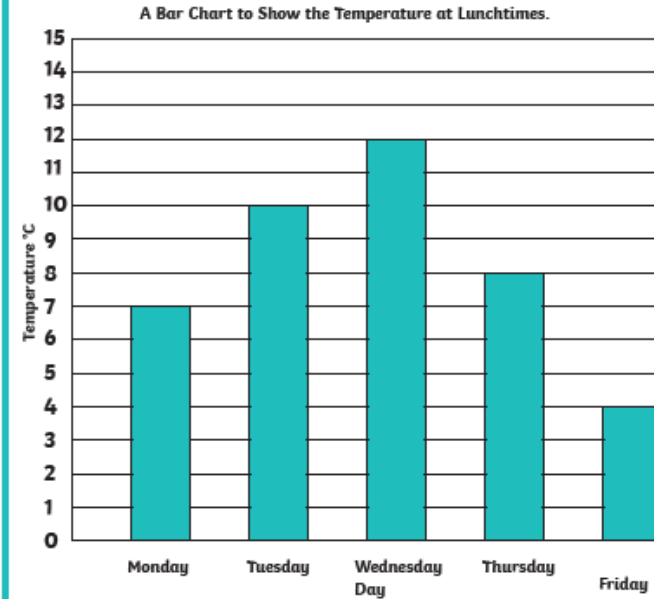
Mill Road	0726	0800	0842
High St.	0729	0803	0845
Southey Green	0742	0816	0858
Pitsmoor Road	0759	0833	0915
Snig Hill	0812	0846	0928
Hunters Bar	0830	0904	0946
Fulwood	0845	0919	1001

## Timetables

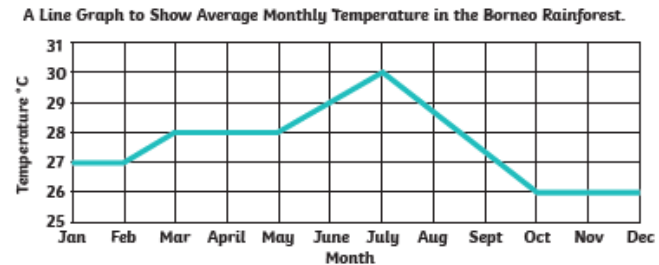
Timetables tell the reader what time a certain event will happen. In this case, it shows what time each bus will reach a stop.

## Time Graph

Time graphs show the changing of data over time.  
Here is a bar chart which shows the change in temperature over five days.



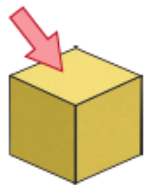
Here is a line graph which shows the change in temperature over twelve months.



# Year 5 Properties of Shape Word Mat

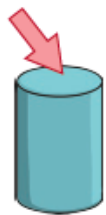
## cube

A cube has 6 square faces.



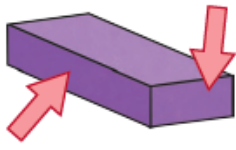
## cylinder

A cylinder has two circular faces.



## cuboid

A cuboid has 6 rectangular faces.



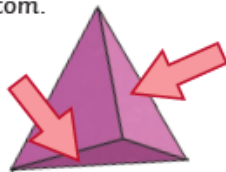
## cone

A cone has a circular face.



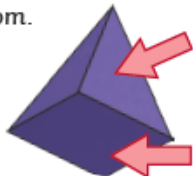
## triangular-based pyramid

A triangular-based pyramid has 4 triangular faces. One of the triangular faces is on the bottom.



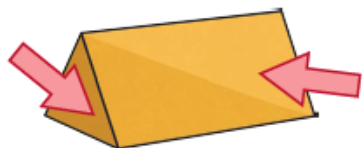
## square-based pyramid

A square-based pyramid has 4 triangular faces. It has a square face on the bottom.



## triangular prism

A triangular prism has 2 triangular faces. It has 3 rectangular faces.



Angles are measured in degrees ( $^{\circ}$ ).

## Regular and Irregular Shapes

### Regular



Square



Triangle



Pentagon



Hexagon

### Irregular



Rectangle



Triangle



Pentagon



Hexagon

A **rectilinear** shape is one which is bound by straight lines and can be divided into rectangles or triangles in order to find its area.



### Parallel



### Perpendicular



### Equal

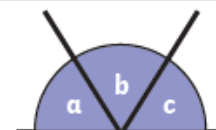
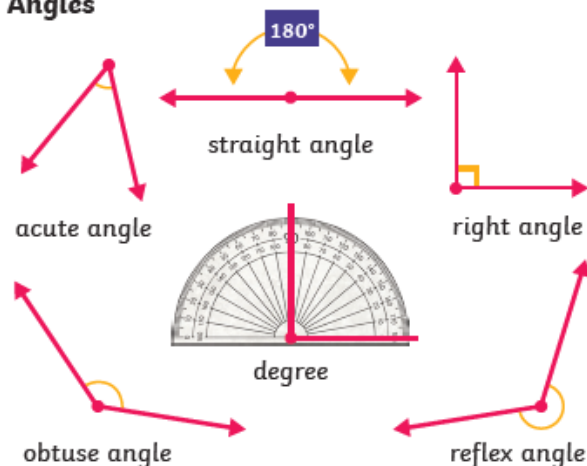


## How to Use a Protractor

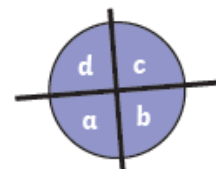
- 1 Place the cross of circle at the point (vertex) of the angle that you are measuring.
- 2 Read from the zero on the outer scale of your protractor.
- 3 Count the degree lines carefully.



## Angles



Angles on a straight line add up to  $180^{\circ}$



Angles around a point total  $360^{\circ}$ . This is a whole turn.