

Year 6

## Number

Millions			Thousands			Ones			Decimals		
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

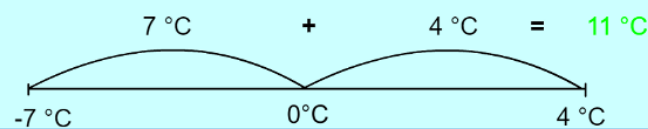
- 4 digits x 2 digits
- 4 digits ÷ 2 digits and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- perform mental calculations, including with mixed operations and large numbers
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Number	Rounded to Nearest Ten	Nearest Hundred	Nearest Thousand	Nearest Ten Thousand	Nearest Hundred Thousand	Nearest Million
5 658 485	5 658 490	5 658 500	5 658 000	5 660 000	5 700 000	6 000 000

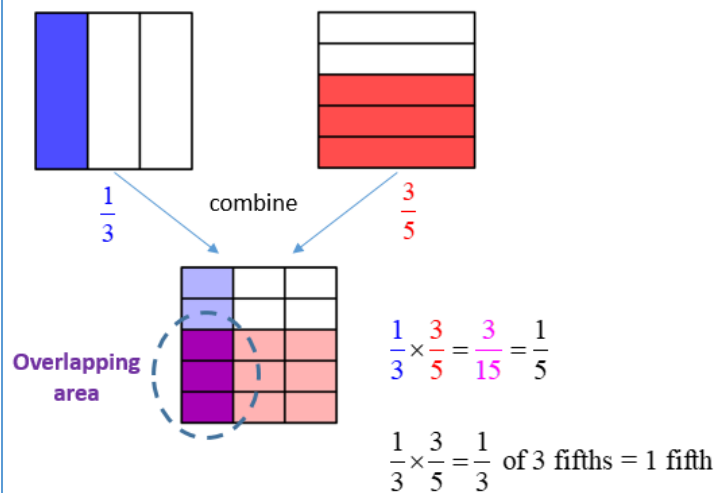
City	Vancouver	London	New York	Madrid	Delhi	Moscow
Temperature	-7 °C	4 °C	2 °C	16 °C	26 °C	-13 °C

click next for another question

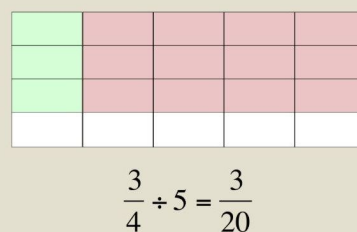
What is the difference in temperature between London and Vancouver ?



### Multiplying Fractions

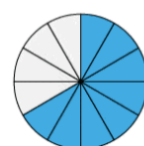


Three quarters divided by five:



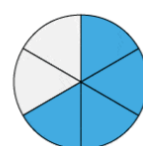
Original Fraction

$$\frac{8}{12}$$



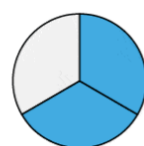
Not yet!

$$\frac{4}{6}$$



Simplest form

$$\frac{2}{3}$$



Greatest Common Factor

$$\frac{8}{12} \div 4 = \frac{2}{3}$$

### Ordering Mathematical Operations

B	O	D	M	A	S
Brackets (...)	Orders $\sqrt{x}$ $x^2$	Division $\div$	Multiplication $\times$	Addition $+$	Subtraction $-$

$$2.212 \times 3$$

Tens	Ones	Tenths	Hundredths	Thousandths
	● ●	● ●	● ●	● ●
	● ●	● ●	● ●	● ●
	● ●	● ●	● ●	● ●

$\frac{1}{8}$  is half of a  $\frac{1}{4}$  so what is half of 0.25 (think 25) = **0.125**

$$\frac{5}{8} = \frac{1}{2} + \frac{1}{8}, \text{ so } 0.5 + 0.125 = \mathbf{0.625}$$

$$\frac{3}{8} = \frac{1}{4} + \frac{1}{8}, \text{ so } 0.25 + 0.125 = \mathbf{0.375}$$

$$\frac{7}{8} = \frac{3}{4} + \frac{1}{8}, \text{ so } 0.75 + 0.125 = \mathbf{0.875}$$

### Common Multiples - allowing us to compare and order.

$\frac{7}{9}$	$\frac{1}{3}$	$\frac{5}{12}$	$\frac{2}{9}$	$\frac{3}{4}$
$\frac{28}{36}$	$\frac{12}{36}$	$\frac{15}{36}$	$\frac{8}{36}$	$\frac{27}{36}$

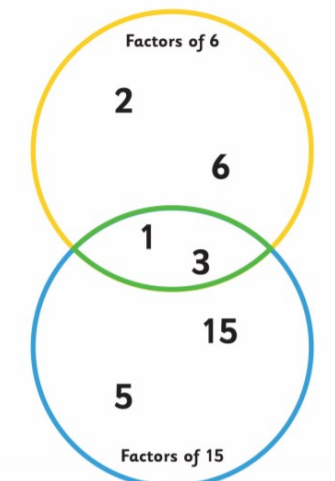
$$A. \frac{29}{12} < \frac{11}{4} = \frac{33}{12}$$



## Common Factors

A common factor is a factor of 2 or more numbers.

