



Purbrook Junior School

MATHS

KNOWLEDGE ORGANISORS

YEAR 4



Number and Place Value

Knowledge Organiser

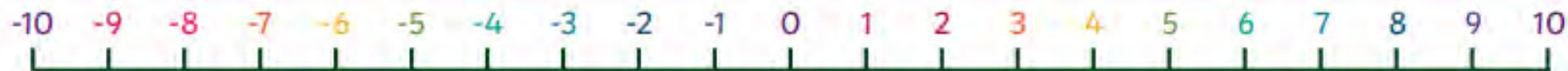
Key Vocabulary	Counting																									
thousands	Counting in 6s																									
hundreds	0	6	12	18	24	30	36	42	48	54	60															
tens	Counting in 7s																									
ones	0	7	14	21	28	35	42	49	56	63	70															
zero	Counting in 9s																									
place value	0	9	18	27	36	45	54	63	72	81	90															
greater than	Counting in 25s																									
less than	0	25	50	75	100	125	150	175	200	225	250															
order	Counting in 1000s																									
round	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10 000															
rounded to	Compare and Order						1000 More or 1000 Less																			
negative number	<table border="1" style="font-size: small;"> <thead> <tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr> </thead> <tbody> <tr><td>●●●</td><td>●●</td><td>●</td><td>●●●</td></tr> </tbody> </table>				Th	H	T	O	●●●	●●	●	●●●	4324 > 3243 greater than		<table border="1" style="font-size: small;"> <thead> <tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr> </thead> <tbody> <tr><td>●●●</td><td>●</td><td>●●●</td><td>●</td></tr> </tbody> </table>				Th	H	T	O	●●●	●	●●●	●
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●●●	●●	●	●●●																							
Th	H	T	O																							
●●●	●	●●●	●																							
partition					879 < 2126 less than																					
digit	<table style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px;">2497</td> <td style="border: 1px solid black; padding: 5px;">2508</td> <td style="border: 1px solid black; padding: 5px;">3012</td> <td style="border: 1px solid black; padding: 5px;">3521</td> <td style="border: 1px solid black; padding: 5px;">3530</td> <td style="border: 1px solid black; padding: 5px;">4002</td> </tr> <tr> <td colspan="3">smallest</td> <td colspan="3">greatest</td> </tr> </table>												2497	2508	3012	3521	3530	4002	smallest			greatest				
2497	2508	3012	3521	3530	4002																					
smallest			greatest																							
Roman numeral	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="background-color: #00a68a; color: white;">1000 Less</th> <th></th> <th style="background-color: #00a68a; color: white;">1000 More</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> </td> <td style="vertical-align: top;"> </td> <td style="vertical-align: top;"> </td> </tr> <tr> <td style="font-size: large; color: #00a68a;">1212</td> <td style="font-size: large; color: red;">2212</td> <td style="font-size: large;">3212</td> </tr> </tbody> </table>												1000 Less		1000 More				1212	2212	3212					
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Number and Place Value

Knowledge Organiser

Negative Numbers



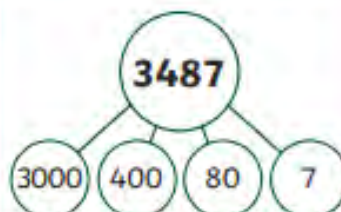
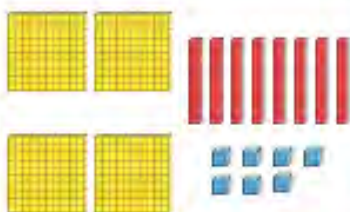
Represent 4-Digit Numbers

3487

three thousand, four hundred and eighty-seven

1000s	100s	10s	1s

Thousands	Hundreds	Tens	Ones



Roman Numerals

one	1	I
five	5	V
ten	10	X
fifty	50	L
one hundred	100	C

XVIII = 18

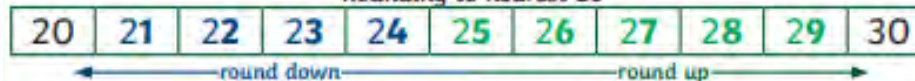
XXIX = 29

LXXXIV = 84

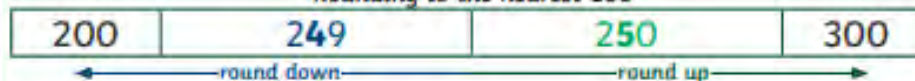
Rounding

Look at the place value column to the right of the value you are rounding to. If this digit is a 4 or less, round down. If the digit is a 5 or more, round up.

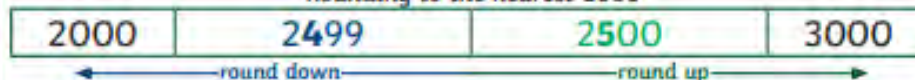
Rounding to nearest 10



Rounding to the nearest 100




Rounding to the nearest 1000



Addition and Subtraction

Knowledge Organiser

Key Vocabulary	Addition and Subtraction Methods	
Add	Add 4-digit numbers	
Total	No exchange	
Plus	$\begin{array}{r} 5162 \\ +3427 \\ \hline 8589 \end{array}$	Starting with the ones, add each column in turn.
Sum	One exchange	
More	$\begin{array}{r} 5162 \\ +3497 \\ \hline 8659 \\ 1 \end{array}$	Starting with the ones, add each column in turn. When adding 6 tens + 9 tens = 15 tens = 1 hundred + 5 tens. Place 1 hundred under the hundreds answer and 5 tens in the answer.
Altogether	Multiple exchanges	
Difference	$\begin{array}{r} 5864 \\ +3497 \\ \hline 9361 \\ 111 \end{array}$	Starting with the ones, add each column in turn. Exchange tens, hundreds and/ or thousands as required.
Subtract	Subtract 4-digit numbers	
Less	No exchange	
Minus	$\begin{array}{r} 5789 \\ -3421 \\ \hline 2368 \end{array}$	Starting with the ones, subtract each column in turn.
Take away	One exchange	
Mentally, Orally	$\begin{array}{r} 61 \\ 5749 \\ -3471 \\ \hline 2278 \end{array}$	Starting with the ones, subtract each column in turn. When subtracting 4 tens - 7 tens, exchange 1 hundred to make: 14 tens - 7 tens = 7 tens
Column Addition	Multiple exchanges	
Column Subtraction	$\begin{array}{r} 6131 \\ 5742 \\ -3476 \\ \hline 2266 \end{array}$	Starting with the ones, subtract each column in turn. Exchange tens, hundreds and/ or thousands as required.
Exchange	Efficient subtraction	
Estimate	<p>Calculate $6000 - 3617 = 2383$</p>	
Inverse operation	<p>Calculate $6000 - 3617 = 2383$</p>	
Solve problems		
Number facts		
		

