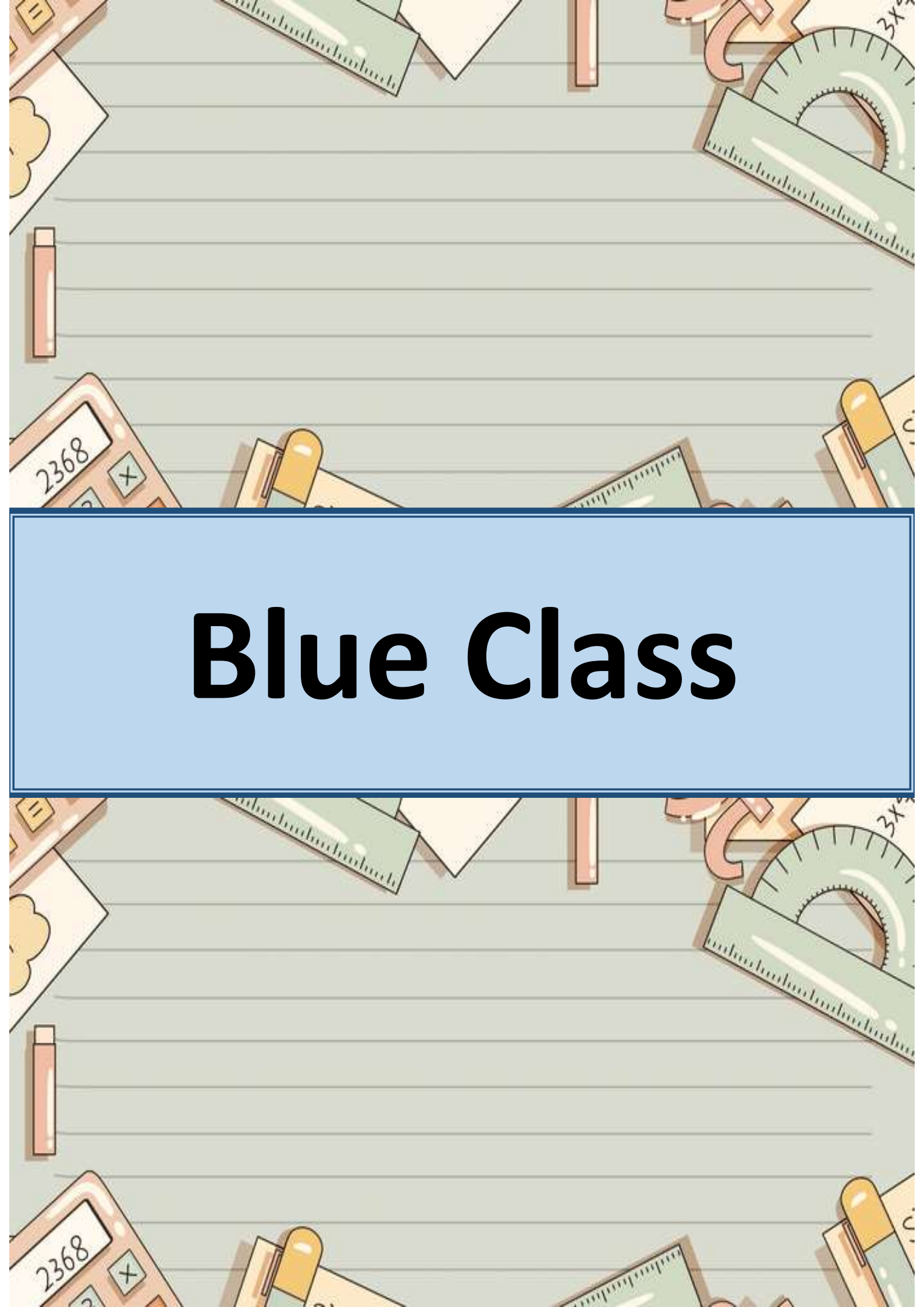
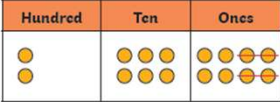
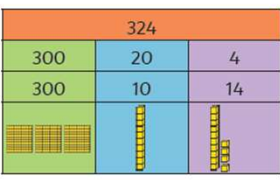
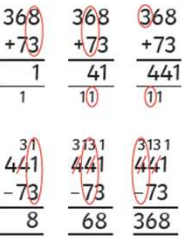
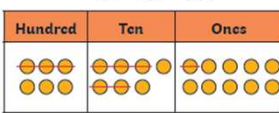
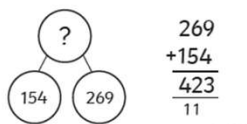
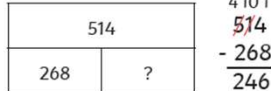
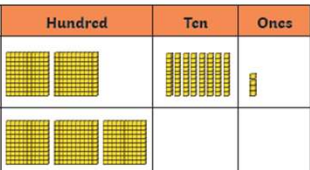
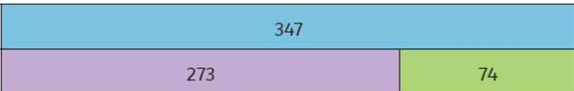
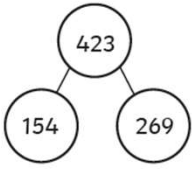


