Round to the nearest 100,000

681,294
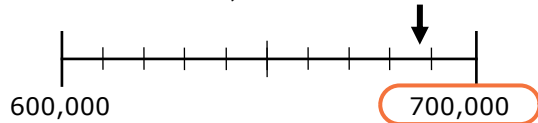
600,000 — 700,000

Round to the nearest 1,000

681,294

681,000 — 682,000
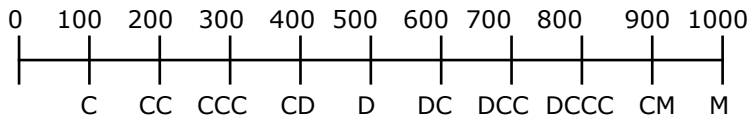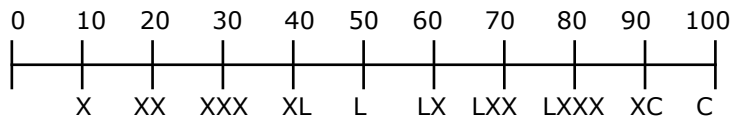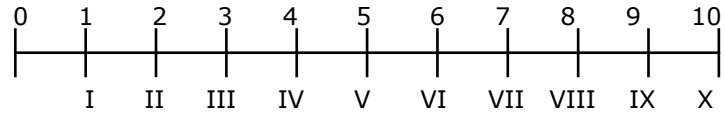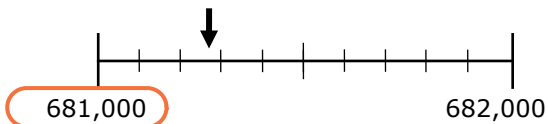
HTh	TTh	Th	H	T	O
6	8	1	2	9	4
6	0	0	0	0	0
	8	0	0	0	0
		1	0	0	0
			2	0	0
				9	0
					4

comparing numbers

$<$ $>$ $=$

less than   more than   equal to

681,294	$<$	700,000
681,294	$>$	600,000
681,294	$=$	680,000 + 1,294

ordering numbers

HTh	TTh	Th	H	T	O
6	8	1	2	9	4
6	8	1	9	2	4
6	8	1	2	4	9

ascending order:
681,249   681,294   681,924

descending order:
681,924   681,294   681,249

0	1	2	3	4	5	6	7	8	9	10
	I	II	III	IV	V	VI	VII	VIII	IX	X

0	10	20	30	40	50	60	70	80	90	100
	X	XX	XXX	XL	L	LX	LXX	LXXX	XC	C

0	100	200	300	400	500	600	700	800	900	1000
	C	CC	CCC	CD	D	DC	DCC	DCCC	CM	M

0   100,000   200,000   300,000   400,000   500,000   600,000   700,000   800,000   900,000   1,000,000
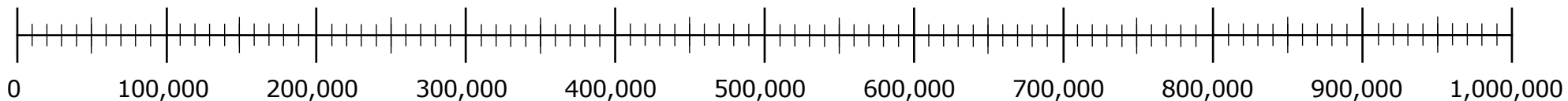
column addition

	HTh	TTh	Th	H	T	O
	4	5	2	5	7	8
+		2	3	3	5	1
	4	7	5	9	2	9
				1		

column subtraction

	HTh	TTh	Th	H	T	O
	4	4̸5	1 2	5	7	8
-		2	3	3	5	1
	4	2	9	2	2	7

column addition

HTh	TTh	Th ,	H	T	O

$$352{,}196 + 204{,}500 = 556{,}696$$

use rounding to check answers

416,493 people see a football match on Friday and 304,192 see a match on Saturday. How many people saw the match in total?

approximate answer: $420{,}000 + 300{,}000 = 720{,}000$

actual answer: $416{,}493 + 304{,}192 = 720{,}685$

solve addition and subtraction word problems

A factory makes 34,246 toys in January and 43,394 toys in February. It needs to make 120,000 toys in total in the first 3 months. How many does it need to make in March?