Addition and Subtraction

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Add and Subtract 1s, 10s, 100s, 1000s

Here is the number 3124



Add 2 thousands = 5124

Add 5 hundreds = 5624

Subtract 2 tens = 5604

Add 5 ones = 5609

Here is the number 6708

Thousands	Hundreds	Tens	Ones
6	7	0	8

Add 3 thousands = 9708

Subtract 4 hundreds = 9308

Add 5 tens = 9358

Subtract 7 ones = 9351

Crossing ones, tens or hundreds

5392 + 4 tens = 5432 crossing tens

5126 - 600 = 4526 crossing hundreds

When crossing ones, tens or hundreds, more than one digit will change.



Round to Estimate

$$1635 + 386 = 2021$$

Round to the nearest ten

$$1640 + 390 = 2030$$

Round to the nearest hundred

$$1600 + 400 = 2000$$

Both give a reasonable estimate, but rounding the nearest ten is more accurate.

$$9362 - 5729 = 3622$$

Round to the nearest hundred

$$9400 - 5700 = 3700$$

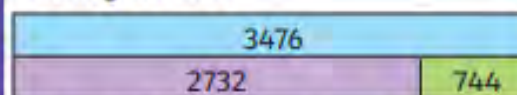
Round to the nearest thousand

$$9000 - 6000 = 3000$$

Rounding to the nearest hundred is much more accurate in this case.

Checking Strategies

Using Inverse



$3476 - 744 = 2732$ can be checked using
 $2732 + 744 = 3476$

This part whole shows the inverse calculations using these three numbers.



$1549 + 2688 = 4237$	$2688 + 1549 = 4237$
$4237 - 1549 = 2688$	$4237 - 2688 = 1549$

Adding in a different order

$$420 + 372 + 280 =$$

Change to

$$420 + 280 + 372 =$$

$$\text{As } 420 + 280 = 700$$

(because $42 + 28 = 70$)

$$420 + 280 + 372 = 700 + 372 = 1072$$

Multiplication and Division

Knowledge Organiser

Key Vocabulary	Multiplication and Division Facts	Use Place Value to Multiply and Divide Mentally																																																																																																																																																																									
multiply	<table border="1"> <tr> <td>x</td> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td> </tr> <tr> <td>1</td> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td> </tr> <tr> <td>2</td> <td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td><td>16</td><td>18</td><td>20</td><td>22</td><td>24</td> </tr> <tr> <td>3</td> <td>3</td><td>6</td><td>9</td><td>12</td><td>15</td><td>18</td><td>21</td><td>24</td><td>27</td><td>30</td><td>33</td><td>36</td> </tr> <tr> <td>4</td> <td>4</td><td>8</td><td>12</td><td>16</td><td>20</td><td>24</td><td>28</td><td>32</td><td>36</td><td>40</td><td>44</td><td>48</td> </tr> <tr> <td>5</td> <td>5</td><td>10</td><td>15</td><td>20</td><td>25</td><td>30</td><td>35</td><td>40</td><td>45</td><td>50</td><td>55</td><td>60</td> </tr> <tr> <td>6</td> <td>6</td><td>12</td><td>18</td><td>24</td><td>30</td><td>36</td><td>42</td><td>48</td><td>54</td><td>60</td><td>66</td><td>72</td> </tr> <tr> <td>7</td> <td>7</td><td>14</td><td>21</td><td>28</td><td>35</td><td>42</td><td>49</td><td>56</td><td>63</td><td>70</td><td>77</td><td>84</td> </tr> <tr> <td>8</td> <td>8</td><td>16</td><td>24</td><td>32</td><td>40</td><td>48</td><td>56</td><td>64</td><td>72</td><td>80</td><td>88</td><td>96</td> </tr> <tr> <td>9</td> <td>9</td><td>18</td><td>27</td><td>36</td><td>45</td><td>54</td><td>63</td><td>72</td><td>81</td><td>90</td><td>99</td><td>108</td> </tr> <tr> <td>10</td> <td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td><td>80</td><td>90</td><td>100</td><td>110</td><td>120</td> </tr> <tr> <td>11</td> <td>11</td><td>22</td><td>33</td><td>44</td><td>55</td><td>66</td><td>77</td><td>88</td><td>99</td><td>110</td><td>121</td><td>132</td> </tr> <tr> <td>12</td> <td>12</td><td>24</td><td>36</td><td>48</td><td>60</td><td>72</td><td>84</td><td>96</td><td>108</td><td>120</td><td>132</td><td>144</td> </tr> </table>	x	1	2	3	4	5	6	7	8	9	10	11	12	1	1	2	3	4	5	6	7	8	9	10	11	12	2	2	4	6	8	10	12	14	16	18	20	22	24	3	3	6	9	12	15	18	21	24	27	30	33	36	4	4	8	12	16	20	24	28	32	36	40	44	48	5	5	10	15	20	25	30	35	40	45	50	55	60	6	6	12	18	24	30	36	42	48	54	60	66	72	7	7	14	21	28	35	42	49	56	63	70	77	84	8	8	16	24	32	40	48	56	64	72	80	88	96	9	9	18	27	36	45	54	63	72	81	90	99	108	10	10	20	30	40	50	60	70	80	90	100	110	120	11	11	22	33	44	55	66	77	88	99	110	121	132	12	12	24	36	48	60	72	84	96	108	120	132	144	<p>$5 \times 1 = 5$ $5 + 1 = 5$</p>
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Factor pairs and Commutativity