A decorative border surrounds the central text box, featuring various school supplies like rulers, a protractor, a calculator, and paper clips. The background is a light gray surface with horizontal lines.

Blue Class

Addition and Subtraction: Stage 3

Addition and Subtraction		Knowledge Organiser	
Key Vocabulary add total plus sum more altogether difference subtract less minus take away column addition column subtraction exchange estimate inverse operation solve problems number facts place value	Addition and Subtraction Methods		
3-digit and 1-digit numbers Not crossing 10s $268 - 4 = 264$  $343 + 6 = 349$  Crossing 10s (Exchanging)  $316 + 8 = 324$  $324 - 8 = 316$		3-digit and 2-digit numbers Add and subtract tens  $451 + 3 \text{ tens} = 481$ ($5 + 3 = 8$) $451 - 4 \text{ tens} = 411$ ($5 - 4 = 1$) Crossing 10s (Exchanging) $258 + 80 = 338$ • Column method • Count in 10s mentally • Add 100, subtract 20 Crossing 10 and 100 	
		3-digit numbers Not crossing $679 - 351 = 328$  Crossing 10s (Exchanging)   Add and Subtract 100s $284 + 300 = 584$ 	

Addition and Subtraction		Knowledge Organiser				
Estimate Estimate by dividing the hundred into 250 and 225. Estimate 10s (330, 340) between 325 and 350.  Estimate $167 - 89$ Use near numbers $170 - 90 = 80$ Near numbers: 	Check Answers  $347 - 74 = 273$ can be checked using $273 + 74 = 347$ This part whole shows the inverse calculations using these three numbers.  <table border="1"> <tbody> <tr> <td>$154 + 269 = 423$</td> <td>$269 + 154 = 423$</td> </tr> <tr> <td>$423 - 154 = 269$</td> <td>$423 - 269 = 154$</td> </tr> </tbody> </table>		$154 + 269 = 423$	$269 + 154 = 423$	$423 - 154 = 269$	$423 - 269 = 154$
$154 + 269 = 423$	$269 + 154 = 423$					
$423 - 154 = 269$	$423 - 269 = 154$					

Addition and Subtraction: Stage 4

Addition and Subtraction		Knowledge Organiser	
Key Vocabulary		Addition and Subtraction Methods	
Add	Add 4-digit numbers No exchange $\begin{array}{r} 5162 \\ + 3427 \\ \hline 8589 \end{array}$ Starting with the ones, add each column in turn.	Subtract 4-digit numbers No exchange $\begin{array}{r} 5789 \\ - 3421 \\ \hline 2368 \end{array}$ Starting with the ones, subtract each column in turn.	
Total			
Plus			
Sum			
More	One exchange 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.	One exchange 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	
Altogether			
Difference			
Subtract			
Less	Multiple exchanges $\begin{array}{r} 5162 \\ + 3497 \\ \hline 8659 \\ 1 \end{array}$ Starting with the ones, add each column in turn. Exchange tens, hundreds and/ or thousands as required.	Multiple exchanges $\begin{array}{r} 61 \\ 5749 \\ - 3471 \\ \hline 2278 \end{array}$ Starting with the ones, subtract each column in turn. Exchange tens, hundreds and/ or thousands as required.	
Minus			
Take away			
Mentally, Orally			
Column Addition			
Column Subtraction			
Exchange			
Estimate			
Inverse operation			
Solve problems			
Number facts			
Efficient subtraction			
Calculate 6000 - 3617 = 2383			

Addition and Subtraction

Knowledge Organiser

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.

visit [twinkl.com](https://www.twinkl.com)

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 =

As 420 + 280 = 700

(because 42 + 28 = 70)