120,000		
34,246	43,394	?

$34{,}246 + 43{,}394 = 77{,}640$

$120{,}000 - 77{,}640 = 42{,}360$

long multiplication

		4	3	5	7	
	x			3	6	
	2	6	1	4	2	(4357 x 6)
1	3	0	7	1	0	(4357 x 30)
1	5	6	8	5	2	

short multiplication

	4	3	5	7
x				6
2	6	1	4	2
	2	3	4	

using known facts

3 x 5 = 15
30 x 5 = 150
300 x 5 = 1,500
3,000 x 5 = 15,000
0.3 x 5 = 1.5
0.03 x 5 = 0.15

$2 \times 3 = 6$

factor of 6 · factor of 6 · multiple of 3 · multiple of 2

multiplying by 10, 100 and 1000

TTh	Th	H	T	O	t	h
			1	**2**	**4**	**5**
		1	2	4	5	
	1	2	4	5		
1	2	4	5	0		

dividing by 10, 100 and 1000

TTh	Th	H	T	O	t	h
		4	**2**	**0**		
			4	2		
				4	2	
				0	4	2
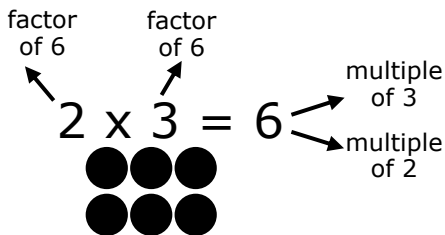
Common factors of 12 and 30 are **1, 2, 3** and **6.**
The **highest common factor (HCF)** is **6**

12	30
1 x 12	1 x 30
2 x 6	2 x 15
3 x 4	3 x 10
	5 x 6

A **multiple** is a number that can be divided by another without a remainder.

Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27
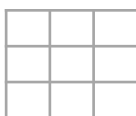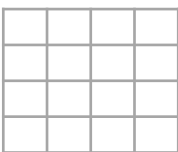Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32

A **prime** number is a whole number greater than one that only has two factors- one and itself. It can't be divided by another positive integer without leaving a remainder. 2 is the only even prime number Non-prime numbers are called **composite**

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
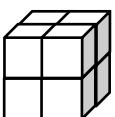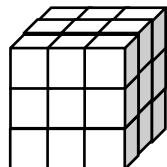
square numbers
A square number is the product of multiplying a number by itself.

1^2	1 x 1	1
2^2	2 x 2	4
3^2	3 x 3	9
4^2	4 x 4	16
5^2	5 x 5	25
6^2	6 x 6	36
7^2	7 x 7	49
8^2	8 x 8	64
9^2	9 x 9	81
10^2	10 x 10	100
11^2	11 x 11	121
12^2	12 x 12	144

$2^2 = 4$

$3^2 = 9$

$4^2 = 16$

cube numbers
A cube number is the product of multiplying a number by itself, then by itself again.

1^3	1 x 1 x 1	1
2^3	2 x 2 x 2	8
3^3	3 x 3 x 3	27
4^3	4 x 4 x 4	64
5^3	5 x 5 x 5	125
6^3	6 x 6 x 6	216
7^3	7 x 7 x 7	343
8^3	8 x 8 x 8	512
9^3	9 x 9 x 9	729
10^3	10 x 10 x 10	1000
11^3	11 x 11 x 11	1331
12^3	12 x 12 x 12	1728

$2^3 = 8$

$3^3 = 27$

distributivity
Distributivity can be expressed as

$a(b + c) = ab + ac$

example:

$3(2 + 4) = 3 \times 2 + 3 \times 4$

$3 \times 6 = 6 + 12$

equivalence statements

$4 \times 25 = 2 \times 2 \times 25$

$3 \times 120 = 3 \times 2 \times 6 \times 10 = 6^2 \times 10$

$4 \times 30 = 4 \times 3 \times 10$

short division

$321 \div 4 = 80.25$

dividend   divisor   quotient

$\frac{321}{4} = 80.25$

		0	8	0 •	2	5
	4	3	2	1 •	0	0
			3		1	2

decimal
80.25

fraction
$80\frac{1}{4}$

remainder
80 r 1

missing number problems

$3 \times 120 = 360$

$3 \times \boxed{} = 360$

$360 \div \boxed{} = 120$

$\boxed{} = 120 \times 3$

$\boxed{} = 360 \div 3$

$120 = \boxed{} \div 3$

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Y5- Fractions (including Decimals and Percentages)

O		t	h	th
3	.	5	7	2

1			
0	. 5		
0	. 0	7	
0	. 0	0	2

comparing and ordering fractions

$\frac{3}{8}$ $\frac{3}{4}$ $\frac{1}{2}$

$\frac{3}{8}$ $\frac{6}{8}$ $\frac{4}{8}$

$\frac{3}{8}$ < $\frac{1}{2}$ < $\frac{3}{4}$

expressing fractions in the same denominator

$\frac{2}{3}$ $\frac{1}{4}$
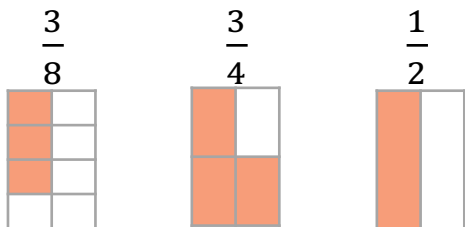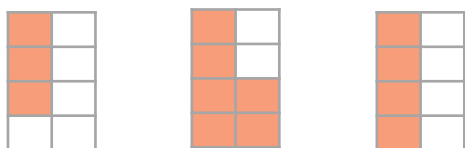
$\frac{8}{12}$ $\frac{3}{12}$

mixed numbers and improper fractions
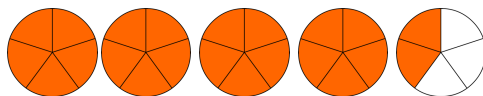
mixed number
$4\frac{2}{5}$

improper fraction
$\frac{22}{5}$

adding fractions with different denominators

First express the fractions as the same denominator

$\frac{8}{12}$ + $\frac{3}{12}$ = $\frac{11}{12}$
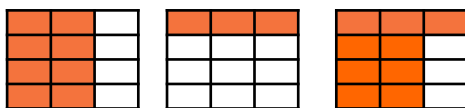
subtracting fractions with different denominators

$\frac{8}{12}$ - $\frac{3}{12}$ = $\frac{5}{12}$
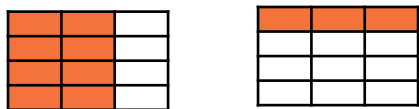
Round to the nearest whole number

1.673

1   2
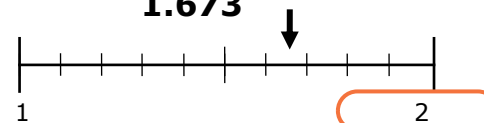
Round to the nearest tenth

3.429

3.4   3.5
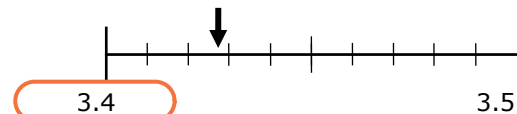
order and compare decimals

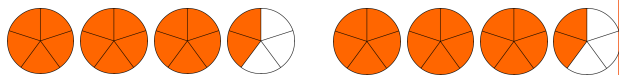| O	.	t	h	th
1	.	3	0	0
1	.	0	0	3
1	.	3	4	0