Multiply Using Formal Written Methods

factor	<p>20</p>	<p>$5 \times 4 = 20$</p>	<table border="1"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>5</td> <td>4</td> <td>3</td> </tr> <tr> <td>x</td> <td></td> <td></td> <td>4</td> </tr> <tr> <td></td> <td></td> <td>1</td> <td>2</td> </tr> <tr> <td></td> <td>1</td> <td>6</td> <td>0</td> </tr> <tr> <td>2</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>2</td> <td>1</td> <td>7</td> <td>2</td> </tr> </tbody> </table>	Th	H	T	O		5	4	3	x			4			1	2		1	6	0	2	0	0	0	2	1	7	2	<p>Remember to move any regrouped numbers into the next column. After the next multiplication, add the regrouped number to the answer.</p>
Th	H	T	O																													
	5	4	3																													
x			4																													
		1	2																													
	1	6	0																													
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multiple	<p>$4 \times 5 = 20$</p>	<table border="1"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>5</td> <td>4</td> <td>3</td> </tr> <tr> <td>x</td> <td></td> <td></td> <td>4</td> </tr> <tr> <td>2</td> <td>1</td> <td>7</td> <td>2</td> </tr> <tr> <td></td> <td>1</td> <td>1</td> <td></td> </tr> </tbody> </table>	Th	H	T	O		5	4	3	x			4	2	1	7	2		1	1											
Th	H	T	O																													
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x			4																													
2	1	7	2																													
	1	1																														
product	<p>The factors of 20 are 1, 2, 4, 5, 10 and 20.</p> <p>The factor pairs are:</p> <p>1 and 20 2 and 10 4 and 5</p>																															