420 + 280 + 372 = 700 + 372 = 1072

Multiplication and Division: Stage 3

Multiplication and Division		Knowledge Organiser																																																																																																																																																																												
Key Vocabulary times tables multiply by divide by array fact families regrouping	Multiplication and Division Facts (3, 4 and 8 multiplication tables)																																																																																																																																																																													
<table border="1"> <tr><th>x</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th></tr> <tr><th>1</th><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><th>2</th><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><th>3</th><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><th>4</th><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><th>5</th><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><th>6</th><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><th>7</th><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><th>8</th><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><th>9</th><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><th>10</th><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><th>11</th><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><th>12</th><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	3 x Tables $1 \times 3 = 3$ $2 \times 3 = 6$ $3 \times 3 = 9$ $4 \times 3 = 12$ $5 \times 3 = 15$ $6 \times 3 = 18$ $7 \times 3 = 21$ $8 \times 3 = 24$ $9 \times 3 = 27$ $10 \times 3 = 30$ $11 \times 3 = 33$ $12 \times 3 = 36$ $3 \div 3 = 1$ $6 \div 3 = 2$ $9 \div 3 = 3$ $12 \div 3 = 4$ $15 \div 3 = 5$ $18 \div 3 = 6$ $21 \div 3 = 7$ $24 \div 3 = 8$ $27 \div 3 = 9$ $30 \div 3 = 10$ $33 \div 3 = 11$ $36 \div 3 = 12$		4 x Tables $1 \times 4 = 4$ $2 \times 4 = 8$ $3 \times 4 = 12$ $4 \times 4 = 16$ $5 \times 4 = 20$ $6 \times 4 = 24$ $7 \times 4 = 28$ $8 \times 4 = 32$ $9 \times 4 = 36$ $10 \times 4 = 40$ $11 \times 4 = 44$ $12 \times 4 = 48$	8 x Tables $1 \times 8 = 8$ $2 \times 8 = 16$ $3 \times 8 = 24$ $4 \times 8 = 32$ $5 \times 8 = 40$ $6 \times 8 = 48$ $7 \times 8 = 56$ $8 \times 8 = 64$ $9 \times 8 = 72$ $10 \times 8 = 80$ $11 \times 8 = 88$ $12 \times 8 = 96$
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																																																																																																																																																																		
Write and Calculate Mathematical Statements		Related Calculations																																																																																																																																																																												
$4 \times 8 = 32$ $32 \div 8 = 4$ $8 \times 4 = 32$ $32 \div 4 = 8$ $5 \times 3 = 15$ $15 \div 3 = 5$ $3 \times 5 = 15$ $15 \div 5 = 3$		$3 \times 4 = 12$ $4 \times 3 = 12$ $30 \times 4 = 120$ $40 \times 3 = 120$																																																																																																																																																																												

Multiplication and Division		Knowledge Organiser																												
Written Multiplication Methods - No Regrouping		Written Multiplication Methods - With Regrouping																												
Tens Ones $23 \times 3 = 69$ <table border="1"> <tr><td></td><td>T</td><td>O</td></tr> <tr><td></td><td>2</td><td>3</td></tr> <tr><td>x</td><td></td><td>3</td></tr> <tr><td></td><td>6</td><td>9</td></tr> </table>			T	O		2	3	x		3		6	9	Tens Ones $24 \times 4 = 96$ <table border="1"> <tr><td></td><td>T</td><td>O</td></tr> <tr><td></td><td>2</td><td>4</td></tr> <tr><td>x</td><td></td><td>4</td></tr> <tr><td></td><td>9</td><td>6</td></tr> <tr><td></td><td>1</td><td></td></tr> </table>			T	O		2	4	x		4		9	6		1	
	T	O																												
	2	3																												
x		3																												
	6	9																												
	T	O																												
	2	4																												
x		4																												
	9	6																												
	1																													
Written Division Methods - No Regrouping		Written Division Methods - With Regrouping																												
Tens Ones $84 \div 4$ <table border="1"> <tr><td></td><td>2</td><td>1</td></tr> <tr><td>4</td><td>8</td><td>4</td></tr> </table>			2	1	4	8	4	Tens Ones $45 \div 3$ <table border="1"> <tr><td></td><td>1</td><td>5</td></tr> <tr><td>3</td><td>4</td><td>5</td></tr> </table>			1	5	3	4	5															
	2	1																												
4	8	4																												
	1	5																												
3	4	5																												

