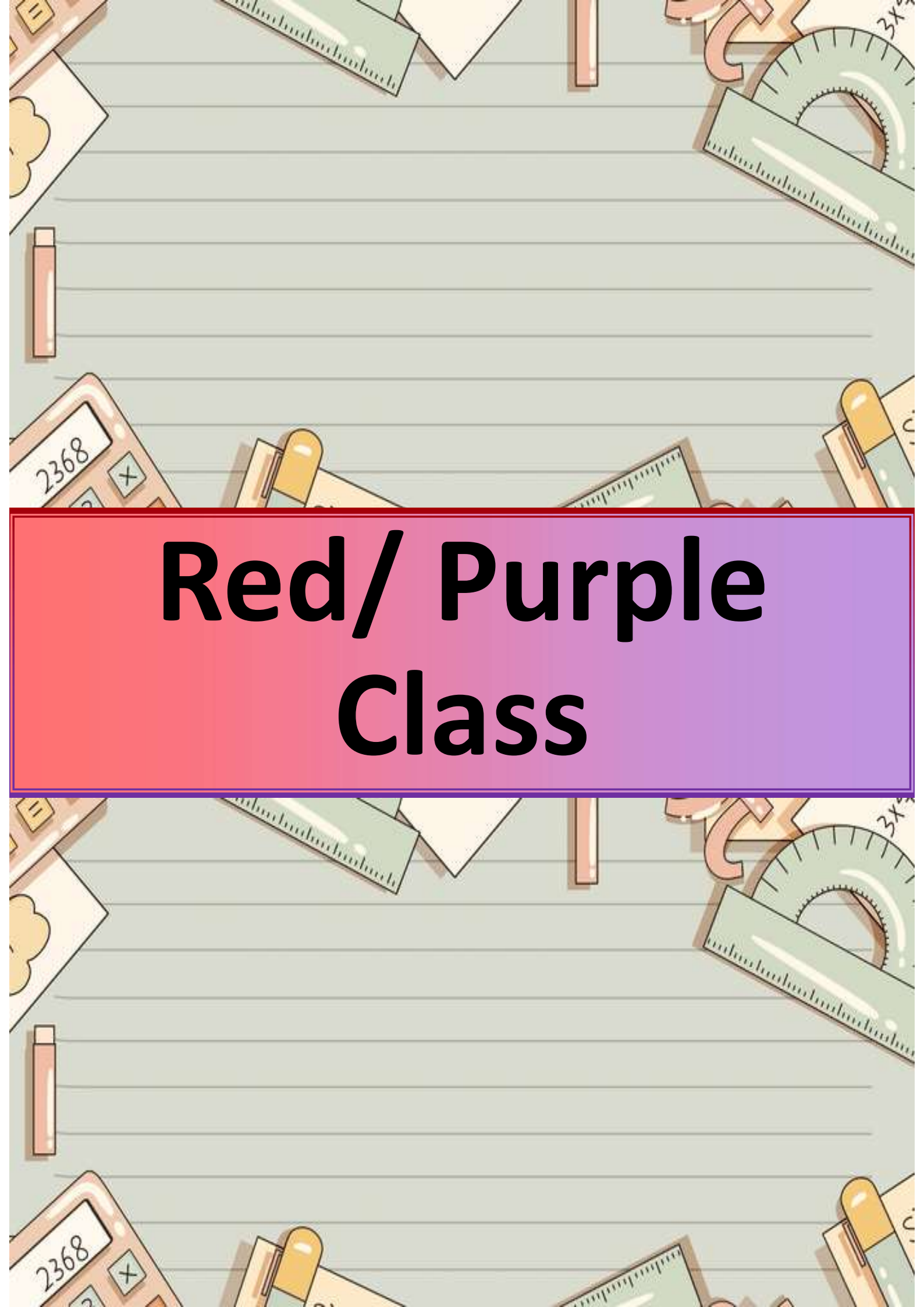
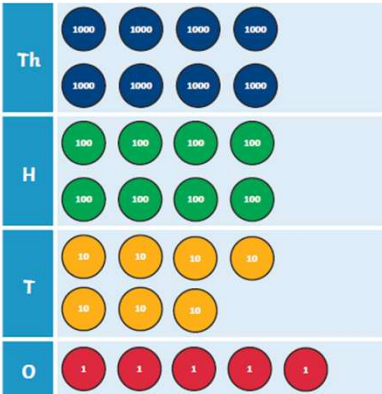
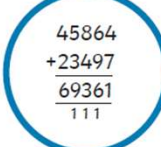
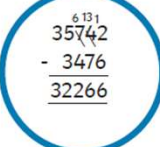


The background of the image is a light gray surface with horizontal lines, resembling a notebook page. Scattered around the edges are various colorful school supplies: a green ruler, a yellow pencil, a pink eraser, a blue protractor, a yellow calculator, and a yellow paper clip. A central rectangular box with a red-to-purple gradient background and a thin black border contains the text.