Written Multiplication Methods - No Regrouping

Tens	Ones

$21 \times 3 = 69$

	T	O
	2	3
*		3
	6	9

\rightarrow

X	20	3
3	60	9

\rightarrow

	T	O
	2	3
*		3
	6	9

$60 + 9 = 69$

Written Multiplication Methods - With Regrouping

Tens	Ones

$24 \times 4 = 96$

	T	O
	2	4
*		4
	9	6
	1	

\rightarrow

	T	O
	2	4
*		4
	9	6
	1	

Written Division Methods - No Regrouping

Tens	Ones

$136 \div 4 = 34$

4	3	4	
-	1	2	0
	1	6	
-	1	6	
		0	

Written Division Methods - With Regrouping

Tens	Ones

$333 \div 4 = 83 \text{ r } 1$

		3	3	r 1
4	8	3	3	
-	1	2	0	
		1	3	
-	1	2		
			1	



Decimals

Knowledge Organiser

Key Vocabulary

tenths

hundredths

decimal tenths

decimal hundredths

decimal equivalents

part-whole model

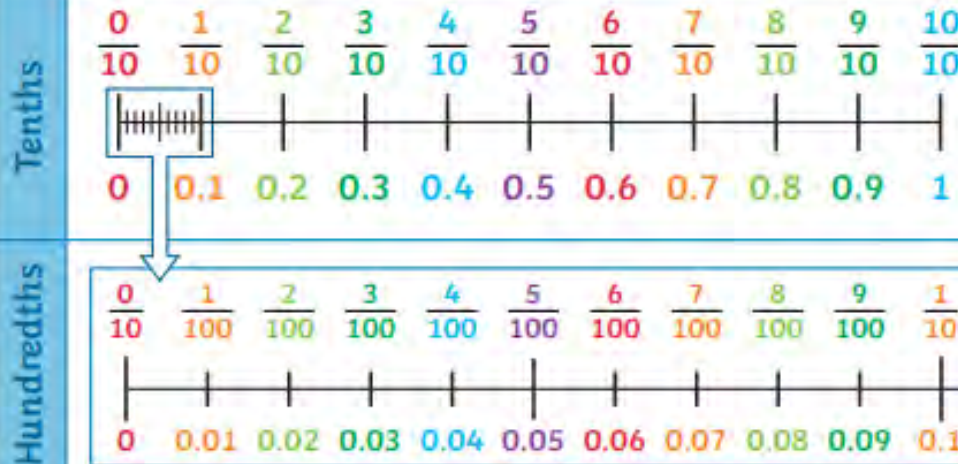
rounding

decimal point

place value



Tenths and Hundredths



Fraction and Decimal Equivalents

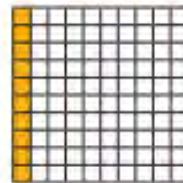
= $\frac{1}{2}$ = 0.5

= $\frac{1}{4}$ = 0.25

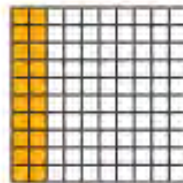
= $\frac{3}{4}$ = 0.75

= $\frac{1}{10}$ = 0.1

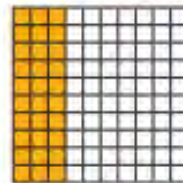
Tenth and Hundredth Decimal Equivalents



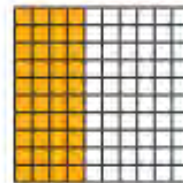
$\frac{1}{10} = \frac{10}{100} = 0.1$



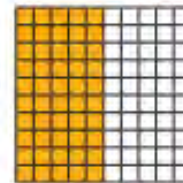
$\frac{2}{10} = \frac{20}{100} = 0.2$



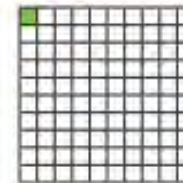
$\frac{3}{10} = \frac{30}{100} = 0.3$



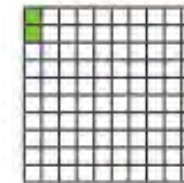
$\frac{4}{10} = \frac{40}{100} = 0.4$



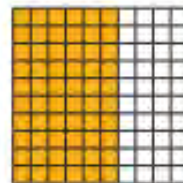
$\frac{5}{10} = \frac{50}{100} = 0.5$



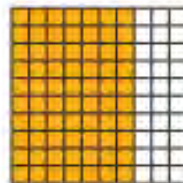
$\frac{1}{100} = 0.01$



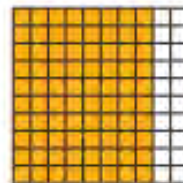
$\frac{2}{100} = 0.02$



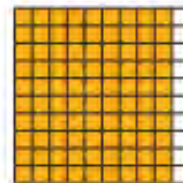
$\frac{6}{10} = \frac{60}{100} = 0.6$



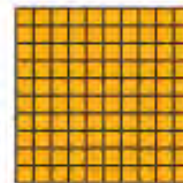
$\frac{7}{10} = \frac{70}{100} = 0.7$



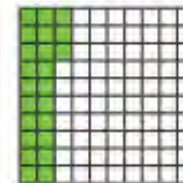
$\frac{8}{10} = \frac{80}{100} = 0.8$



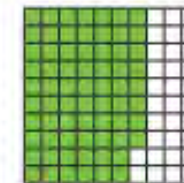
$\frac{9}{10} = \frac{90}{100} = 0.9$



$\frac{10}{10} = \frac{100}{100} = 1$



$\frac{23}{100} = 0.23$



$\frac{68}{100} = 0.68$

Decimals

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Dividing by 10

Tens	Ones	$\div 10$
8	5	

$\div 10$		
Tens	Ones	Tenths
	8	5
$\div 10$		

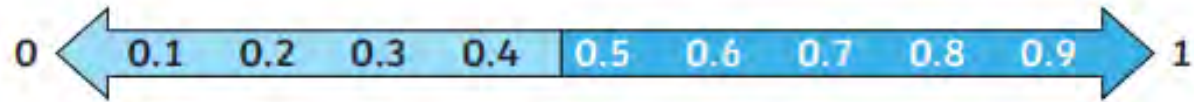
Dividing by 100

Tens	Ones	$\div 100$
8	5	

$\div 100$			
Tens	Ones	Tenths	Hundredths
	0	8	5
$\div 100$			



Rounding Decimals



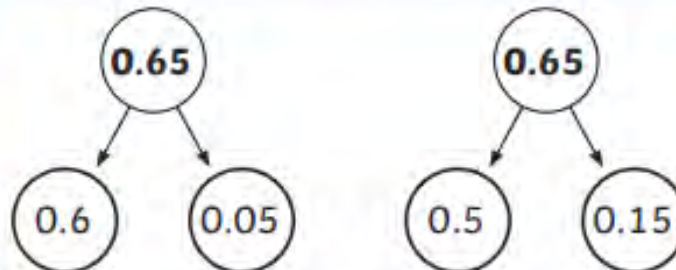
If the tenths digit is 1, 2, 3 or 4, we round **down** to the nearest whole number.

If the tenths digit is 5, 6, 7, 8 or 9, we round **up** to the nearest whole number.

Make a Whole



Partitioning Tenths and Hundredths



Comparing Numbers with Two Decimal Places

Ones	Tenths	Hundredths
	$\frac{1}{10}$ $\frac{3}{10}$	$\frac{1}{100}$ $\frac{4}{100}$
0	.	34

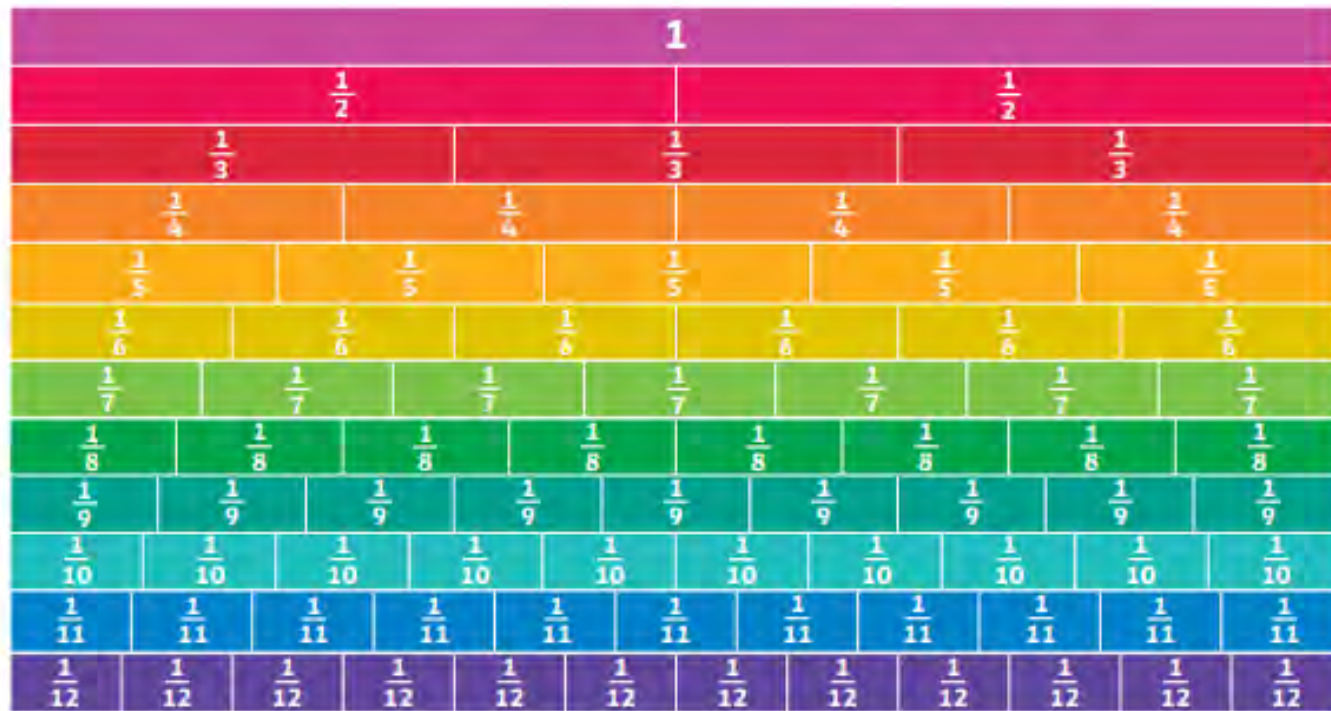
Ones	Tenths	Hundredths
1		$\frac{1}{100}$ $\frac{2}{100}$
1	.	02

