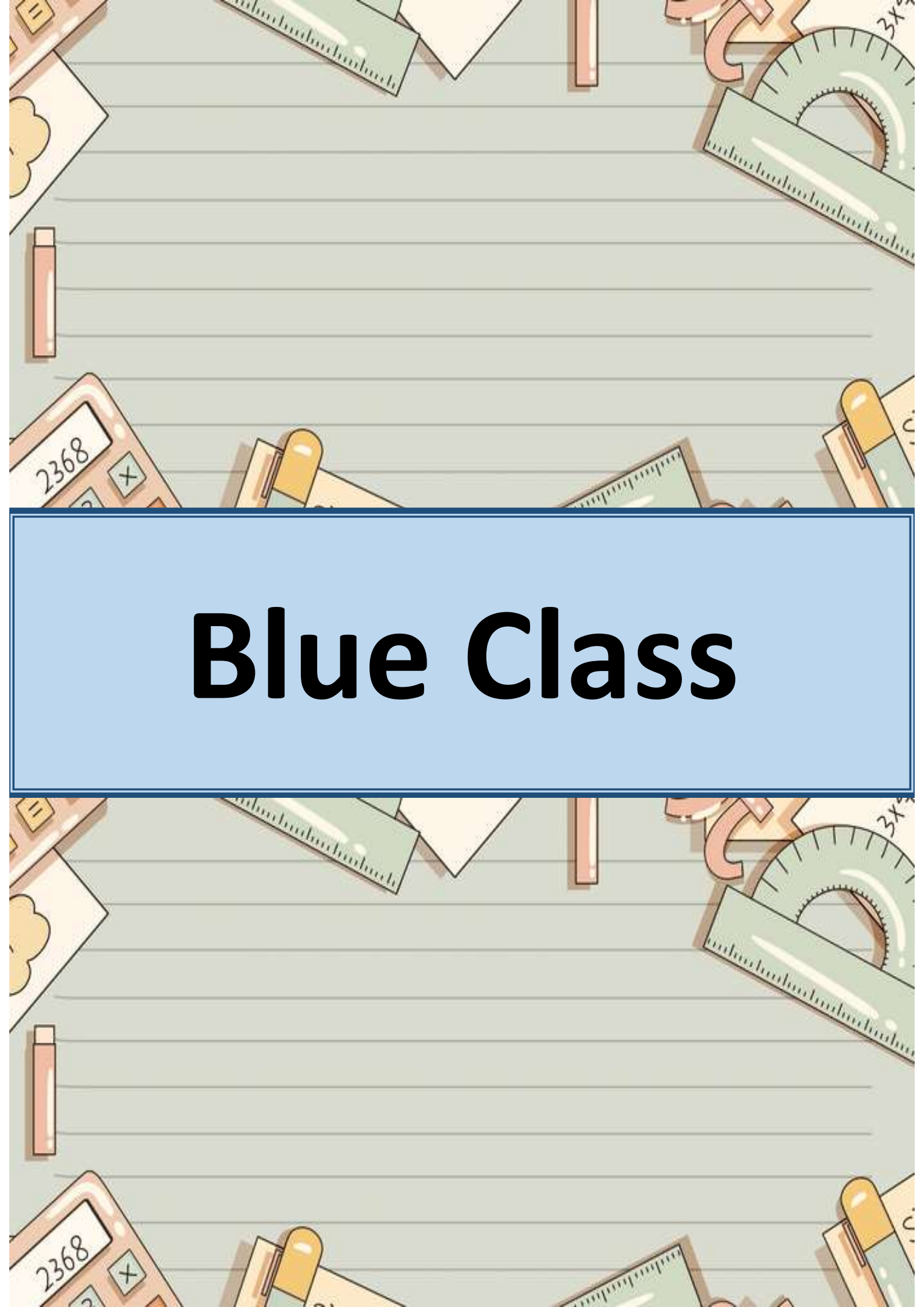
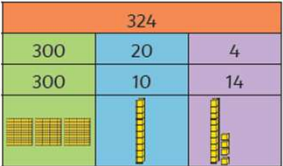
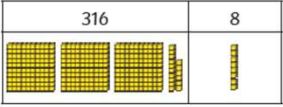
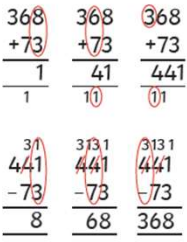
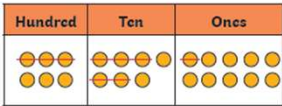
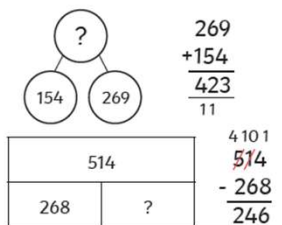
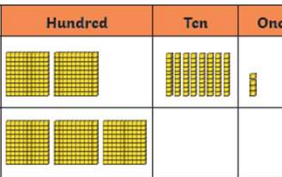
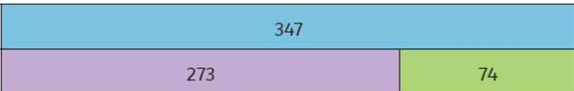
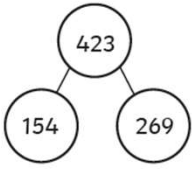