Red/ Purple Class

Addition and Subtraction: Stage 5

Addition and Subtraction		Knowledge Organiser	
Key Vocabulary	Addition	Subtraction	
Add	Place Value Grid: $3274 + 5601 = 8875$	Place Value Grid: $35\ 727 - 6313 = 29\ 414$	
Total		TTh	 2 ten thousands left
Make		Th	 5 thousands – 6 thousands cannot be done. Exchange ten thousand for ten thousands becoming 15 thousands – 6 thousands = 9 thousands
Plus		H	 7 hundreds – 3 hundreds = 4 hundreds
Sum		T	 2 tens – 1 ten = 1 ten
More		O	 7 ones – 3 ones = 4 ones
Altogether		Column Method	
Difference	Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands and/or as required.		
Subtract			
Less	Column Method		
Minus	Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or as required.		
Take away			
Column addition			
Column subtraction			
Estimate			
Inverse operation			
Number facts			
Place value			
Complex			

Addition and Subtraction

Knowledge Organiser

Estimate and Approximate

Inverse Operations

Rounding to Estimate

41 635 + 7386 = 49 021

Round to ten:

41 630 + 7380 = 49 010

41 630 + 7390 = 49 020

41 640 + 7390 = 49 030

Rounding is not as accurate when both numbers are rounded up. A better estimate comes from "rounding" one down and one up.

Estimating on a Number Line

10 000

50 000



The arrow is about $\frac{3}{4}$ of the way across the line so it is 40 000.



Use the inverse to check:

53 476

32 732

20 744

To check $53\,476 - 32\,732 = 20\,744$
use $32\,732 + 20\,744 = 53\,476$

Start with a number, subtract 409 and double. I end with 6264. To find the starting number use the inverse: halve, then add 409. Half of 6264 = 3132. $3132 + 409 = 3541$. The starting number was 3541.

Multistep Problems

Using a Bar Model

The sum of two numbers is 25 567.

The difference is 1875.

25 567

1875

Subtract 1875 from 25 567 = 23 692.

Halve 23 692 to find smaller number = 11 846.

Add 1875 to find larger number = 13 721.

£20

£3.75

£8.49

?

£12.24

£7.76

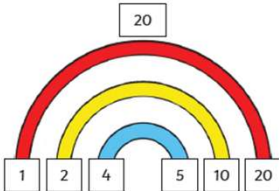
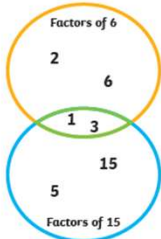
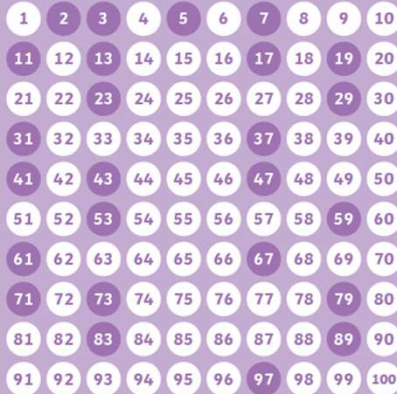
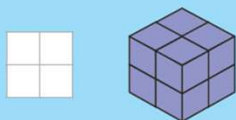
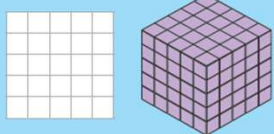
£20 is used to buy 2 books costing £3.75 and £8.49.

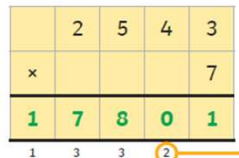
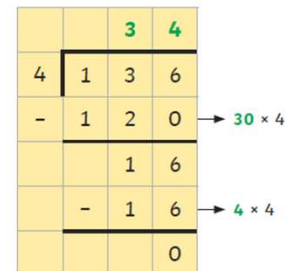
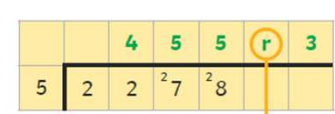
How much change is given?

£3.75 + £8.49 = £12.24

£20.00 - £12.24 = £7.76

Multiplication and Division: Stage 5

Multiplication and Division		Knowledge Organiser
Key Vocabulary	Factors	Prime Numbers
multiply	A factor is a number that divides into another number exactly, without leaving a remainder.  A common factor is a factor of 2 or more numbers.  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	
groups of		
lots of		
times		
divide		
share		
remainder		
factor	Squared ² and Cubed ³ Numbers	Related Calculations
multiple	 $2^2 = 4$ $2 \times 2 = 4$ $2^3 = 8$ $2 \times 2 \times 2 = 8$  $5^2 = 25$ $5 \times 5 = 25$ $5^3 = 125$ $5 \times 5 \times 5 = 125$	$8 \times 9 = 72$ $80 \times 9 = 720$ $9 \times 8 = 72$ $90 \times 8 = 720$
product		$72 \div 9 = 8$ $720 \div 9 = 80$ $72 \div 8 = 9$ $720 \div 8 = 90$
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Multiplication and Division		Knowledge Organiser
Short Multiplication		Long Multiplication
$2543 \times 7 = 17\ 801$  Remember to move any regrouped digits into the next column. After the next multiplication, add the regrouped number to the answer.		$2543 \times 67 = 170\ 381$  Before multiplying by the number in the tens column, remember to use zero as a placeholder because the 6 in 67 is 6 tens (60).
Division		Short Division
$136 \div 4 = 34$ 		 $15 \div 4 = 3$ remainder 3 Remember to regroup any remainders and move them into the next column.  $28 \div 5 = 5$ remainder 3 If your calculation has a remainder, remember to record it in the answer using the letter r.

Four Operations: Stage 6

Four Operations

Knowledge Organiser

Key Vocabulary

Add
Total
Make
Plus
Sum
More
Altogether
Difference
Leave
Subtract
Difference between
Less
Minus
Take away
Mentally, Orally
Column Addition
Column Subtraction
Estimate
Inverse operation
Solve problems
Number facts
Place Value
Complex

Add and Subtract Whole Numbers

Column Method

	4	5	8	6	4
+	2	3	4	9	7
	6	9	3	6	1
		1	1	1	

Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands as required.