1.3   1.003   1.34

1.34 > 1.3 > 1.003

multiply fractions by whole numbers
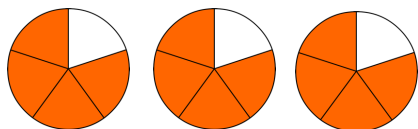
$$\frac{4}{5} \times 3 = \frac{12}{5} = 2\frac{2}{5}$$

multiply mixed numbers by whole numbers

$$3\frac{2}{5} \times 2 = 6\frac{4}{5}$$

method one:

$$3 \times 2 = 6$$

$$\frac{2}{5} \times \frac{2}{1} = \frac{4}{5}$$

$$6 + \frac{4}{5} = 6\frac{4}{5}$$

1) Multiply the whole numbers
2) Multiply the fraction by the whole number
3) Add the two answers together

method two:

$$\frac{17}{5} \times \frac{2}{1} = \frac{34}{5}$$

$$\frac{34}{5} = 6\frac{4}{5}$$

1) Convert the mixed number to an improper fraction
2) Multiply the improper fraction by the whole number
3) Convert the answer to a mixed number

read and write decimal numbers as fractions

$$\frac{73}{100} = 0.73$$

$$\frac{3}{4} = \frac{75}{100} = 0.75 \qquad 0.25 = \frac{25}{100} = \frac{1}{4}$$

x 25 (×25)
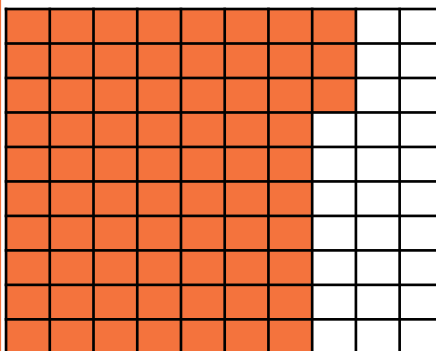
÷ 25 (÷25)

fraction, decimal and percentage equivalences

$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{1}{5}$	0.2	20%
$\frac{2}{5}$	0.4	40%
$\frac{3}{5}$	0.6	60%
$\frac{4}{5}$	0.8	80%
$\frac{3}{10}$	0.3	30%
$\frac{7}{10}$	0.7	70%

decimal addition and subtraction

Line up number in the correct place value columns and include the decimal point. Use place holders to fill in the empty spaces.
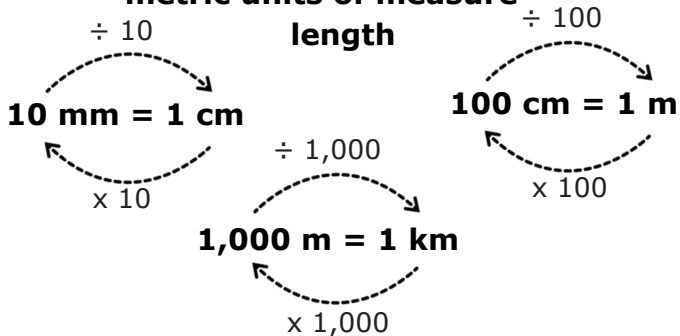
$$23.4 - 1.23 =$$

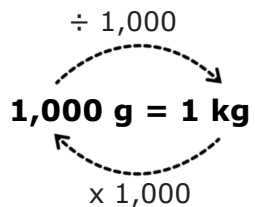| T	O	t	h
2	3	³4̸	¹0
	1	2	3
2	2	1	7

$$4 - 1.09 =$$

T	O	t	h
	³4̸	¹0	¹0
	1	0	9
	2	9	1

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metric units of measure

length

$\div 10$ / x 10 — **10 mm = 1 cm**

$\div 100$ / x 100 — **100 cm = 1 m**

$\div 1,000$ / x 1,000 — **1,000 m = 1 km**

mass

$\div 1,000$ / x 1,000 — **1,000 g = 1 kg**

capacity

$\div 1,000$ / x 1,000 — **1,000 ml = 1 l**

composite rectilinear shapes

If any sides are missing, calculate those first.