The background of the page is a light gray surface with horizontal lines, resembling a notebook. It is decorated with various school supplies: a green ruler, a protractor, a calculator showing '2368', a pencil, a paperclip, and a small notepad with a cloud drawing. These items are scattered around the edges of the page.

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.

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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

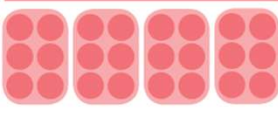
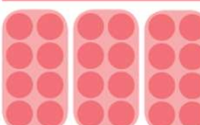
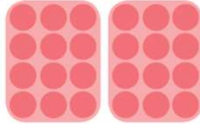
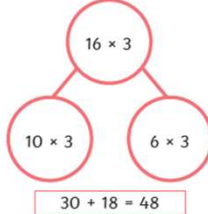
Multiplication and Division: Stage 3

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 $1 \times 8 = 8$ $2 \times 8 = 16$ $3 \times 8 = 24$ $4 \times 8 = 32$ $5 \times 8 = 40$ $6 \times 8 = 48$ $7 \times 8 = 56$ $8 \times 8 = 64$ $9 \times 8 = 72$ $10 \times 8 = 80$ $11 \times 8 = 88$ $12 \times 8 = 96$
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Write and Calculate Mathematical Statements		Related Calculations																																																																																																																																																																												
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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
	T	O											
	2	3											
x		3											
	6	9											

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	 5 × 1 = 5 5 ÷ 1 = 5																																													
groups of		1	1	2	3	4	5	6	7	8	9	10	11	12	 5 × 10 = 50 50 ÷ 10 = 5																																													
lots of		2	2	4	6	8	10	12	14	16	18	20	22	24	 5 × 100 = 500 500 ÷ 100 = 5																																													
times		3	3	6	9	12	15	18	21	24	27	30	33	36																																														
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divide																																																												
share																																																												
remainder																																																												
		Factor pairs and Commutativity												Multiply Using Formal Written Methods																																														
factor		 20 5 × 4 = 20 4 × 5 = 20 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												<table><tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>5</td><td>4</td><td>3</td><td></td></tr><tr><td>x</td><td></td><td></td><td>4</td><td></td></tr><tr><td></td><td></td><td>1</td><td>2</td><td>(4 × 3)</td></tr><tr><td></td><td>1</td><td>6</td><td>0</td><td>(4 × 40)</td></tr><tr><td>2</td><td>0</td><td>0</td><td>0</td><td>(4 × 500)</td></tr><tr><td>2</td><td>1</td><td>7</td><td>2</td><td></td></tr></table>													Th	H	T	O		5	4	3		x			4				1	2	(4 × 3)		1	6	0	(4 × 40)	2	0	0	0	(4 × 500)	2	1	7	2	
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2	1	7	2																																																									
	1	1																																																										
product														Remember to move any regrouped numbers into the next column. After the next multiplication, add the regrouped number to the answer.																																														