	3	5	7	13	12
-		3	4	7	6
	3	2	2	6	6

Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or ten thousands as required.

Multiply up to 4-digit by 2-digit

1	8	2	
	1	5	4
×		2	6
	9	2	4
3	0	8	0
4	0	0	4
1	1		

Start with the ones.
 $154 \times 6 = 924$
 $154 \times 20 = 3080$
 $3080 + 924 = 4004$

Order of Operations

B	Brackets	$10 \times (4 + 2) = 10 \times 6 = 60$
O	Order	$5 + 2^2 = 5 + 4 = 9$
D	Division	$10 + 6 \div 2 = 10 + 3 = 13$
M	Multiplication	$10 - 4 \times 2 = 10 - 8 = 2$
A	Addition	$10 \times 4 + 7 = 40 + 7 = 47$
S	Subtraction	$10 \div 2 - 3 = 5 - 3 = 2$

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Four Operations

Short Division

Start from the left.

		4	4	0	5
12	5	2	8	6	0

$5 \div 12 = 0 \text{ r}5$
 $52 \div 12 = 4 \text{ r}4$
 $48 \div 12 = 4$
 $6 \div 12 = 0 \text{ r}6$

Long Division

		1	2	0	r	3
14	1	6	8	3		
	1	4	0	0		
		2	8	3		
		2	8	0		
				3		

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Knowledge Organiser

Common Factors

Factors of 48

1	2	3	4	6	8	12	16	24	48
---	---	---	---	---	---	----	----	----	----

Factors of 30

1	2	3	5	6	10	15	30
---	---	---	---	---	----	----	----

Common factors: 1, 2, 3, 6

Primes

A prime number has only 1 and itself as factors: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43

A composite number has factors other than 1 and itself.

Mental Calculations and Estimation

Order of calculations:

$50 \times 34 \times 2 = 50 \times 2 \times 34 = 100 \times 34 = 3400$

Money: £8.99 + £3.49 = £12.48

Use £9 + £3.50 = £12.50 and subtract 2p

Estimate on a number line

Subdivide line to estimate: 17

Common Multiples

Multiples of 3

3	...	18	21	24	...	39	42
---	-----	----	----	----	-----	----	----

Multiples of 7

7	14	21	28	35	42
---	----	----	----	----	----

Common multiples: 21, 42...

Squares and Cubes

Square numbers result from a number being multiplied by itself (e.g. $5 \times 5 = 25$):

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

Cube numbers result from a number being multiplied by itself twice ($2 \times 2 \times 2 = 8$):

1, 8, 27, 64, 125

Reason from Known Facts

$90 \div 10 = 9$ so $90 \div 20 = 4.5$ and $90 \div 5 = 18$

$16 \times 9 = 144$ so $1.6 \times 9 = 14.4$

$4352 \div 17 = 256$

so $256 \times 18 = 4352 + 256 = 4608$

$3786 + 2850 = 6636$

so $4786 + 2850 = 7636$

and $2786 + 3850 = 6636$

and $8636 - 3786 = 4850$

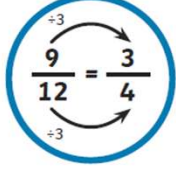
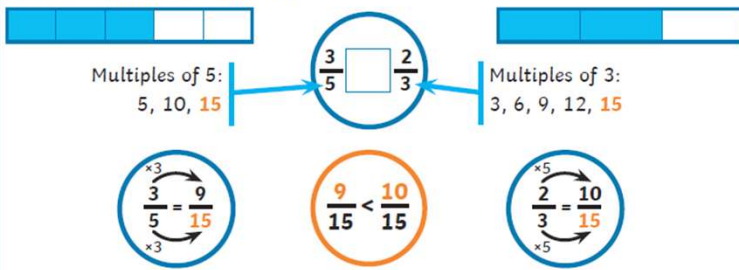
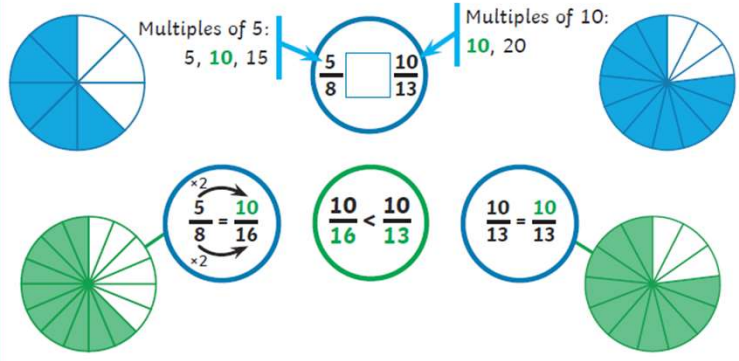
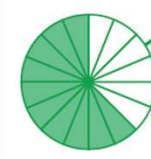
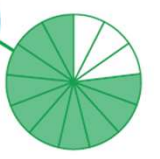
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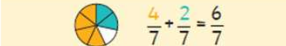
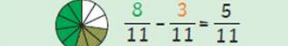
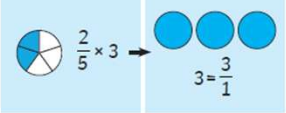
Fractions: Stage 5