Ones	Tenths	Hundredths
2	$\frac{1}{10}$	$\frac{1}{100}$ $\frac{3}{100}$
2	.	13

Key Vocabulary

Fraction Families

- numerator
- denominator
- unit fraction
- non-unit fraction
- equivalent
- quantities
- whole
- halves
- thirds
- quarters
- fifths
- sixths
- sevenths
- eighths
- ninths
- tenths
- elevenths
- twelfths
- quantities



Fractions of Quantities

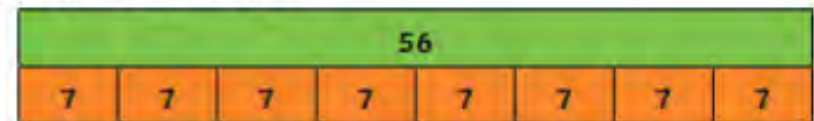
To find a fraction of a number, divide by the denominator and multiply by numerator.

To find quarters of 20:



$\frac{1}{4}$ of 20 = 5 $\frac{2}{4}$ of 20 = 10 $\frac{3}{4}$ of 20 = 15 $\frac{4}{4}$ of 20 = 20

To find eighths of 56:



$\frac{1}{8}$ of 56 = 7 $\frac{2}{8}$ of 56 = 14 $\frac{3}{8}$ of 56 = 21 $\frac{4}{8}$ of 56 = 28
 $\frac{5}{8}$ of 56 = 35 $\frac{6}{8}$ of 56 = 42 $\frac{7}{8}$ of 56 = 49 $\frac{8}{8}$ of 56 = 56



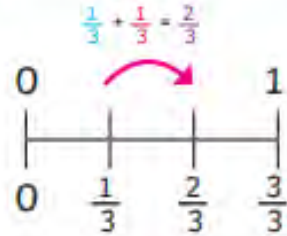
Fractions

Knowledge Organiser

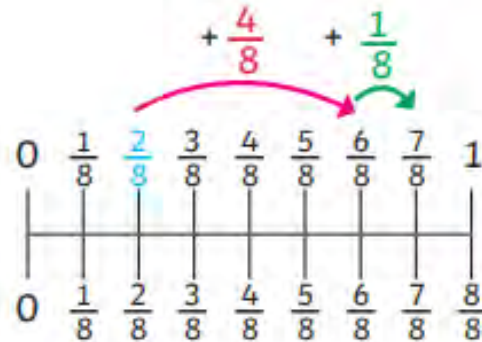
Adding Fractions

Fractions can be added when the denominators are the same.

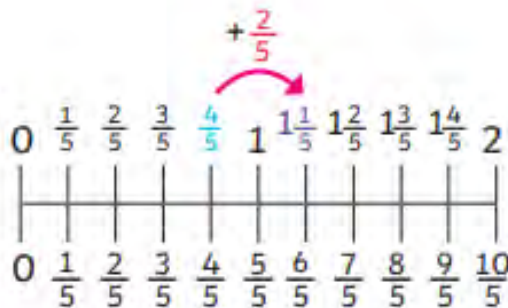
$$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$$



$$\frac{2}{8} + \frac{4}{8} + \frac{1}{8} = \frac{7}{8}$$



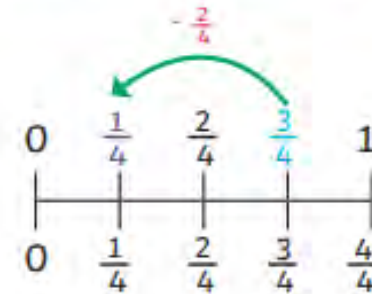
$$\frac{4}{5} + \frac{2}{5} = \frac{6}{5} \text{ or } 1\frac{1}{5}$$



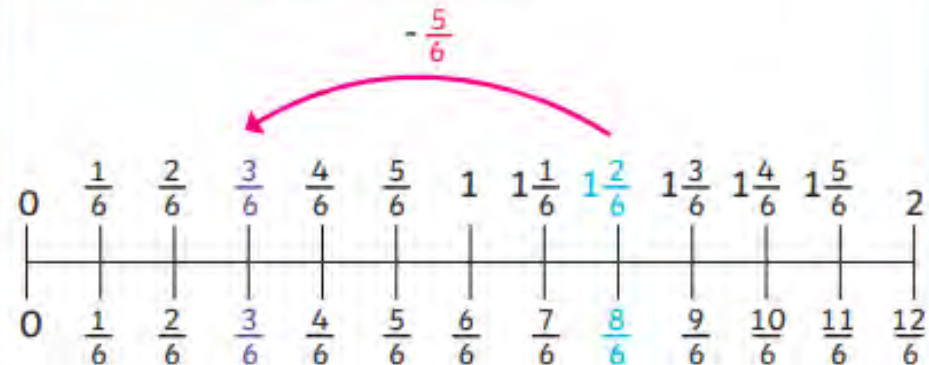
Subtracting fractions

Fractions can be subtracted when the denominators are the same.