Multiplication and Division				Knowledge Organiser			
Mental Calculations for Solving Problems				Integer Scaling Problems			
$(2 \times 3) \times 4 = 24$ 		$(2 \times 4) \times 3 = 24$ 		10 pencils 		$10 \times 4 = 40$ pencils 	
$(3 \times 4) \times 2 = 24$ 		 16×3 10×3 6×3 $30 + 18 = 48$		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.

$$69 \div 3 = 23$$

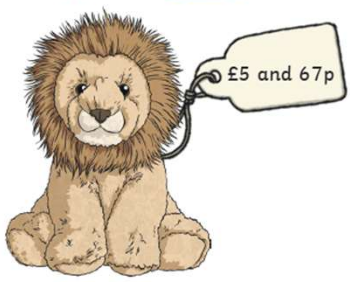
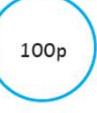
$$\begin{array}{r} 23 \\ 3 \overline{) 69} \end{array}$$

69		
23	23	23

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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					
value	<table border="1"> <thead> <tr> <th>Pounds and Pence</th><th>Convert Pounds and Pence</th></tr> </thead> <tbody> <tr> <td>  £3 and 25 pence </td><td>  £52 and 13 pence </td></tr> </tbody> </table>	Pounds and Pence	Convert Pounds and Pence	 £3 and 25 pence	 £52 and 13 pence
Pounds and Pence	Convert Pounds and Pence				
 £3 and 25 pence	 £52 and 13 pence				

Money Knowledge Organiser					
Adding Amounts					
 	<table border="1"> <thead> <tr> <th colspan="2">?</th></tr> </thead> <tbody> <tr> <td>£1 and 60p</td><td>    </td></tr> </tbody> </table> $£1 \text{ and } 60p + £1 \text{ and } 52p$ There is £2 and 112p. 112p is £1 and 12p Altogether there is £3 and 12p.	?		£1 and 60p	  
?					
£1 and 60p	  				
Subtracting Amounts	Giving Change				
£2 and 35p - £1 and 80p 	     $£9 - £5 = £4$ $100p - 67p = 33p$ £4 and 33p change				

Money: Stage 4

Money

Knowledge Organiser

Key Vocabulary

amount

change

combinations

estimate

decimal

pence

penny

pounds

round

value

convert

UK Coins



£0.01
one
penny coin



£0.02
two
pence coin



£0.05
five
pence coin



£0.10
ten
pence coin



£0.20
twenty
pence coin



£0.50
fifty
pence coin



£1.00
one
pound coin



£2.00
two
pound coin

UK Notes



£5
five pound note



£10
ten pound note



£20
twenty pound note



£50
fifty pound note

Pounds and Pence



£3 and 25 pence

£3.25



£52 and 13 pence

£52.13

463 = £4.63

705p = £7.05

92p = £0.92

Money

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.

£4.00 £5.00

We can use estimates when calculating.

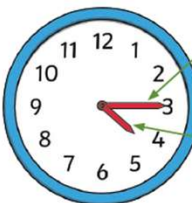
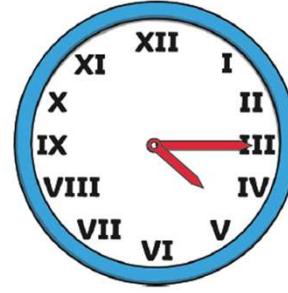
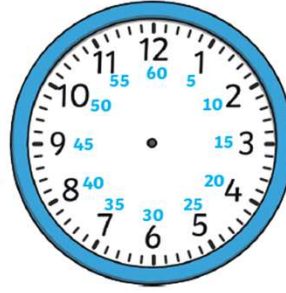
They are about £3 and £7
so will be about £10 in total.