Fractions		Knowledge Organiser
Key Vocabulary	Equivalent Fractions	Compare and Order Fractions
numerator	To find equivalent fractions, we multiply or divide the numerator and denominator by the same number.	We can compare and order fractions by using common denominators.
denominator		
unit fraction		
non-unit fraction		
whole		
equivalent	Mixed Numbers	Improper Fractions
mixed number	Mixed numbers contain a whole number and a fraction.	An improper fraction has a numerator which is greater than or equal to the denominator. $\frac{5}{3}$
improper fraction	Convert an Improper Fraction to a Mixed Number	Convert a Mixed Number to an Improper Fraction
simplest form	$\frac{9}{4}$ $9 \div 4 = 2 \text{ r } 1$ Divide the numerator by the denominator. This shows you the whole number and the fraction. $2 \frac{1}{4}$	Multiply the whole by the denominator to make an improper fraction. $2 \frac{5}{6} = \frac{12}{6} + \frac{5}{6} = \frac{17}{6}$ Add the fractions together.
multiple	Adding and Subtracting Fractions	
common denominator	To add or subtract fractions with denominators that are multiples of the same number, we must change one fraction to have the same denominator.	
common numerator		

Fractions		Knowledge Organiser						
Add Fractions Where the Total is Greater Than 1		Subtract from a Mixed Number						
$\frac{1}{2} + \frac{3}{4} + \frac{5}{8} = \frac{4}{8} + \frac{6}{8} + \frac{5}{8} = \frac{15}{8} = 1 \frac{7}{8}$		$1 \frac{2}{3} - \frac{2}{9} = 1 \frac{6}{9} - \frac{2}{9} = 1 \frac{4}{9}$ <table border="1"> <thead> <tr> <th>starting number</th><th>find the equivalent fraction</th><th>subtract</th></tr> </thead> <tbody> <tr> <td></td><td></td><td></td></tr> </tbody> </table>	starting number	find the equivalent fraction	subtract			
starting number	find the equivalent fraction	subtract						
Add Mixed Numbers								
$1 \frac{1}{4} + \frac{3}{8} = 1 \frac{2}{8} + \frac{3}{8} = 1 \frac{5}{8}$ $1 \frac{1}{4} + \frac{3}{8} = \frac{5}{4} + \frac{3}{8} = \frac{10}{8} + \frac{3}{8} = \frac{13}{8} = 1 \frac{5}{8}$								
Multiply Unit Fractions by an Integer	Multiply Non-Unit Fractions by an Integer	Subtract Two Mixed Numbers						
$\frac{1}{3} \times 5 = \frac{5}{3}$	$2 \times \frac{4}{9} = \frac{8}{9}$	$2 \frac{3}{4} - 1 \frac{5}{8} = 1 \frac{1}{8}$ $2 - 1 = 1$ $\frac{3}{4} - \frac{5}{8} = \frac{1}{8}$						
Multiply Mixed Numbers by Integers		Subtract from a Mixed Number - Breaking the Whole						
Convert to an improper fraction and multiply the numerator by the integer. $2 \frac{1}{4} \times 2 = \frac{9}{4} \times 2 = \frac{18}{4} = 4 \frac{2}{4} = 4 \frac{1}{2}$ Use repeated addition. $2 \frac{1}{4} \times 2 = 2 \frac{1}{4} + 2 \frac{1}{4} = 4 \frac{2}{4} = 4 \frac{1}{2}$		$2 \frac{1}{4} - \frac{3}{8} = 2 \frac{2}{8} - \frac{3}{8} = 1 \frac{10}{8} - \frac{3}{8} = 1 \frac{7}{8}$						

Fractions: Stage 6

Fractions		Knowledge Organiser
Key Vocabulary	Simplify Fractions	Compare and Order Fractions
numerator denominator proper fraction improper fraction factor highest common multiple lowest common multiple equivalents common numerator common denominator decimal equivalent simplify simplest form mixed number whole number mixed number	 Factors of 9: 1, 3, 9 Factors of 12: 1, 2, 3, 4, 6, 12   	Use the Common Denominator  Multiples of 5: 5, 10, 15 Multiples of 3: 3, 6, 9, 12, 15 $\frac{3}{5} = \frac{9}{15}$ $\frac{2}{3} = \frac{10}{15}$ $\frac{9}{15} < \frac{10}{15}$   Use the Common Numerator  Multiples of 5: 5, 10, 15 Multiples of 10: 10, 20 $\frac{5}{8} = \frac{10}{16}$ $\frac{10}{13} = \frac{10}{13}$ $\frac{10}{16} < \frac{10}{13}$  