Multiplication and Division: Stage 4

Multiplication and Division

Knowledge Organiser

Key Vocabulary

Multiplication and Division Facts

Use Place Value to Multiply and Divide Mentally

multiply

x	1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	---	----	----	----

groups of

1	1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	---	----	----	----

lots of

2	2	4	6	8	10	12	14	16	18	20	22	24
---	---	---	---	---	----	----	----	----	----	----	----	----

times

3	3	6	9	12	15	18	21	24	27	30	33	36
---	---	---	---	----	----	----	----	----	----	----	----	----

divide

4	4	8	12	16	20	24	28	32	36	40	44	48
---	---	---	----	----	----	----	----	----	----	----	----	----

share

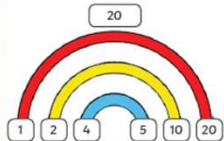
5	5	10	15	20	25	30	35	40	45	50	55	60
---	---	----	----	----	----	----	----	----	----	----	----	----

remainder

6	6	12	18	24	30	36	42	48	54	60	66	72
---	---	----	----	----	----	----	----	----	----	----	----	----

factor

Factor pairs and Commutativity



The factors of 20 are 1, 2, 4, 5, 10 and 20.

The factor pairs are:

1 and 20 2 and 10 4 and 5

$5 \times 4 = 20$

$4 \times 5 = 20$

multiple

product

Multiply Using Formal Written Methods

Th	H	T	O
	5	4	3
x			4
		1	2
	1	6	0
2	0	0	0
2	1	7	2

Th	H	T	O
	5	4	3
x			4
2	1	7	2
	1	1	

Remember to move any regrouped numbers into the next column. After the next multiplication, add the regrouped number to the answer.

twinkl visit [twinkl.com](https://www.twinkl.com)

Multiplication and Division

Knowledge Organiser

Mental Calculations for Solving Problems

$$(2 \times 3) \times 4 = 24$$

$$(2 \times 4) \times 3 = 24$$

$$(3 \times 4) \times 2 = 24$$

Integer Scaling Problems

10 pencils

$10 \times 4 = 40$ pencils

75g

$75g \times 2 = 150g$

Short Division with Exact Answers

There are 69 tennis balls packed in tubes of 3.

There are 23 tubes altogether.

$$69 \div 3 = 23$$

$$\begin{array}{r} 23 \\ 3 \overline{) 69} \end{array}$$

69

23

23

23

twinkl
visit [twinkl.com](https://www.twinkl.com)

Decimals: Stage 4

Decimals		Knowledge Organiser
Key Vocabulary	Tenths and Hundredths	Fraction and Decimal Equivalents
tenths		= $\frac{1}{2}$ = 0.5
hundredths		= $\frac{1}{4}$ = 0.25
decimal tenths		= $\frac{3}{4}$ = 0.75
decimal hundredths		= $\frac{1}{10}$ = 0.1
decimal equivalents	Tenth and Hundredth Decimal Equivalents	
part-whole model		
rounding		
decimal point		
place value		

Decimals

Knowledge Organiser

Dividing by 10

Tens	Ones	
8	5	$\div 10$

Tens	Ones	Tenths
	8	5

$\div 10$

Dividing by 100

Tens	Ones	
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
0	3	4

Ones	Tenths	Hundredths
1	0	2

Ones	Tenths	Hundredths
2	1	3

visit [twinkl.com](https://www.twinkl.com)

Money: Stage 3

Money Knowledge Organiser	
Key Vocabulary	UK Coins
amount	 1p  2p  5p  10p  20p  50p  £1  £2 one penny coin two pence coin five pence coin ten pence coin twenty pence coin fifty pence coin one pound coin two pound coin
change	
coin	
combinations	UK Notes
convert	 £5 five pound note  £10 ten pound note  £20 twenty pound note  £50 fifty pound note
note	
pence	
penny	
pounds	Pounds and Pence
value	 £3 and 25 pence  £52 and 13 pence  120 pence 100 pence is £1 120 pence is £1 and 20 pence.

Money Knowledge Organiser	
Adding Amounts	
 £1 and 60p  £1 and 52p	? £1 and 60p  $£1 \text{ and } 60\text{p} + £1 \text{ and } 52\text{p}$ There is £2 and 112p. 112p is £1 and 12p Altogether there is £3 and 12p.
Subtracting Amounts	Giving Change
£2 and 35p - £1 and 80p  $£2 \text{ and } 35\text{p} - £1 \text{ and } 80\text{p}$ 20p 35p £1 and 80p £2 £2 and 35p	  £5 and 67p £10 £9 100p $£9 - £5 = £4$ $100\text{p} - 67\text{p} = 33\text{p}$ £4 and 33p change