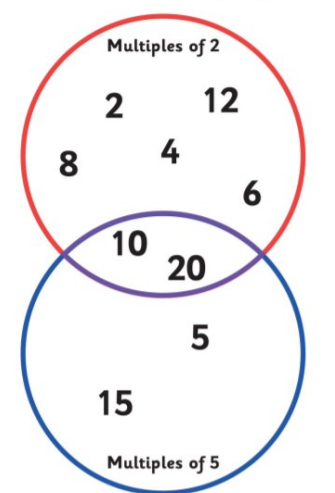
e.g. 3 is a common factor of 6 and 15.



## Common Multiples

A common multiple is a multiple of 2 or more numbers.

e.g. 10 is a common multiple of 2 and 5.

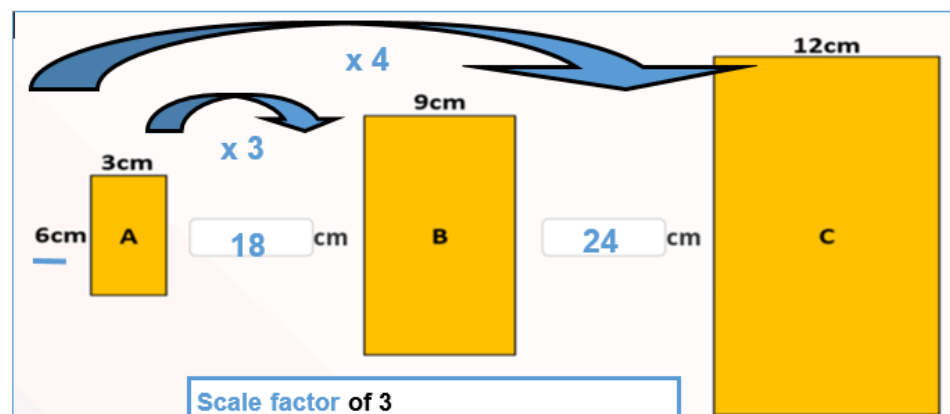


## Prime Numbers

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

Remember these facts about Prime Numbers!  
There are no even numbers except 2.  
There are no prime numbers ending in 5, except 5.  
The digits can't add up to 3 except 3 (digital root).

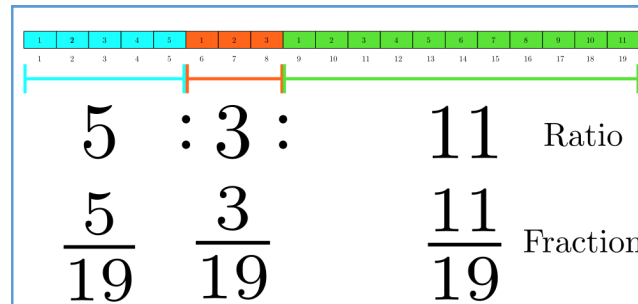


Scale factor of 3

Area of B = 9 cm x 18cm = 162 cm<sup>2</sup>

Scale factor of 4

Area of C = 24cm x 12cm = 288 cm<sup>2</sup>



## Ratio and Proportion

40% of ? = 221

?									
221									
55.25	55.25	55.25	55.25	55.25	55.25	55.25	55.25	55.25	55.25

$\frac{1}{4}$  of 40% = 10%

$221 \div 4 = 55.25$

10% = 55.25

100% = 55.25 x 10 = **552.5**

35% of 360 = ?

360									
?									