Fractions		Knowledge Organiser
Adding and Subtracting Proper Fractions		Adding and Subtracting Mixed Numbers
Same Denominators   $\frac{4}{7} + \frac{2}{7} = \frac{6}{7}$ $\frac{8}{11} - \frac{3}{11} = \frac{5}{11}$ Different Denominators Multiples of 7: 7, 14, 21, 28, 35 Multiples of 5: 5, 10, 15, 20, 25, 30, 35 Multiples of 10: 10, 20 Multiples of 4: 4, 8, 12, 16, 20 $\frac{2}{7} = \frac{10}{35}, \frac{3}{5} = \frac{21}{35}$ $\frac{10}{35} + \frac{21}{35} = \frac{31}{35}$ $\frac{9}{10} = \frac{18}{20}, \frac{1}{4} = \frac{5}{20}$ $\frac{18}{20} - \frac{5}{20} = \frac{13}{20}$		Add or subtract the whole numbers and fractions separately. $2\frac{2}{5} + 1\frac{3}{10}$ $2 + 1 = 3$ $\frac{2}{5} + \frac{3}{10} = \frac{4}{10} + \frac{3}{10} = \frac{7}{10}$ $3 + \frac{7}{10} = 3\frac{7}{10}$ $2\frac{1}{2} - 1\frac{1}{4}$ $2 - 1 = 1$ $\frac{1}{2} - \frac{1}{4} = \frac{2}{4} - \frac{1}{4} = \frac{1}{4}$ $1 + \frac{1}{4} = 1\frac{1}{4}$ Convert the mixed numbers to improper fractions. $2\frac{2}{5} + 1\frac{3}{10}$ $2\frac{2}{5} = \frac{12}{5}, 1\frac{3}{10} = \frac{13}{10}$ $\frac{12}{5} + \frac{13}{10} = \frac{24}{10} + \frac{13}{10} = \frac{37}{10}$ $\frac{37}{10} = 3\frac{7}{10}$ $2\frac{1}{2} - 1\frac{1}{4}$ $2\frac{1}{2} = \frac{5}{2}, 1\frac{1}{4} = \frac{5}{4}$ $\frac{5}{2} - \frac{5}{4} = \frac{10}{4} - \frac{5}{4} = \frac{5}{4}$ $\frac{5}{4} = 1\frac{1}{4}$
Multiplying Proper Fractions Multiplying Fractions by Fractions $\frac{1}{2} \times \frac{1}{3} = \frac{1 \times 1}{2 \times 3} = \frac{1}{6}$ Multiplying Fractions by Whole Numbers  $\frac{2}{5} \times 3 = \frac{6}{5} = 1\frac{1}{5}$		Dividing Fractions by Whole Numbers $\frac{2}{5} \div 2 = \frac{1}{5}$ Multiplication and division are the inverse of one another so: $\div 2$ is the same as $\times \frac{1}{2}$ $\frac{2}{5} \times \frac{1}{2} = \frac{2}{10} = \frac{1}{5}$

Decimals: Stage 5

Decimals

Knowledge Organiser

Key Vocabulary

Tenths, Hundredths and Thousandths

tenths

hundredths

decimal tenths

decimal hundredths

decimal equivalents

part-whole model

rounding

decimal point

place value

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The figure displays three horizontal number lines, each with arrows at both ends, representing the progression from 0 to 1.

- Tenths:** The top number line is divided into 10 equal segments. Above the line, fractions are labeled: $\frac{0}{10}$, $\frac{1}{10}$, $\frac{2}{10}$, $\frac{3}{10}$, $\frac{4}{10}$, $\frac{5}{10}$, $\frac{6}{10}$, $\frac{7}{10}$, $\frac{8}{10}$, $\frac{9}{10}$, and $\frac{10}{10}$. Below the line, decimal equivalents are labeled: 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, and 1. A blue box highlights the first segment from 0 to 0.1.
- Hundredths:** The middle number line is divided into 100 equal segments. Above the line, fractions are labeled: $\frac{0}{100}$, $\frac{1}{100}$, $\frac{2}{100}$, $\frac{3}{100}$, $\frac{4}{100}$, $\frac{5}{100}$, $\frac{6}{100}$, $\frac{7}{100}$, $\frac{8}{100}$, $\frac{9}{100}$, and $\frac{10}{100}$. Below the line, decimal equivalents are labeled: 0, 0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, and 0.1. A blue box highlights the first segment from 0 to 0.01.
- Thousandths:** The bottom number line is divided into 1000 equal segments. Above the line, fractions are labeled: $\frac{0}{1000}$, $\frac{1}{1000}$, $\frac{2}{1000}$, $\frac{3}{1000}$, $\frac{4}{1000}$, $\frac{5}{1000}$, $\frac{6}{1000}$, $\frac{7}{1000}$, $\frac{8}{1000}$, $\frac{9}{1000}$, and $\frac{10}{1000}$. Below the line, decimal equivalents are labeled: 0, 0.001, 0.002, 0.003, 0.004, 0.005, 0.006, 0.007, 0.008, 0.009, and 0.01.

The figure shows four base ten blocks arranged in a row, illustrating the relationship between place values through multiplication and division by 10.

- Unit Cube:** A large yellow cube representing 1. It is labeled $\frac{1}{1}$.
- Flat:** A red square representing $\frac{1}{10}$. It is formed by dividing the unit cube into 10 equal parts (indicated by $\div 10$).
- Rod:** An orange rod representing $\frac{1}{100}$. It is formed by dividing the flat into 10 equal parts (indicated by $\div 10$).
- Small Cube:** A small yellow cube representing $\frac{1}{1000}$. It is formed by dividing the rod into 10 equal parts (indicated by $\div 10$).

Arrows indicate the reverse process: multiplying by 10 to move from a smaller unit to a larger one (e.g., $\times 10$ from small cube to rod, $\times 10$ from rod to flat, $\times 10$ from flat to unit cube).