$$\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$$

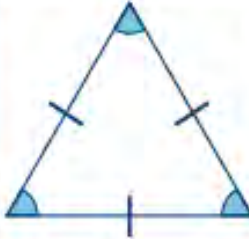

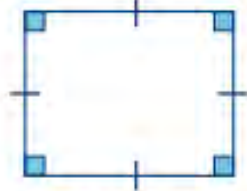


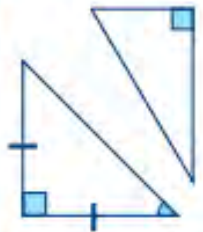
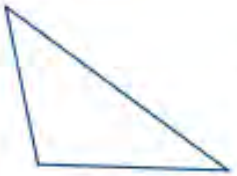



$$\frac{8}{6} - \frac{5}{6} = \frac{3}{6}$$



Properties of Shape

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Key Vocabulary	Triangles	Quadrilaterals
angle	<p>Triangles have 3 sides and 3 vertices. The total of the angles in a triangle is 180°.</p>  <p>An equilateral triangle is a regular polygon. It has sides of equal length and each angle is 60°.</p>	<p>A quadrilateral is a polygon with four sides.</p> 
right angle		<p>A square has four sides of equal length and four right angles (90°). A square is also a rectangle, a rhombus and a parallelogram.</p>  <p>A rectangle has two pairs of parallel, equal sides and four right angles. A rectangle is also a parallelogram.</p>
acute		
obtuse		<p>A rhombus has four sides of equal length and opposite equal angles. A rhombus is also a parallelogram.</p> 
horizontal	<p>An isosceles triangle has two sides of equal length and two angles of equal size.</p> 	<p>A right-angled triangle always has one 90° angle. It can be isosceles or scalene.</p> 
vertical	<p>A scalene triangle has no equal sides or angles.</p> 	
diagonal		
parallel		<p>A kite has two pairs of adjacent equal sides and one pair of opposite equal angles.</p> 
perpendicular		
two-dimensional		
polygon		
line of symmetry		
reflection		
mirror line		
isosceles		
equilateral		
scalene		
quadrilateral		
rhombus		
parallelogram		
trapezium		



Angles

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

Right angle

The intersection of perpendicular lines creates a right angle.



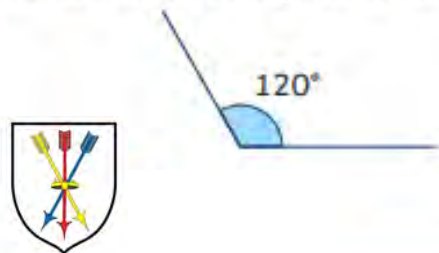
Acute angle

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



Obtuse angle

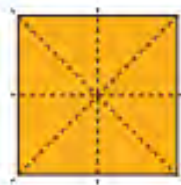
Any angle measuring more than 90 degrees but less than 180 degrees is obtuse.



Lines of Symmetry

Lines of symmetry may be horizontal, vertical or diagonal. Some 2D shapes will have no lines of symmetry and some 2D shapes will have multiple lines of symmetry.

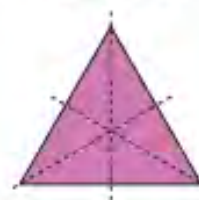
A square has four lines of symmetry.



A rectangle has two lines of symmetry.



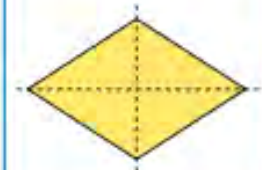
An equilateral triangle has three lines of symmetry.



An isosceles triangle has one line of symmetry.

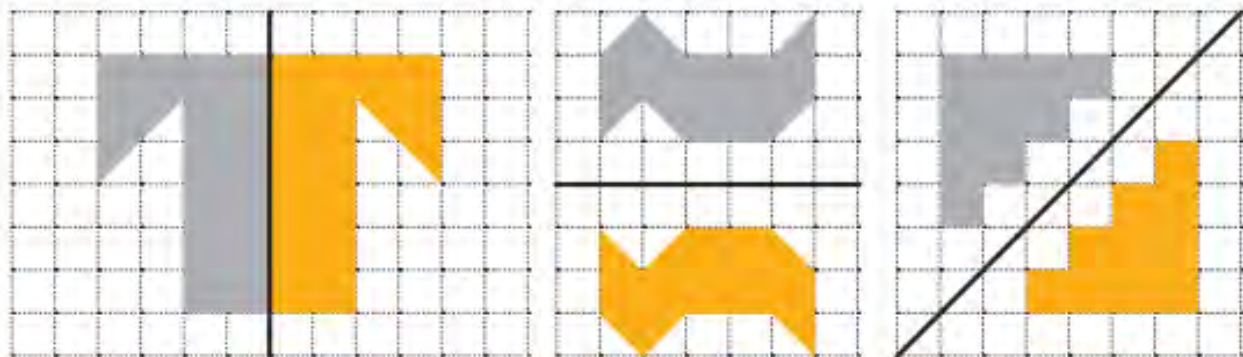


A rhombus has two lines of symmetry.



Symmetric Figures

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



Area and Perimeter

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Keywords

Area and Perimeter

- area
- perimeter
- centimetres
- metres
- squares
- distance

Area is the amount of space inside a 2D shape.
Perimeter is the total **distance** around the outside of a 2D shape.

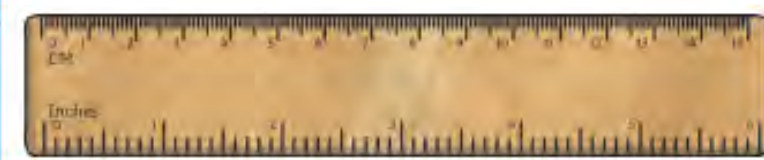


millimetres

Units of Measure for Perimeter

- kilometres
- length
- width
- rectilinear
- right angle

km 1 kilometre = 1000 metres
m 1 metre = 100 centimetres
cm 1 centimetre = 10 millimetres
mm



Measuring Area

We can count **squares** to find the **area** of a **rectilinear** shape.