360									
36	36	36	36	36	36	36	36	36	36

10% of 360 = 36 so 30% = 3 x 36 = 108

360									
36	36	36	36	36	36	36	36	36	36
108			18	18					

$\frac{1}{2}$  of 10% = 5% so 36  $\div$  2 = 18

35% of 360 = 108 + 18 = **126**

$2n$	3 <sup>rd</sup> term	$2 \times 3 = 6$
$3n + 1$	4 <sup>th</sup> term	$3 \times 4 + 1 = 13$
$2n - 1$	6 <sup>th</sup> term	$2 \times 6 - 1 = 11$
$4n + 3$	7 <sup>th</sup> term	$4 \times 7 + 3 = 31$
$5n - 4$	8 <sup>th</sup> term	$5 \times 8 - 4 = 36$
$7n + 8$	9 <sup>th</sup> term	$7 \times 9 + 8 = 71$
$\frac{1}{2}n + 3$	6 <sup>th</sup> term	$\frac{1}{2} \times 6 + 3 = 6$
$2n - 17$	4 <sup>th</sup> term	$2 \times 4 - 17 = -11$

## Algebra

Clue 1  $\star - 15 = 45$

Clue 2  $\star \times \triangle = 120$

$\star - 15 = 45$

$\star - 15 = 45 + 15$

$\star = 60$

$\star \times \triangle = 120$

$60 \times \triangle = 120$

$\triangle = 120 \div 60$

$\triangle = 2$

Some shapes can have the same area...

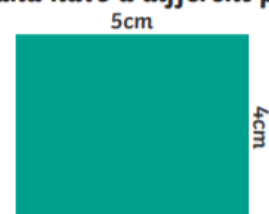


Length  $\times$  Width = Area  
 $5\text{cm} \times 4\text{cm} = 20\text{cm}^2$



Length  $\times$  Width = Area  
 $10\text{cm} \times 2\text{cm} = 20\text{cm}^2$

and have a different perimeter...



$5\text{cm} + 5\text{cm} + 4\text{cm} + 4\text{cm} =$   
 $2(5\text{cm} + 4\text{cm}) = 18\text{cm}$



$10\text{cm} + 10\text{cm} + 2\text{cm} + 2\text{cm} =$   
 $2(10\text{cm} + 2\text{cm}) = 24\text{cm}$

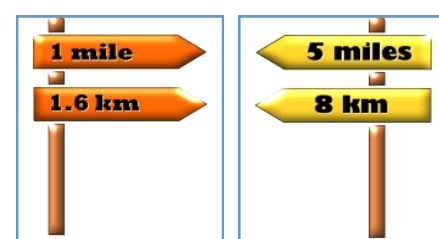
and vice versa.



Area  
Length  $\times$  Width = Area  
 $5\text{cm} \times 5\text{cm} = 25\text{cm}^2$   
Perimeter  
 $2(5\text{cm} + 5\text{cm}) = 20\text{cm}$



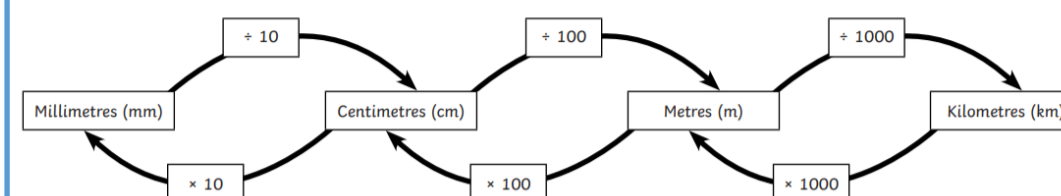
Area  
Length  $\times$  Width = Area  
 $8\text{cm} \times 2\text{cm} = 16\text{cm}^2$   
Perimeter  
 $2(8\text{cm} + 2\text{cm}) = 20\text{cm}$



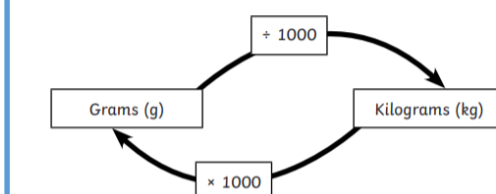
## Measurement

### Measurement Conversion Chart

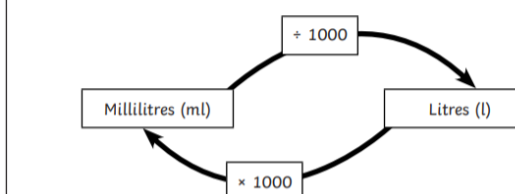
Length



Mass



Capacity



When you are asked to list **all** the possible combinations of two variables, it is important to work systematically so you know you have found all the possibilities.

$$a + b = 14$$

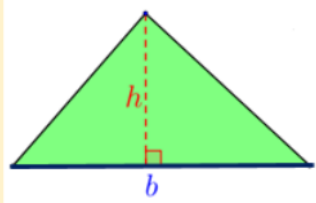
List all the possible values of a and b, where a and b are < 9.