Order and Compare Numbers with Three Decimal Places

Ones	Tenths	Hundredths	Thousandths
	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
0	2	1	3

Ones	Tenths	Hundredths	Thousandths
1		$\frac{1}{100}$	$\frac{1}{1000}$
1	0	2	2

Ones	Tenths	Hundredths	Thousandths
1	$\frac{1}{10}$		$\frac{1}{1000}$
2	1	0	3

Decimal Numbers as Fractions

$$0.71 = \frac{71}{100} = \frac{7}{10} + \frac{1}{100}$$

$$0.37 = \frac{37}{100} = \frac{3}{10} + \frac{7}{100}$$

Decimals

Knowledge Organiser

Multiplying and Dividing by 10, 100 and 1000

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
3	8	0		

$\div 10$ (arrow from 8 to 0.8)
 $\times 10$ (arrow from 0.8 to 8)

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
3	8	0	3	

$\div 100$ (arrow from 8 to 0.03)
 $\times 100$ (arrow from 0.03 to 8)

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
3	8	0	0	3

$\div 1000$ (arrow from 8 to 0.003)
 $\times 1000$ (arrow from 0.003 to 8)

Adding and Subtracting Decimals

$$0.8 + 0.001 = 0.801$$

$$1.031 - 0.23 = 0.801$$

$$0.4005 + 0.4005 = 0.801$$

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Rounding Decimals

1 ← 1.1 1.2 1.3 1.4 | 1.5 1.6 1.7 1.8 1.9 → **2**

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.

1.1 ← 1.11 1.12 1.13 1.14 | 1.15 1.16 1.17 1.18 1.19 → **1.2**

If the hundredths digit is 1, 2, 3 or 4, we round down to the nearest tenth.

If the hundredths digit is 5, 6, 7, 8 or 9, we round up to the nearest tenth.

Percentage and Decimal Equivalents

$$50\% = \frac{50}{100} = \frac{1}{2} = 0.5$$

$$25\% = \frac{25}{100} = \frac{1}{4} = 0.25$$

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

$$40\% = \frac{40}{100} = \frac{2}{5} = 0.4$$

Crossing the Whole

$$0.82 + 0.63 = 1.45$$

$$2.531 - 0.6 = 1.931$$

$$20\% = \frac{20}{100} = \frac{1}{5} = 0.2$$

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

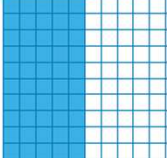
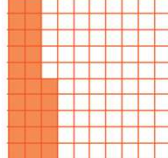
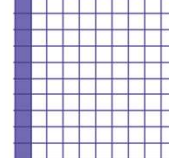
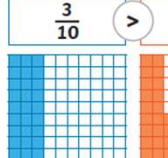
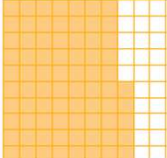
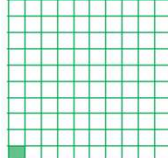
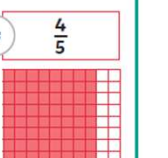
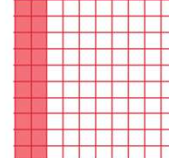
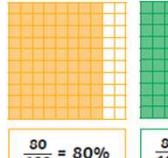
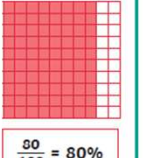
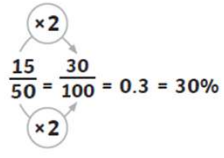
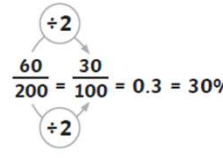
$$70\% = \frac{70}{100} = \frac{7}{10} = 0.7$$

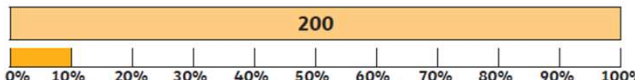
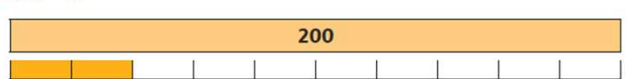
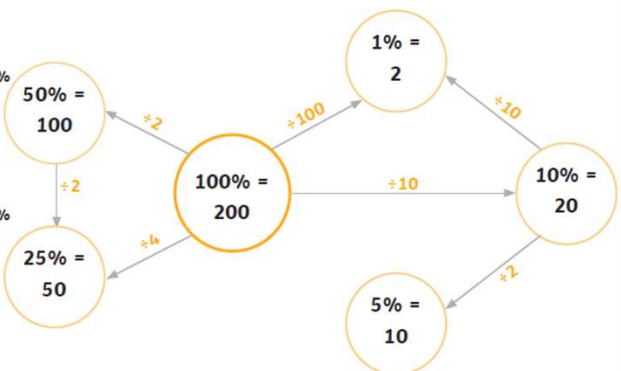
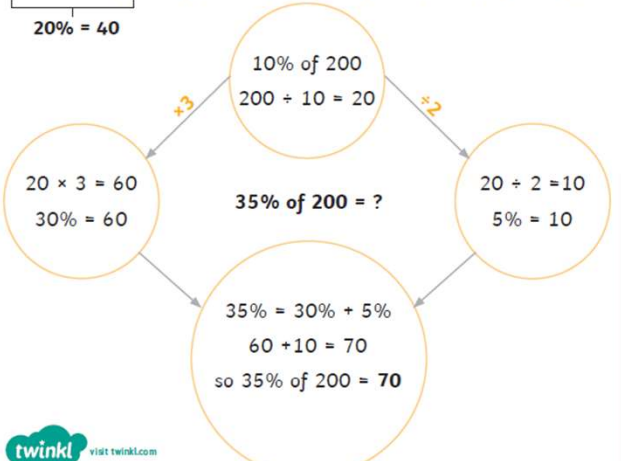
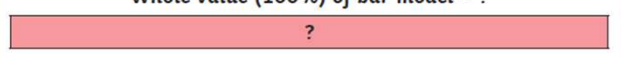
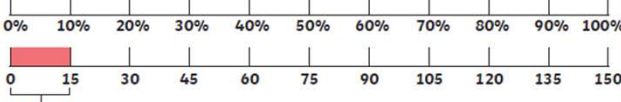
Decimals: Stage 6