3 cm
2 cm
7 cm
6 cm
4 cm
10 cm
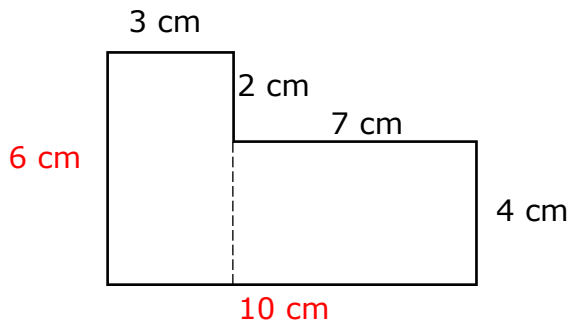
perimeter: add all the sides together.
$3 + 3 + 7 + 4 + 10 + 6 = 32$ cm

Area: split the shape into rectangles, calculate the area of each, then add together
$3 \times 6 = 18 \qquad 7 \times 4 = 28$
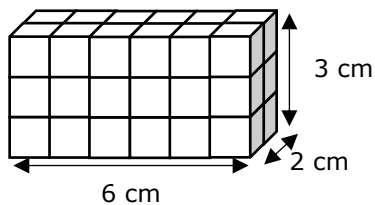$18 + 28 = 46$ cm²

area of rectangles

3 cm
4 cm

$4 \text{ cm} \times 3 \text{ cm} = 12 \text{ cm}^2$

2 cm
6 cm

$6 \text{ cm} \times 2 \text{ cm} = 12 \text{ cm}^2$

metric and imperial units

distance
x 1.6 / $\div 1.6$
1 mile $\approx$ 1.6 km

capacity
x 4.5 / $\div 4.5$
1 gallon $\approx$ 4.5 L

mass (weight)
x 2.2 / $\div 2.2$
1 kg $\approx$ 2.2 pounds
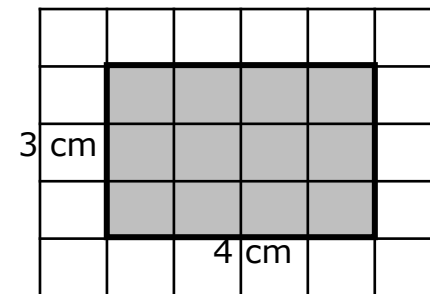
length
x 2.5 / $\div 2.5$
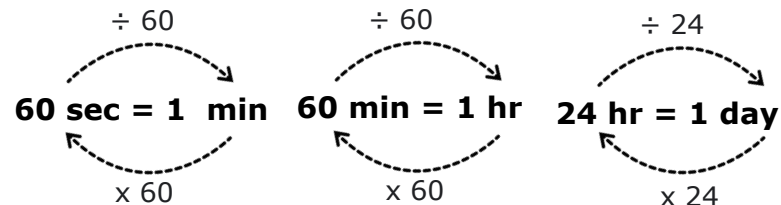1 inch $\approx$ 2.5 cm

volume of cuboids

width x length x height

3 cm
2 cm
6 cm

$6 \times 2 \times 3 = 36 \text{ cm}^3$

convert units of time

60 seconds= 1 minute
60 minutes= 1 hour
24 hours= 1 day
7 days = 1 week
12 months = 1 year
365 days = 1 year

$\div 60$ / x 60 — **60 sec = 1 min**

$\div 60$ / x 60 — **60 min = 1 hr**

$\div 24$ / x 24 — **24 hr = 1 day**

Y5- Geometry- Properties of Shape

measuring using a protractor

1) Estimate the angle. If it is an acute angle, it will be less than 90°
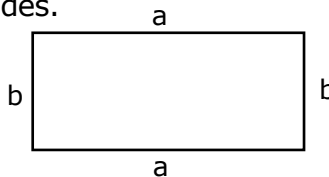
2) Line up the centre of the protractor with the centre of the angle.