Money: Stage 4

Knowledge Organiser

Key Vocabulary		UK Coins							
amount									
change		£0.01	£0.02	£0.05	£0.10	£0.20	£0.50	£1.00	£2.00
combinations		one penny coin	two pence coin	five pence coin	ten pence coin	twenty pence coin	fifty pence coin	one pound coin	two pound coin
estimate									
decimal									
pence									
penny									
pounds									
round									
value									
convert									

UK Notes				
				
£5 five pound note	£10 ten pound note	£20 twenty pound note	£50 fifty pound note	

Pounds and Pence		
		463 = £4.63
£3 and 25 pence	£3.25	£52 and 13 pence
		£52.13
		705p = £7.05
		92p = £0.92

Knowledge Organiser

Ordering Money

We can compare or order amounts by changing all amounts to either pounds or pence.

£4.82 428p

£4.82 = 482p

482p > 428p

£4.82 > 428p

Order in ascending order:

516p	156p	£1.65	£6.51
------	------	-------	-------

£1.65 = 165p and £6.51 = 651p

156p, £1.65, 516p, £6.51

Estimating Money



That's about £8.

£7.00 £7.50 £8.00

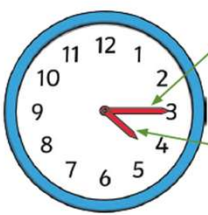
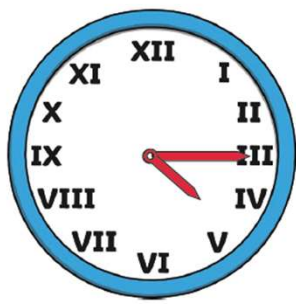
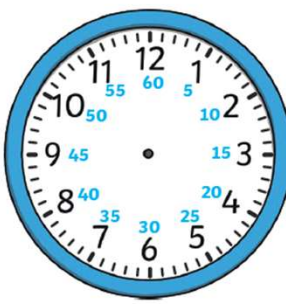
That's about £4.

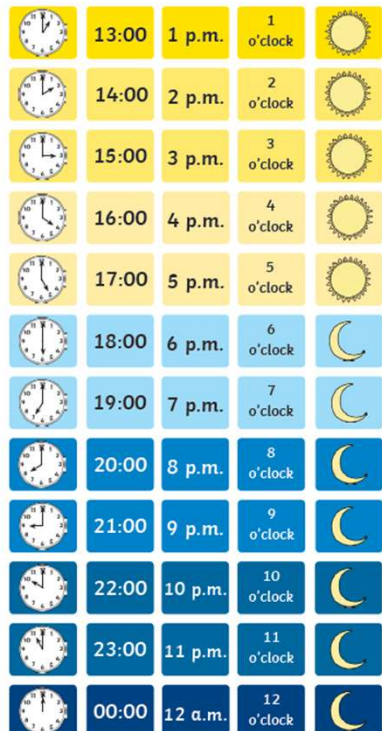
We can use estimates when calculating.

They are about £3 and £7 so will be about £10 in total.

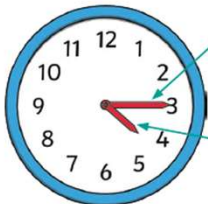
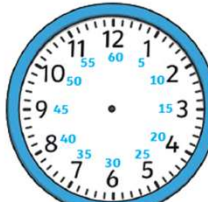
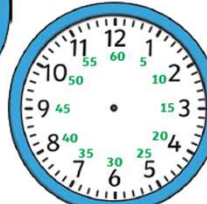


Time: Stage 3

Time	Knowledge Organiser	
Key Vocabulary 12-hour time 24-hour time - Roman numerals - analogue - digital - hours - minutes - seconds - o'clock - half past - quarter past - quarter to - midday - midnight - noon	Analogue and Digital Clocks  Minute Hand The long hand points to the minutes past or the minutes to the hour. Hour Hand The short hand points to the hour. If this hand is pointing between hours, it is either past the earlier hour or to the later hour.  twelve o'clock  quarter past twelve  half past twelve  quarter to one	
	Time and Roman Numerals 	Hours, Minutes and Seconds  There are 60 seconds in an minute. There are 60 minutes in an hour.