Decimals		Knowledge Organiser																																				
Key Vocabulary	Place Value	Fractions to Decimals																																				
decimal place	Tens Ones tenths hundredths thousandths $3 + \frac{4}{10} + \frac{2}{100} + \frac{6}{1000} \longleftrightarrow 3.426 \longleftrightarrow 3 + 0.4 + 0.02 + 0.006$ <table border="1" style="margin: 0 auto;"> <tr><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></tr> <tr><td>0.1</td><td>0.2</td><td>0.3</td><td>0.4</td><td>0.5</td><td>0.6</td><td>0.7</td><td>0.8</td><td>0.9</td></tr> <tr><td>0.01</td><td>0.02</td><td>0.03</td><td>0.04</td><td>0.05</td><td>0.06</td><td>0.07</td><td>0.08</td><td>0.09</td></tr> <tr><td>0.001</td><td>0.002</td><td>0.003</td><td>0.004</td><td>0.005</td><td>0.006</td><td>0.007</td><td>0.008</td><td>0.009</td></tr> </table>	1	2	3	4	5	6	7	8	9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	$\frac{7}{20} = \frac{35}{100}$ or 0.35 $\frac{7}{25} = \frac{28}{100}$ or 0.28 $\frac{7}{50} = \frac{14}{100}$ or 0.14 $\frac{8}{200} = \frac{4}{100}$ or 0.04 When the denominator is not a factor or multiple of 100 $\frac{7}{8} = 7 \div 8$
1		2	3	4	5	6	7	8	9																													
0.1		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9																													
0.01		0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09																													
0.001		0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009																													
decimal fraction																																						
recurring decimal																																						
equivalent fraction																																						
tenth																																						
sharing																																						
partitioning																																						
exchanging																																						
rounding to 3d.p.																																						
hundredth																																						
thousandth																																						
equal to																																						
remainder																																						
grouping																																						
Dividing Decimals by Integers																																						
	$8.12 \div 4$ 	$6.93 \div 3 = 2.31$ 																																				

Decimals		Knowledge Organiser																																																																																			
Multiplying and Dividing by 10, 100 and 1000	Decimal Numbers as Fractions																																																																																				
<table border="1" style="width: 100%;"> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> <th>tenths</th> <th>hundredths</th> <th>thousandths</th> </tr> <tr> <td></td> <td></td> <td>2</td> <td>0</td> <td>8</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>2</td> <td>0</td> <td>8</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>2</td> <td>0</td> <td>8</td> <td></td> <td></td> </tr> </table> <table border="1" style="width: 100%;"> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> <th>tenths</th> <th>hundredths</th> <th>thousandths</th> </tr> <tr> <td></td> <td></td> <td>4</td> <td>3</td> <td>5</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>4</td> <td>3</td> <td>5</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>4</td> <td>3</td> <td>5</td> <td></td> <td></td> </tr> </table> <table border="1" style="width: 100%;"> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> <th>tenths</th> <th>hundredths</th> <th>thousandths</th> </tr> <tr> <td></td> <td></td> <td>1</td> <td>3</td> <td>5</td> <td>1</td> <td></td> </tr> <tr> <td></td> <td></td> <td>1</td> <td>3</td> <td>5</td> <td>1</td> <td></td> </tr> <tr> <td></td> <td></td> <td>1</td> <td>3</td> <td>5</td> <td>1</td> <td></td> </tr> </table>	Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths			2	0	8					2	0	8					2	0	8			Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths			4	3	5					4	3	5					4	3	5			Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths			1	3	5	1				1	3	5	1				1	3	5	1		$\frac{1}{10} = 0.1$ $\frac{2}{10} = 0.2$ $\frac{3}{10} = 0.3$ $\frac{4}{10} = 0.4$ $\frac{5}{10} = 0.5$ $\frac{6}{10} = 0.6$ $\frac{7}{10} = 0.7$ $\frac{8}{10} = 0.8$ $\frac{9}{10} = 0.9$ $1 = 1$ $\frac{1}{5} = 0.2$ $\frac{2}{5} = 0.4$ $\frac{3}{5} = 0.6$ $\frac{4}{5} = 0.8$ $\frac{1}{100} = 0.01$ $\frac{50}{100} = \frac{1}{2} = 0.5$ $\frac{25}{100} = \frac{1}{4} = 0.25$ $\frac{75}{100} = \frac{3}{4} = 0.75$ $\frac{20}{100} = \frac{1}{5} = 0.2$ $\frac{1}{3} = 0.33$ $\frac{1}{8} = 0.125$ $\frac{1}{1000} = 0.001$
Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths																																																																															
		2	0	8																																																																																	
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		1	3	5	1																																																																																
Multiplying Decimals by Integers																																																																																					
$3.21 \times 3 = 9.63$ 																																																																																					