$0 + 14 = 14$	$5 + 9 = 14$
$1 + 13 = 14$	$6 + 8 = 14$
$2 + 12 = 14$	$7 + 7 = 14$
$3 + 11 = 14$	$8 + 6 = 14$
$4 + 10 = 14$	$9 + 5 = 14$



## Measurement cont.

triangle



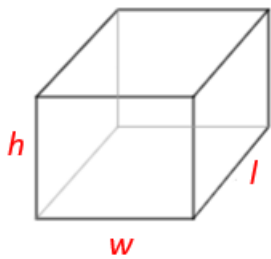
$$A = \frac{1}{2}bh$$

parallelogram



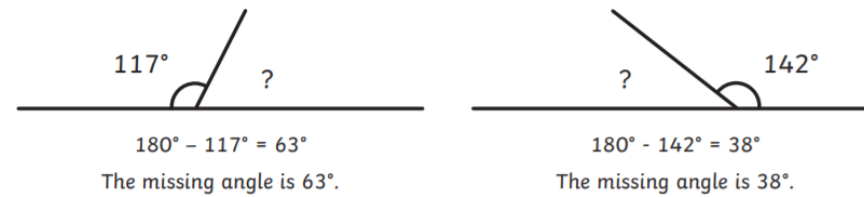
$$A = bh$$

## Volume of Cuboid

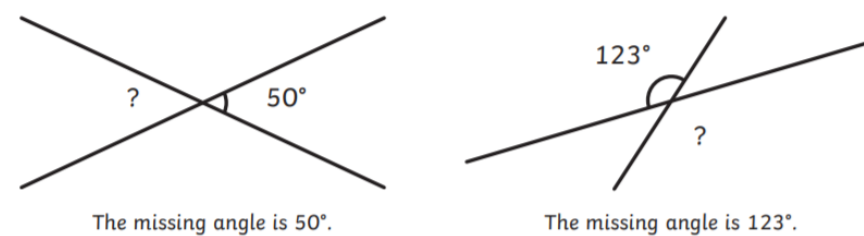


$$V = lwh$$

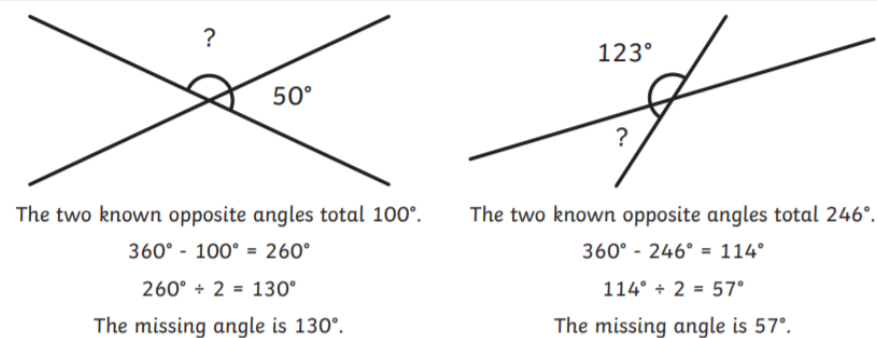
## Angles on a straight line always add up to 180°



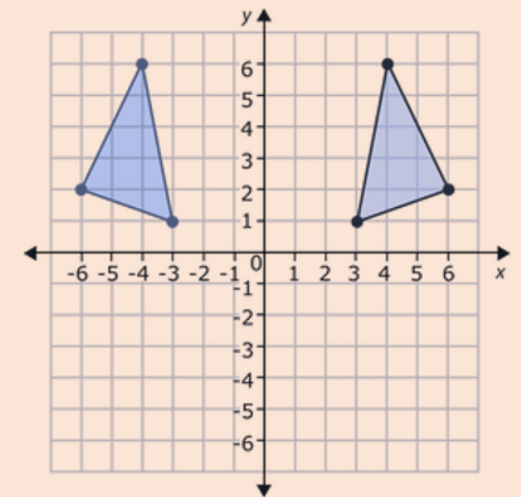
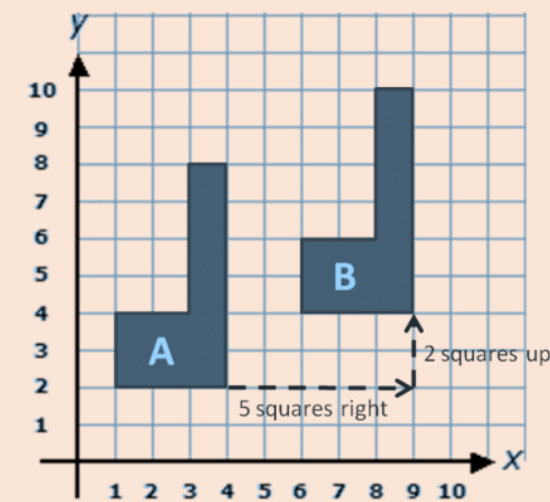
## Missing Vertically Opposite Angles Opposite angles are equal.