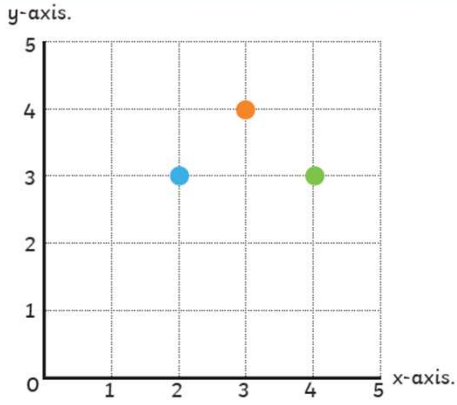
Time	Knowledge Organiser									
24-Hour Time There are 24 hours in a day. 	Calculate Durations of Time Start Duration End  20 minutes has passed.									
	Compare Durations of Time Compare the time using the vocabulary 'longer' and 'shorter'. <table border="1"> <tbody> <tr> <td>180 seconds</td> <td>is the same as</td> <td>3 minutes.</td> </tr> <tr> <td>90 minutes</td> <td>is shorter than</td> <td>2 hours.</td> </tr> <tr> <td>48 hours</td> <td>is longer than</td> <td>1 day.</td> </tr> </tbody> </table>	180 seconds	is the same as	3 minutes.	90 minutes	is shorter than	2 hours.	48 hours	is longer than	1 day.
180 seconds	is the same as	3 minutes.								
90 minutes	is shorter than	2 hours.								
48 hours	is longer than	1 day.								

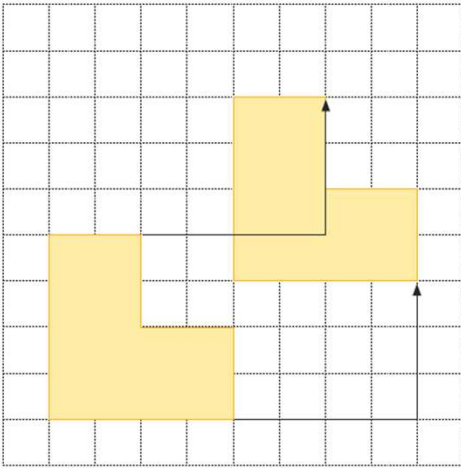
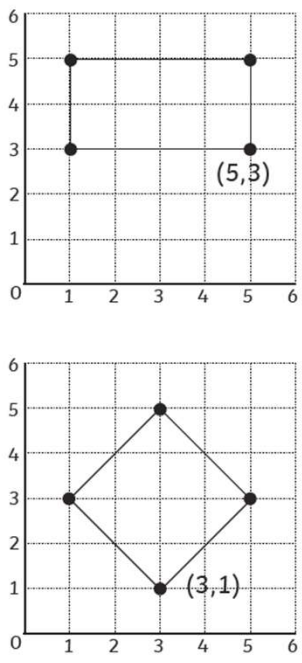
Time: Stage 4

Time	Knowledge Organiser
Key Vocabulary 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.	Analogue and Digital Clocks  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.

Time	Knowledge Organiser																																																																																																																								
24-Hour Time There are 24 hours in a day. 	<table border="1"> <tr> <td></td> <td>01:00</td> <td>1 a.m.</td> <td>1 o'clock</td> <td></td> <td></td> <td>13:00</td> <td>1 p.m.</td> <td>1 o'clock</td> <td></td> </tr> <tr> <td></td> <td>02:00</td> <td>2 a.m.</td> <td>2 o'clock</td> <td></td> <td></td> <td>14:00</td> <td>2 p.m.</td> <td>2 o'clock</td> <td></td> </tr> <tr> <td></td> <td>03:00</td> <td>3 a.m.</td> <td>3 o'clock</td> <td></td> <td></td> <td>15:00</td> <td>3 p.m.</td> <td>3 o'clock</td> <td></td> </tr> <tr> <td></td> <td>04:00</td> <td>4 a.m.</td> <td>4 o'clock</td> <td></td> <td></td> <td>16:00</td> <td>4 p.m.</td> <td>4 o'clock</td> <td></td> </tr> <tr> <td></td> <td>05:00</td> <td>5 a.m.</td> <td>5 o'clock</td> <td></td> <td></td> <td>17:00</td> <td>5 p.m.</td> <td>5 o'clock</td> <td></td> </tr> <tr> <td></td> <td>06:00</td> <td>6 a.m.</td> <td>6 o'clock</td> <td></td> <td></td> <td>18:00</td> <td>6 p.m.</td> <td>6 o'clock</td> <td></td> </tr> <tr> <td></td> <td>07:00</td> <td>7 a.m.</td> <td>7 o'clock</td> <td></td> <td></td> <td>19:00</td> <td>7 p.m.</td> <td>7 o'clock</td> <td></td> </tr> <tr> <td></td> <td>08:00</td> <td>8 a.m.</td> <td>8 o'clock</td> <td></td> <td></td> <td>20:00</td> <td>8 p.m.</td> <td>8 o'clock</td> <td></td> </tr> <tr> <td></td> <td>09:00</td> <td>9 a.m.</td> <td>9 o'clock</td> <td></td> <td></td> <td>21:00</td> <td>9 p.m.</td> <td>9 o'clock</td> <td></td> </tr> <tr> <td></td> <td>10:00</td> <td>10 a.m.</td> <td>10 o'clock</td> <td></td> <td></td> <td>22:00</td> <td>10 p.m.</td> <td>10 o'clock</td> <td></td> </tr> <tr> <td></td> <td>11:00</td> <td>11 a.m.</td> <td>11 o'clock</td> <td></td> <td></td> <td>23:00</td> <td>11 p.m.</td> <td>11 o'clock</td> <td></td> </tr> <tr> <td></td> <td>12:00</td> <td>12 p.m.</td> <td>12 o'clock</td> <td></td> <td></td> <td>00:00</td> <td>12 a.m.</td> <td>12 o'clock</td> <td></td> </tr> </table>		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	
	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																																																																																																																	