3) Count around the protractor from one line to the other, starting from zero.
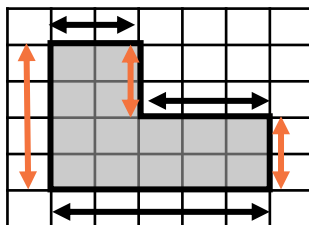
3D shapes and their nets

cuboid
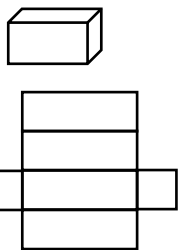
cube
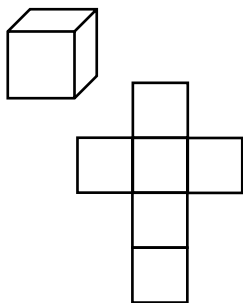
cylinder

triangular prism

sides in a rectangle

Use 2a+2b to find missing sides.
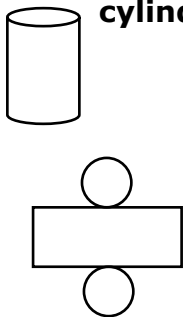
2a+2b = 28cm
If a = 10 cm, b = 4 cm.
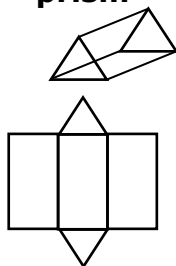
angles

acute angle
less than 90°

right angle
exactly 90°

obtuse angle
more than 90°
less than 180°

acute angle
more than 180°
less than 360°

Angles in a right angle add up to 90°

40°
30°
20°

Angles in a straight line add up to 180°
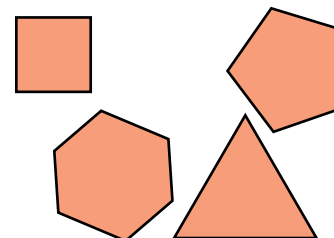
80°
30° 70°

Angles around a point add up to 360°
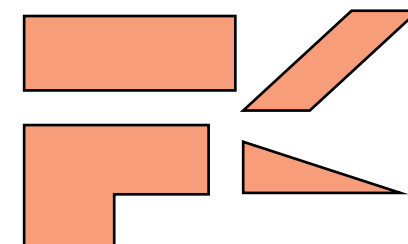
80° 120°
50°
110°

regular and irregular polygons

In a regular polygon, all angles and sides are the same size.

In an irregular polygon, the angles and sides are **not** all the same size
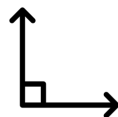
cube	cuboid	sphere
6 square faces	6 faces	1 curved surface
12 edges	12 edges	0 edges
8 vertices	8 vertices	0 vertices
tetrahedron	**triangular prism**	**cylinder**
4 triangular faces	5 faces	2 circular faces
6 edges	9 edges	1 curved surface
4 vertices	6 vertices	2 curved edges
		0 vertices
cone	**square-based pyramid**	**octahedron**
1 circular face	5 faces	8 faces
1 curved surface	8 edges	12 edges
1 curved edge	5 vertices	6 vertices
1 apex		

coordinates

y-axis

(8,5)