£2.92

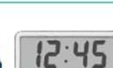
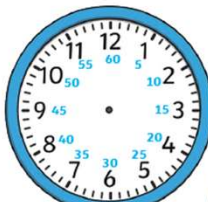
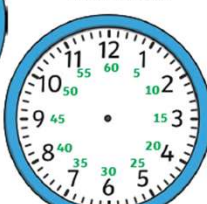
They are about £4 and £3
so will be about £7 in total.
I will have about £3 left.

Time: Stage 3

Time		Knowledge Organiser		
Key Vocabulary	Analogue and Digital Clocks			
12-hour time	 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	
24-hour time		 half past twelve	 quarter to one	
Roman numerals		Time and Roman Numerals		
analogue			Hours, Minutes and Seconds	
digital			 There are 60 seconds in an minute. There are 60 minutes in an hour.	
hours				
minutes				
seconds				
o'clock				
half past				
quarter past				
quarter to				
midday				
midnight				
noon				

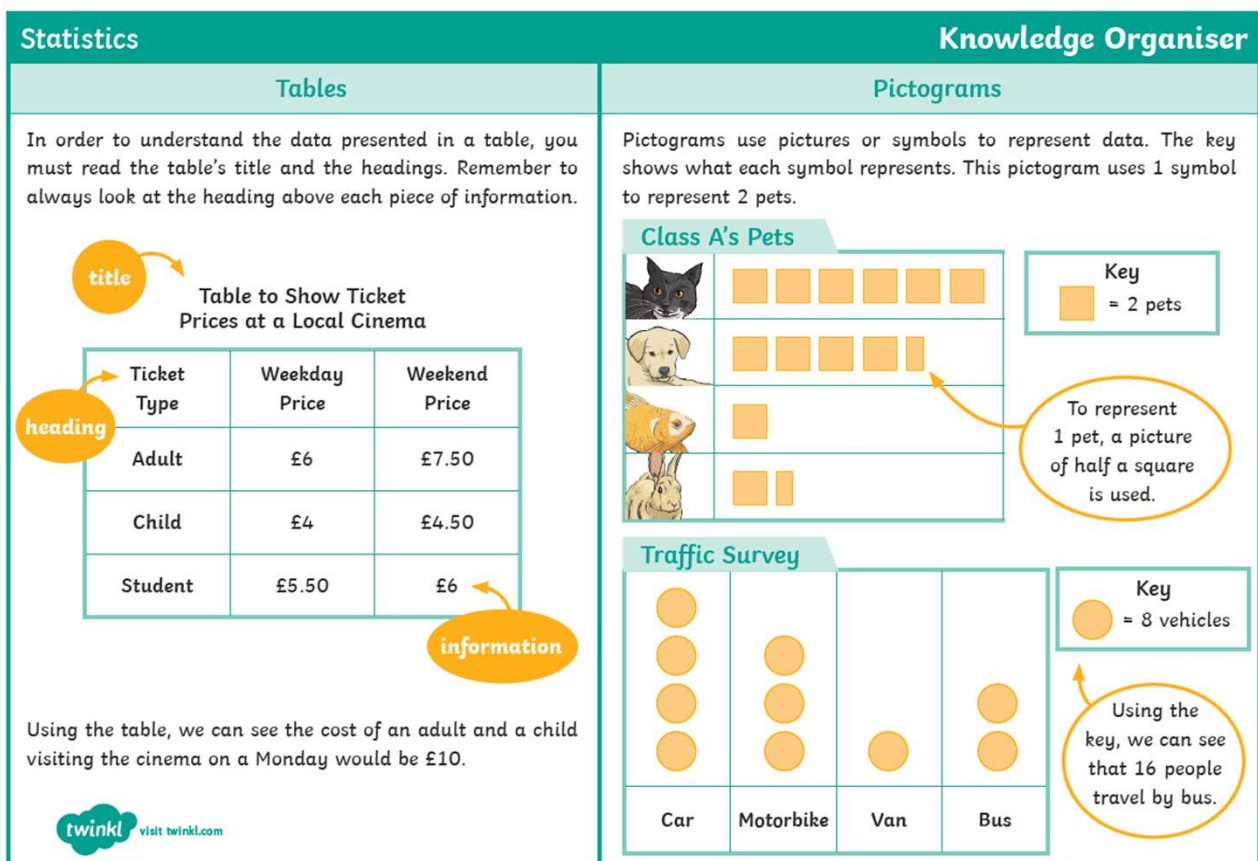
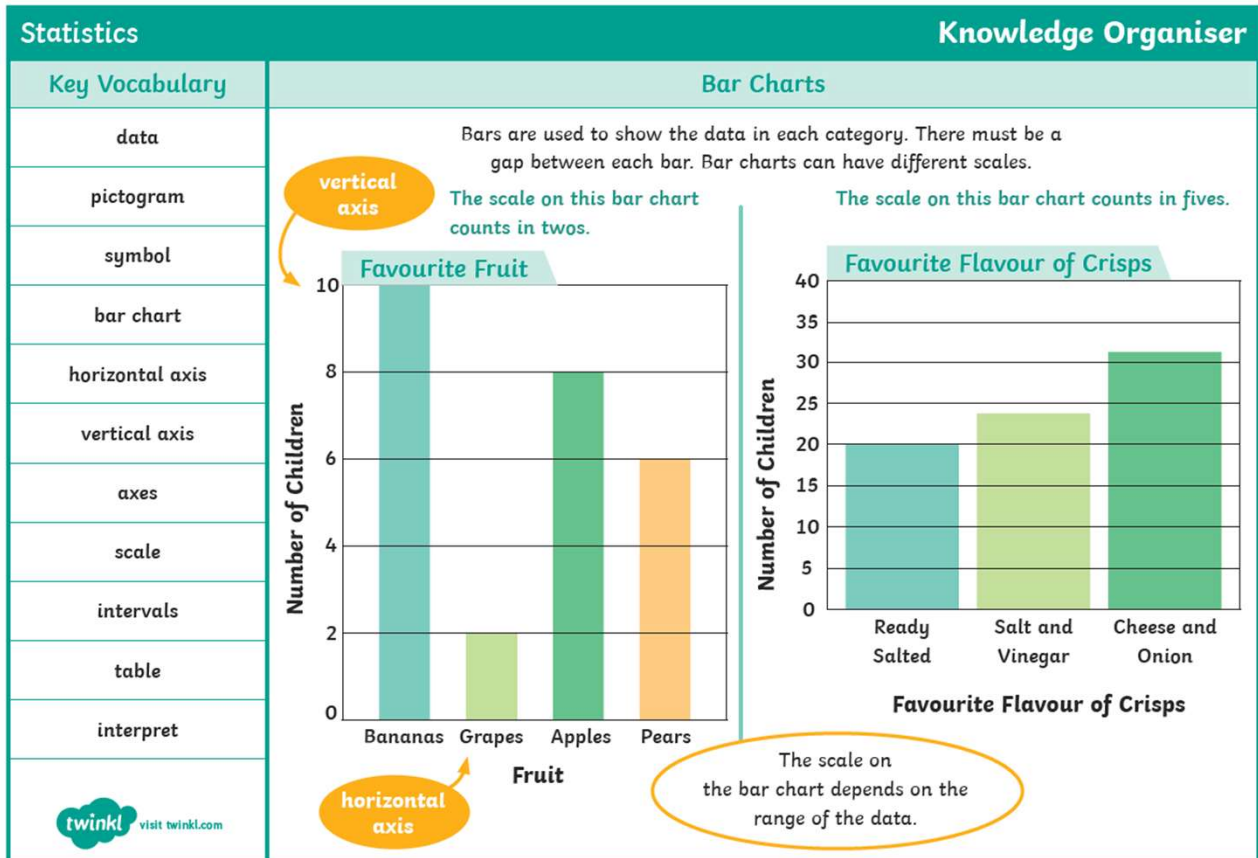
Time		Knowledge Organiser																																																																						
24-Hour Time		Calculate Durations of Time																																																																						
There are 24 hours in a day. 		Start Duration End  20 minutes has passed.																																																																						
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Time: Stage 4