Position and Direction: Stage 4

Position and Direction		Knowledge Organiser
Key Vocabulary	Position in the First Quadrant	
coordinate		Coordinates are a useful way to locate a position on a map or grid.
quadrant		The numbers across the horizontal line of the grid are on the x-axis .
x-axis		The numbers on the vertical line of the grid are on the y-axis .
y-axis		We always read or write the number on the x-axis before the y-axis .
translation		The x and y position are written in brackets with a comma.
vertex		The coordinate of the blue spot is (2, 3) .
vertices	To help you remember which point to read or write first, simply remember to move 'along the corridor and up the stairs'. In other words, move on the x-axis and then move on the y-axis. 	
 visit twinkl.com		

Position and Direction		Knowledge Organiser
Translation	Plotting 2D Shapes	
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. 	Each vertex (corner) of a 2D polygon can be represented as a coordinate on a 2D grid. 	
 visit twinkl.com		

Statistics: Stage 3

Statistics

Knowledge Organiser

Key Vocabulary

data

pictogram

symbol

bar chart

horizontal axis

vertical axis

axes

scale

intervals

table

interpret

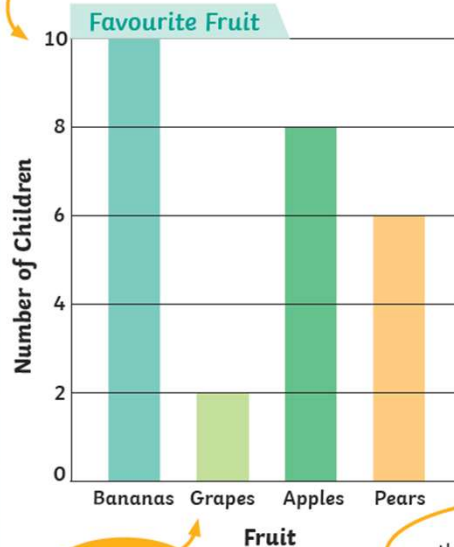
twinkl visit twinkl.com

Bar Charts

Bars are used to show the data in each category. There must be a gap between each bar. Bar charts can have different scales.

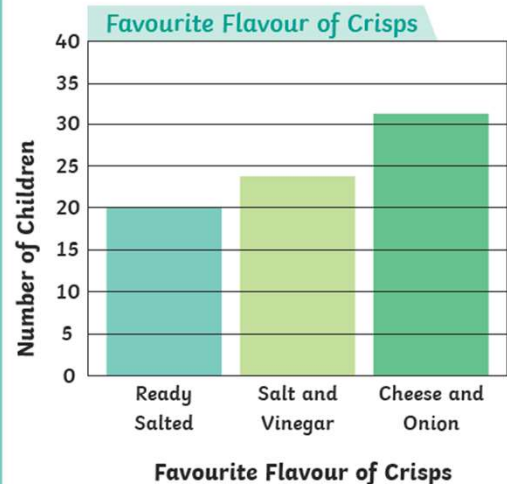
vertical axis

The scale on this bar chart counts in twos.



horizontal axis

The scale on this bar chart counts in fives.



The scale on the bar chart depends on the range of the data.