x-axis

reflection
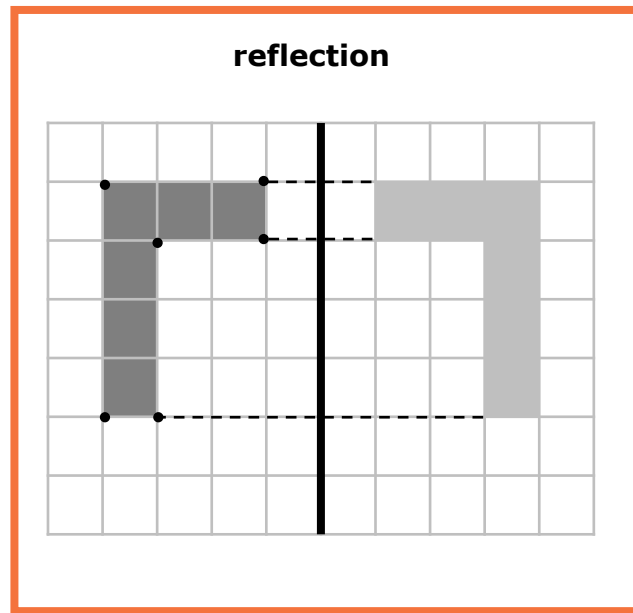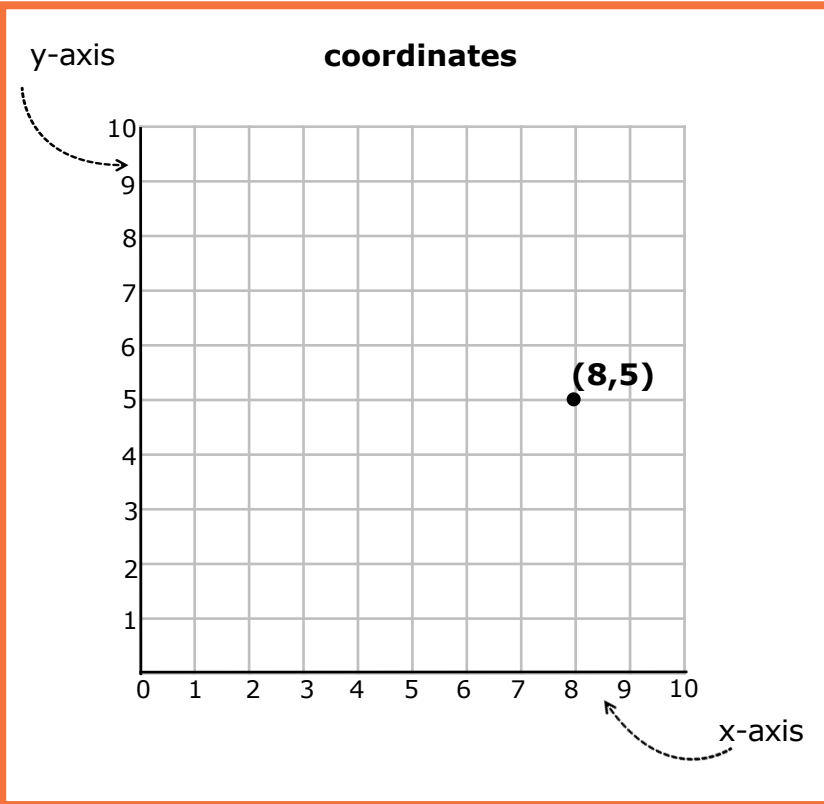
When a shape is translated or reflected, it does not change.