Time	Knowledge Organiser
Key Vocabulary	Analogue and Digital Clocks
12-hour time	 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 
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.	
	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																																																																																																																								
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Statistics: Stage 3

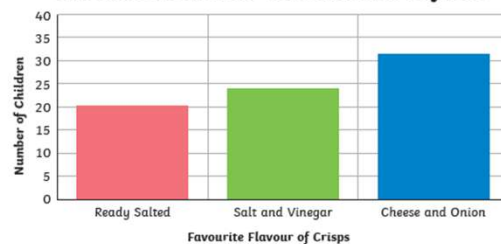


Statistics: Stage 4

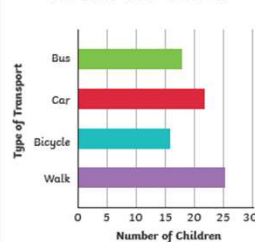
Statistics		Knowledge Organiser
Key Vocabulary	Discrete and Continuous Data	Bar Charts
bar chart	Data that is counted in whole numbers is discrete. In discrete data , values between whole numbers cannot be counted.	A bar chart has a horizontal axis and a vertical axis. Bars are used to show the data of each category. There must be a gap between each bar.
pictogram	Data that is measured and therefore can take on infinite values is continuous. In continuous data , values between whole numbers can be counted.	The scale of the bar chart is based on the range of data.
frequency table		
tally chart		
discrete data	Frequency Tables	
continuous data	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.	
time graph	The frequency column is completed after all the data has been collected.	
sum		
difference		
comparison		
interpret		
 visit twinkl.com		

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

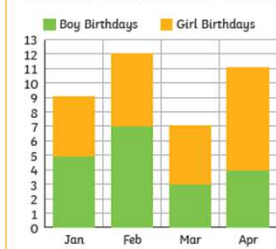
The scale on this bar chart counts in fives.

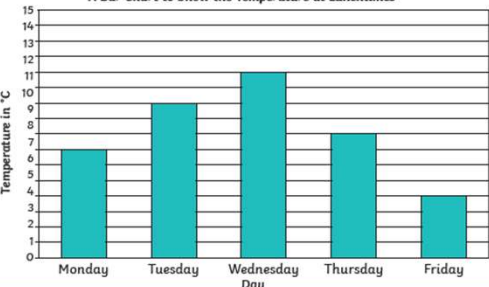
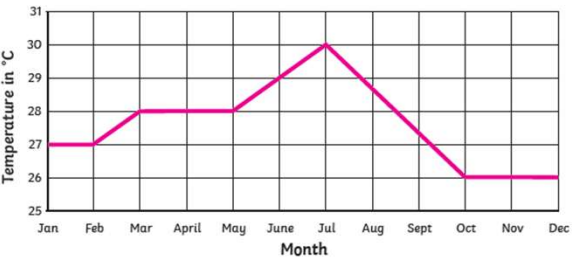
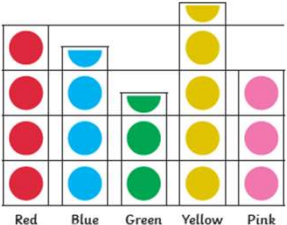
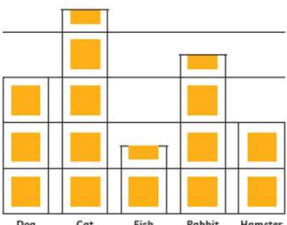


The bars are horizontal on this bar chart.



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



Statistics	Knowledge Organiser
Time Graphs	Pictograms
Time graphs show how data changes over time.	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.
A Bar Chart to Show the Temperature at Lunchtimes  A Line Graph to Show the Average Monthly Temperature in the Borneo Rainforest   visit twinkl.com	Class 10's Favourite Colours  ○ = 2 Children Class 10's Pets   = 4 Children