Statistics

Knowledge Organiser

Tables

In order to understand the data presented in a table, you must read the table's title and the headings. Remember to always look at the heading above each piece of information.

title
Table to Show Ticket Prices at a Local Cinema

heading

Ticket Type	Weekday Price	Weekend Price
Adult	£6	£7.50
Child	£4	£4.50
Student	£5.50	£6

information

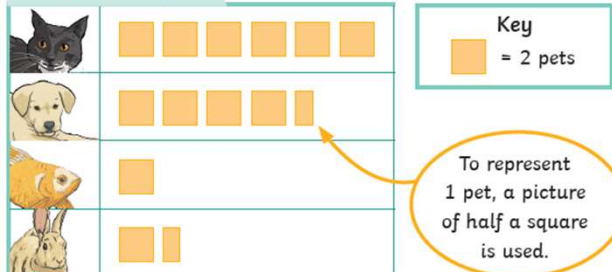
Using the table, we can see the cost of an adult and a child visiting the cinema on a Monday would be £10.

twinkl visit twinkl.com

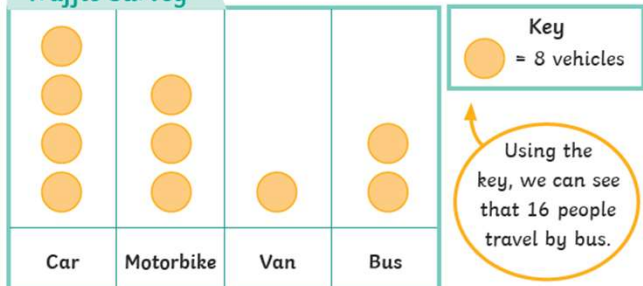
Pictograms

Pictograms use pictures or symbols to represent data. The key shows what each symbol represents. This pictogram uses 1 symbol to represent 2 pets.

Class A's Pets



Traffic Survey



Statistics: Stage 4

Statistics

Key Vocabulary

bar chart

pictogram

frequency table

tally chart

discrete data

continuous data

time graph

sum

difference

comparison

interpret

twinkl visit twinkl.com

Discrete and Continuous Data

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	I	6
blue	III	8
green		3
grey		4
hazel		5

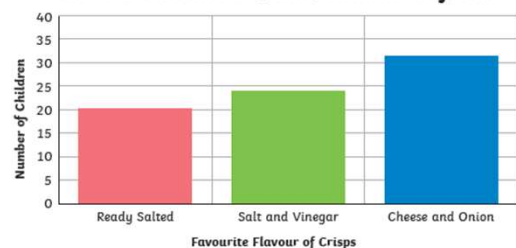
Knowledge Organiser

Bar Charts

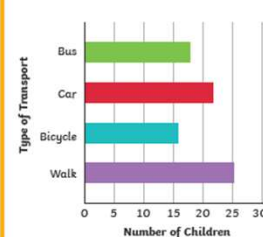
A bar chart has a horizontal axis and a vertical axis. Bars are used to show the data of each category. There must be a gap between each bar.

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

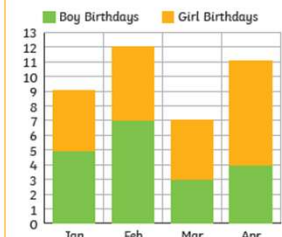
The scale on this bar chart counts in fives.



The bars are horizontal on this bar chart.



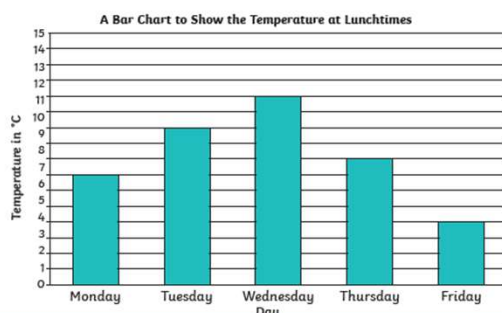
Two sets of data are shown on this stacked bar chart.



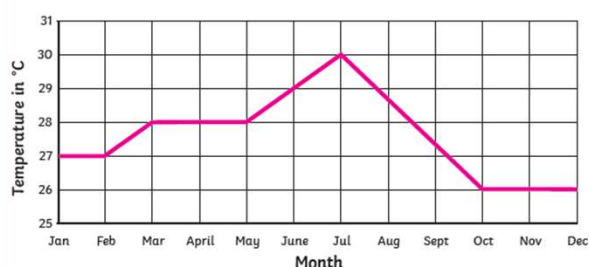
Statistics

Time Graphs

Time graphs show how data changes over time.



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



twinkl visit twinkl.com

Knowledge Organiser

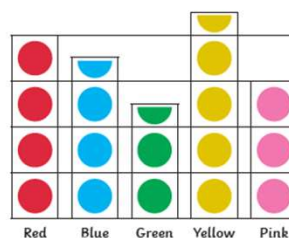
Pictograms

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



○ = 2 Children

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