translation

Translate the shape 3 units right and 4 units up

Y5- Statistics
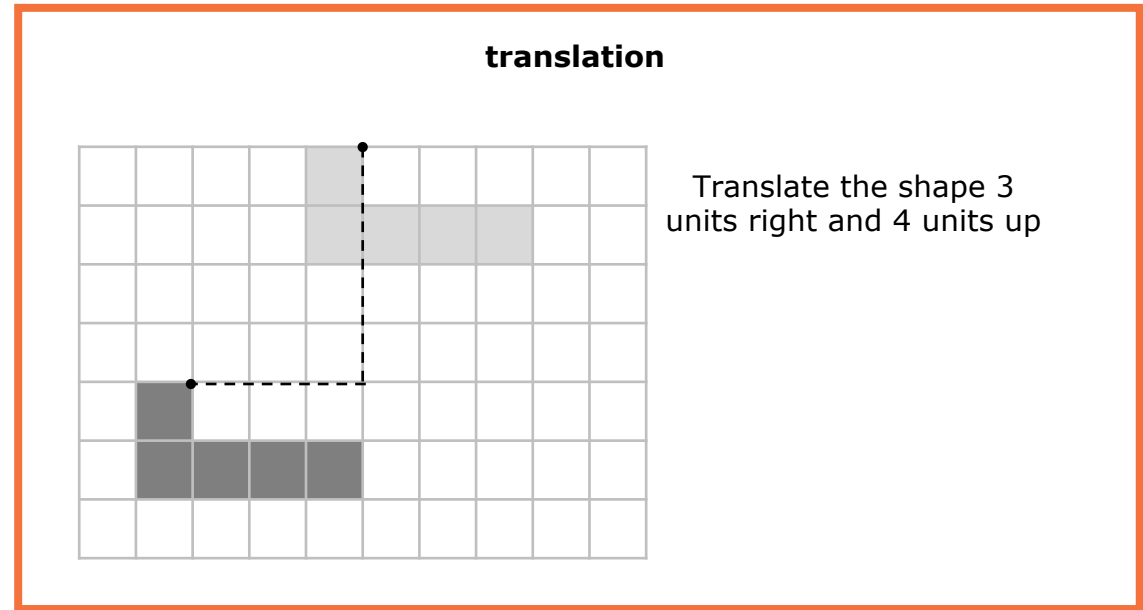
table

hockey	tennis	football	rugby	total
21	41	16	22	100

If one part is missing, add the

hockey	tennis	football	rugby	total
21	41		22	100

other parts together and subtract them from the total.

If the total is missing, add the

hockey	tennis	football	rugby	total
21	41	16	22	

parts together.

two- way table

	football	tennis	rugby	
Year 4	9	13	5	27
Year 5	11	9	8	28
	20	22	13	55

total year 4
total year 5
total children
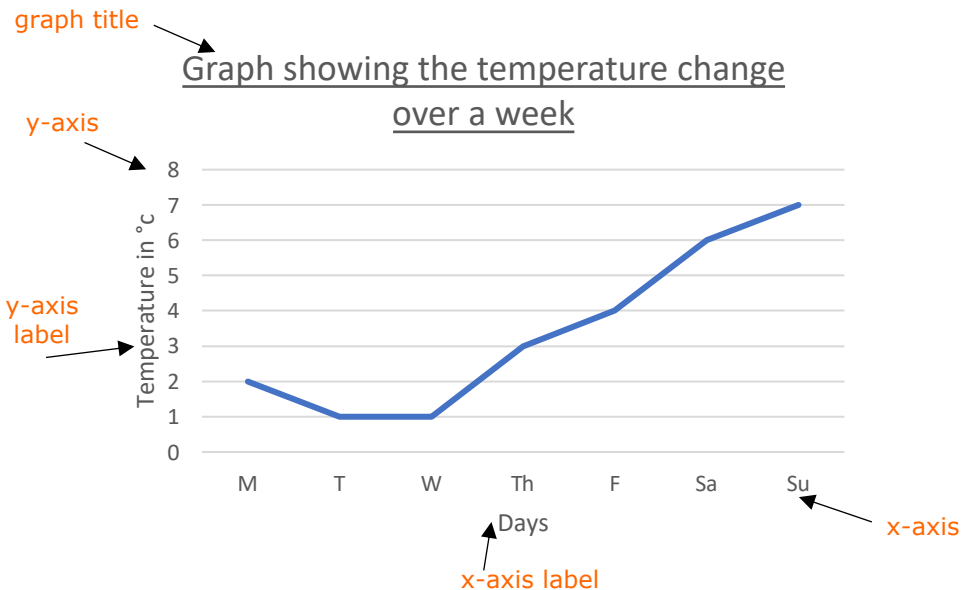
total children who like football
total children who like tennis
total children who like rugby

line graphs
Line graphs show a change over time

graph title

Graph showing the temperature change over a week

y-axis

y-axis label

Days
x-axis label
x-axis

timetables

Here is part of a bus timetable from Kingston to Clevemont

Kingston	10:01	10:24	11:01	11:24
Marchdean	10:23	-	11:23	-
East Bridgate	10:35	10:55	11:35	11:55
Clevemont	11:06	11:15	12:06	12:15

The time the bus leave Kingston

This shows that it didn't stop at Marchdean

This bus takes 1 hour and 5 minutes (65 minutes) to go from Kingston to Clevemont

PRIMARY MATHS HUB