Rectilinear Figures

A **rectilinear** figure is a 2D shape whose sides all meet at **right angles** (90°).



Key Vocabulary

Analogue and Digital Clocks

12-hour time

24-hour time

Roman numerals

analogue

digital

hours

minutes

seconds

o'clock

half past

quarter past

quarter to

midday

midnight

noon

a.m.

p.m.

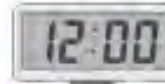


Minute Hand

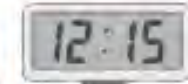
The long hand points to the minutes past the hour.

Hour Hand

The short hand points to the hour. If this hand is pointing between the hours, it is the earlier hour of the two.



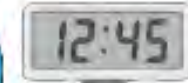
twelve o'clock



quarter past twelve

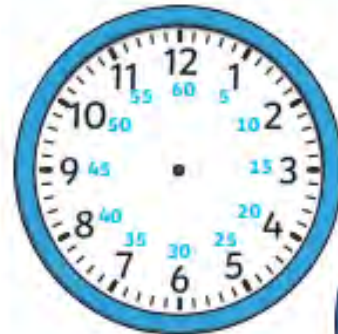


half past twelve



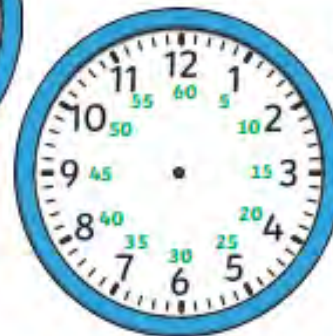
quarter to one

Durations of Time



There are **60 seconds** in a minute.

There are **60 minutes** in an hour.



There are **24 hours** in a day

There are **7 days** in a week.



There are **12 months** in a year.

24-Hour Time

There are 24 hours in a day.



	01:00	1 a.m.	1 o'clock			13:00	1 p.m.	1 o'clock	
	02:00	2 a.m.	2 o'clock			14:00	2 p.m.	2 o'clock	
	03:00	3 a.m.	3 o'clock			15:00	3 p.m.	3 o'clock	
	04:00	4 a.m.	4 o'clock			16:00	4 p.m.	4 o'clock	
	05:00	5 a.m.	5 o'clock			17:00	5 p.m.	5 o'clock	
	06:00	6 a.m.	6 o'clock			18:00	6 p.m.	6 o'clock	
	07:00	7 a.m.	7 o'clock			19:00	7 p.m.	7 o'clock	
	08:00	8 a.m.	8 o'clock			20:00	8 p.m.	8 o'clock	
	09:00	9 a.m.	9 o'clock			21:00	9 p.m.	9 o'clock	
	10:00	10 a.m.	10 o'clock			22:00	10 p.m.	10 o'clock	
	11:00	11 a.m.	11 o'clock			23:00	11 p.m.	11 o'clock	
	12:00	12 p.m.	12 o'clock			00:00	12 a.m.	12 o'clock	



Statistics

Knowledge Organiser

Key Vocabulary

Discrete and Continuous Data

Bar Charts

bar chart

pictogram

frequency table

tally chart

discrete data

continuous data

time graph

sum

difference

comparison

interpret



Data that is counted in whole numbers is discrete. In **discrete data**, values between whole numbers cannot be counted.

Data that is measured and therefore can take on infinite values is continuous. In **continuous data**, values between whole numbers can be counted.

Frequency Tables

Tally marks are used to help count things. Each vertical line represents one unit. The fifth tally mark goes down across the first four to make it easier to count.

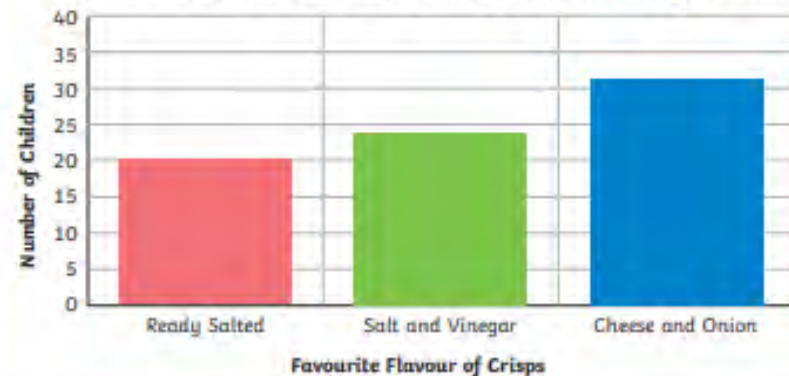
The frequency column is completed after all the data has been collected.

Eye Colour	Tally	Frequency
brown	###	6
blue	###	8
green		3
grey		4
hazel	###	5

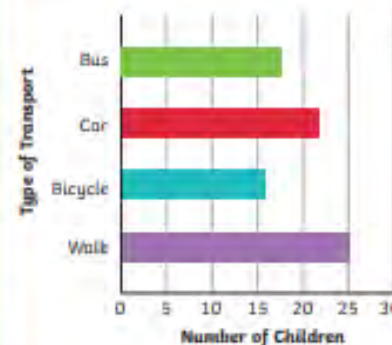
A bar chart has a horizontal axis and a vertical axis. Bars are used to show the data of each category. There must be a gap between each bar.

The scale of the bar chart is based on the range of data.

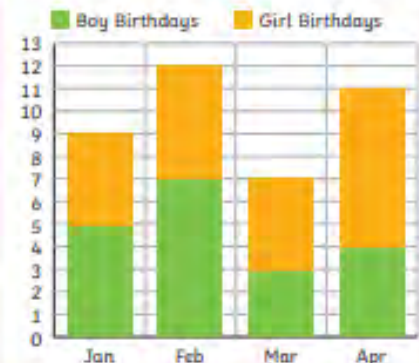
The scale on this bar chart counts in fives.



The bars are horizontal on this bar chart.



Two sets of data are shown on this stacked bar chart.