## Angles around a point total 360°

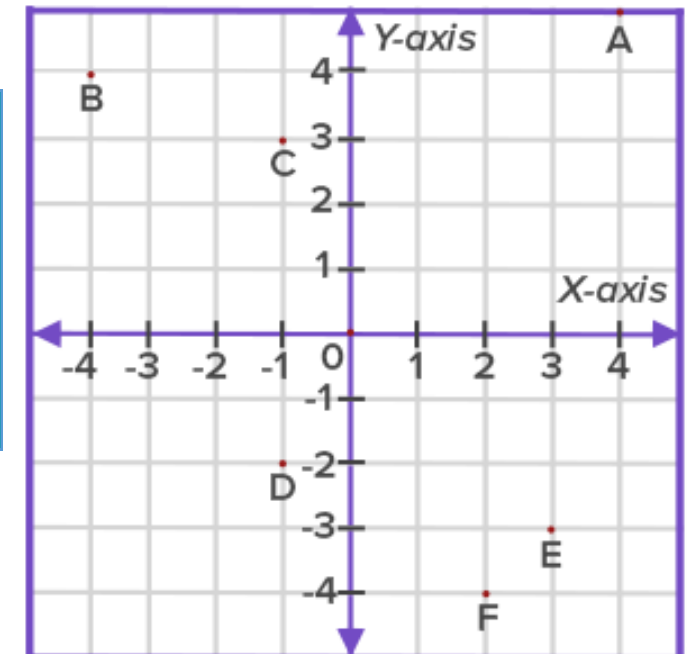
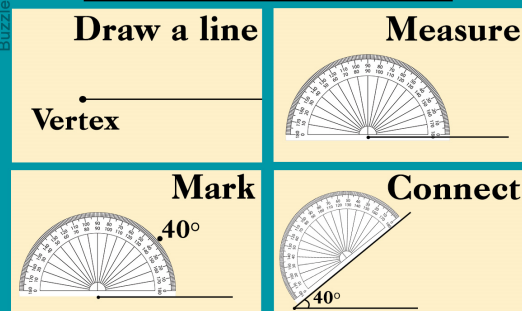


# Translation and reflection

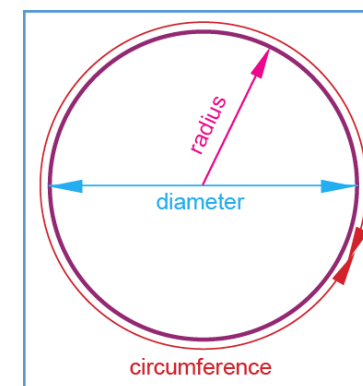


## Geometry

### Steps to Draw an Angle



A = (4,5) B = (-4,4) C = (-1,3)  
D = (-1,-2) E = (3,-3) F = (2,-4)

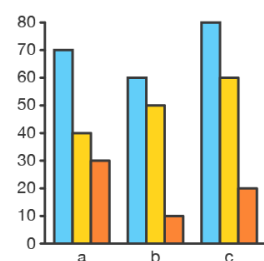


## Statistics

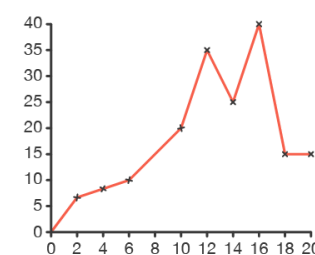
pie chart



bar chart



line graph



pictogram

category	frequency
A	■ ■ ■ ■ ■
B	■ ■ ■ ■ ■
C	■
D	■ ■ ■ ■ ■

## Working with Pie Charts

Transport	Frequency	Working
Car	6	$\frac{6}{30} \times 360^\circ = 120^\circ$
Bus	4	$\frac{4}{30} \times 360^\circ = 80^\circ$
Cycle	5	$\frac{5}{30} \times 360^\circ = 100^\circ$
Walk	3	$\frac{3}{30} \times 360^\circ = 60^\circ$



## Mean

The mean is the average or norm.

Add up all of the values to find a total.

Divide the total by the number of values you added together.

$$2 + 2 + 5 + 6 + 7 + 8 = 30$$

$$30 \div 6 = 5$$

The mean number is

5