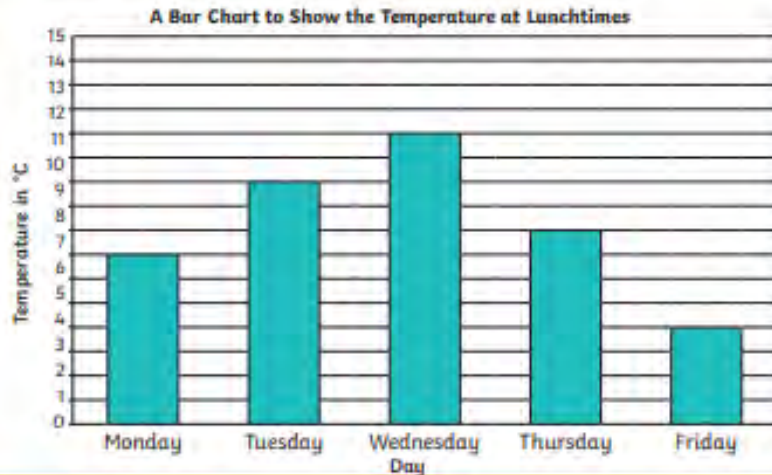


Statistics

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Time Graphs

Time graphs show how data changes over time.



A Line Graph to Show the Average Monthly Temperature in the Borneo Rainforest



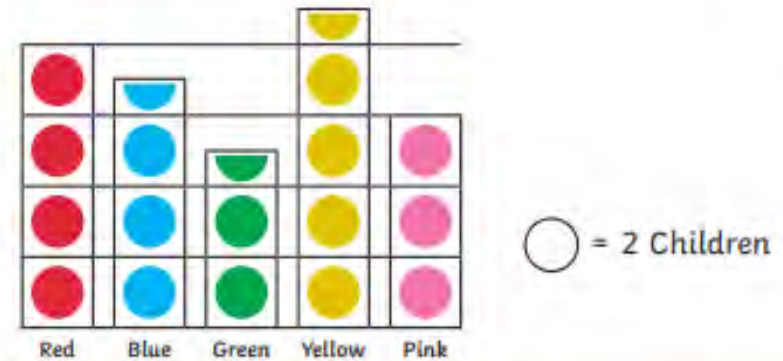
Pictograms

Pictograms use symbols or pictures to represent data.

This pictogram uses one symbol to represent two children.

Using this key, we can see that seven children prefer the colour blue.

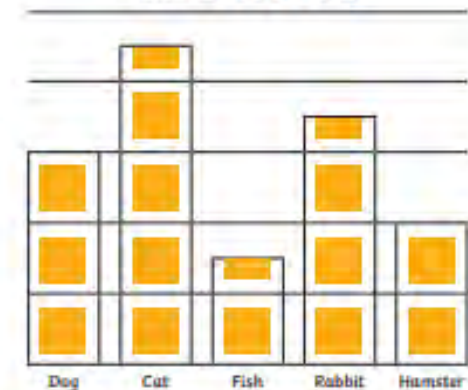
Class 10's Favourite Colours



Class 10's Pets

This pictogram uses one picture to represent four children. Using this key, we can see that six children have a pet fish.

□ = 4 Children



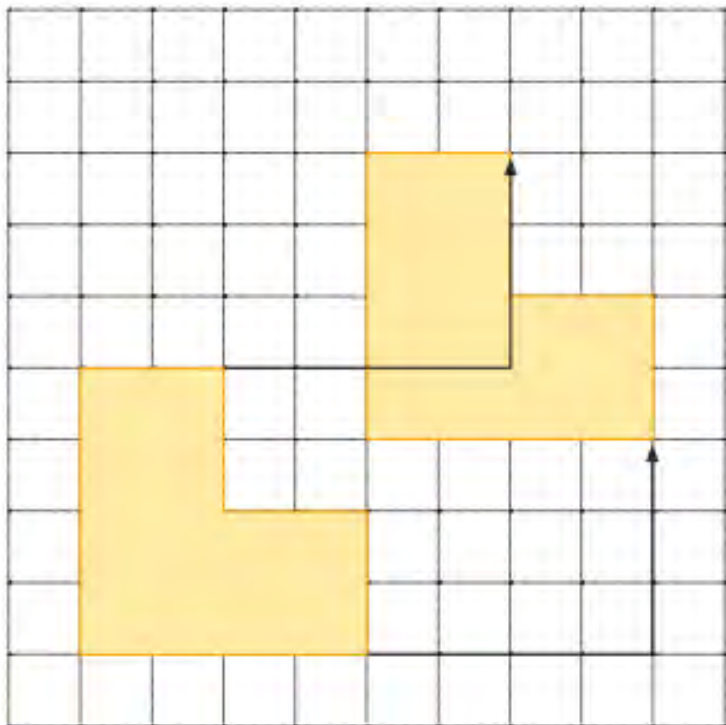
Key Vocabulary	Position in the First Quadrant	
coordinate	<div data-bbox="560 279 1254 893"> <p>y-axis.</p> <p>x-axis.</p> </div> <div data-bbox="1310 303 1971 901"> <p>Coordinates are a useful way to locate a position on a map or grid.</p> <p>The numbers across the horizontal line of the grid are on the x-axis.</p> <p>The numbers on the vertical line of the grid are on the y-axis.</p> <p>We always read or write the number on the x-axis before the y-axis.</p> <p>The x and y position are written in brackets with a comma.</p> <p>The coordinate of the blue spot is (2, 3).</p> </div>	
quadrant		
x-axis		
y-axis		
translation		
vertex	<p>To help you remember which point to read or write first, simply remember to move 'along the corridor and up the stairs'.</p> <p>In other words, move on the x-axis and then move on the y-axis.</p> <div data-bbox="1612 965 1948 1396"> </div>	
vertices		

Position and Direction

Translation

In maths, translation means moving an object on a grid. The object is moved without changing the size, turning or reflecting it.

When translating an object on a grid, it can move up or down, left or right.



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Plotting 2D Shapes

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