Percentages: Stage 6

Percentages		Knowledge Organiser
Key Vocabulary	Equivalent Fractions, Decimals and Percentages	Order Fractions, Decimals and Percentages
per cent (%) = 'out of 100'	 $\frac{50}{100} = \frac{1}{2} = 0.5 = 50\%$	$\frac{3}{10} > 25\% > 0.2$
percentage	 $\frac{25}{100} = \frac{1}{4} = 0.25 = 25\%$	 $\frac{25}{100} = 25\%$
discount	 $\frac{10}{100} = \frac{1}{10} = 0.1 = 10\%$	 $\frac{30}{100} = 30\%$
equivalent fraction	 $\frac{75}{100} = \frac{3}{4} = 0.75 = 75\%$	 $\frac{25}{100} = 25\%$
equivalent decimal	 $\frac{1}{100} = 0.01 = 1\%$	 $\frac{20}{100} = 20\%$
convert	 $\frac{20}{100} = \frac{2}{10} = 0.2 = 20\%$	$80\% = 0.8 = \frac{4}{5}$
compare		 $\frac{80}{100} = 80\%$
order		 $\frac{80}{100} = 80\%$
the whole		 $\frac{80}{100} = 80\%$
Fractions to Percentages  $\frac{15}{50} = \frac{30}{100} = 0.3 = 30\%$  $\frac{60}{200} = \frac{30}{100} = 0.3 = 30\%$		

Percentages		Knowledge Organiser
Finding a Percentage of an Amount		
$50\% = \frac{1}{2}$ so we can divide by 2	$10\% = \frac{1}{10}$ so we can divide by 10	$25\% = \frac{1}{4}$ so we can divide by 4
$1\% = \frac{1}{100}$ so we can divide by 100		
 $10\% = 20$  $20\% = 40$		
 $10\% \text{ of } 200 = 20$ $200 \div 10 = 20$ $20 \times 3 = 60$ $30\% = 60$ $20 \div 2 = 10$ $5\% = 10$ $35\% = 30\% + 5\%$ $60 + 10 = 70$ so $35\% \text{ of } 200 = 70$		Percentages – Missing Values Whole value (100%) of bar model = ?   $10\% = 15$ We know $10\% = 15$ $10\% \times 10 = 100\%$ (the whole) so $15 \times 10 = 150$

Converting Units: Stage 5

Converting Units		Knowledge Organiser			
Key Vocabulary	Converting Mass		Converting Capacity		
mass	 $\times 1000$ $\text{kg} \longleftrightarrow \text{g}$ $\div 1000$	$1000\text{g} = 1\text{kg}$ $\frac{1}{10}\text{kg} = 0.1\text{kg} = 100\text{g}$ $\frac{1}{4}\text{kg} = 0.25\text{kg} = 250\text{g}$ $\frac{1}{2}\text{kg} = 0.5\text{kg} = 500\text{g}$ $\frac{3}{4}\text{kg} = 0.75\text{kg} = 750\text{g}$	 $\times 1000$ $\text{l} \longleftrightarrow \text{ml}$ $\div 1000$		
gram			$1000\text{ml} = 1\text{ litre}$ $\frac{1}{10}\text{l} = 0.1\text{l} = 100\text{ml}$ $\frac{1}{4}\text{l} = 0.25\text{l} = 250\text{ml}$ $\frac{1}{2}\text{l} = 0.5\text{l} = 500\text{ml}$ $\frac{3}{4}\text{l} = 0.75\text{l} = 750\text{ml}$ $\frac{1}{100}\text{l} = 0.01\text{l} = 10\text{ml}$		
kilogram					
capacity					
volume					
millilitre	Converting Length				
centilitre		$\times 1000$ $\text{km} \longleftrightarrow \text{m}$ $\div 1000$		$\times 100$ $\text{m} \longleftrightarrow \text{cm}$ $\div 100$	$\times 10$ $\text{cm} \longleftrightarrow \text{mm}$ $\div 10$
litre		$1000\text{ metres} = 1\text{ kilometre}$ $100\text{cm} = 1\text{m}$ $10\text{mm} = 1\text{cm}$ $\frac{1}{10}\text{km} = 0.1\text{km} = 100\text{m}$			$\frac{1}{4}\text{km} = 0.25\text{km} = 250\text{m}$ $\frac{1}{2}\text{km} = 0.5\text{km} = 500\text{m}$ $\frac{3}{4}\text{km} = 0.75\text{km} = 750\text{m}$
millimetre					
centimetre					
kilometre					
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Converting Units

Knowledge Organiser

Units of Time

Minute

1 minute = 60 seconds

Hour

1 hour = 60 minutes

Day

1 day = 24 hours

Week

1 week = 7 days

Fortnight

1 fortnight = 2 weeks

Month

January = 31 days
February = 28 days (29 on a leap year)
March = 31 days
April = 30 days
May = 31 days
June = 30 days
July = 31 days
August = 31 days
September = 30 days
October = 31 days
November = 30 days
December = 31 days

Year

1 year =
12 months =
52 weeks =
365 days

Leap Year

1 leap year =
366 days

Decade

1 decade =
10 years

Century

1 century =
100 years

Millennium

1 millennium =
1000 years

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Converting Units: Stage 6

Converting Units		Knowledge Organiser	
Key Vocabulary mass gram kilogram capacity volume millilitre litre millimetre centimetre kilometre foot inch ounce pound stone pint gallon	Converting Mass $1 \text{ tonne} = 1000\text{kg}$ $1000\text{g} = 1\text{kg}$ $\frac{1}{10}\text{kg} = 0.1\text{kg} = 100\text{g}$ $\frac{1}{4}\text{kg} = 0.25\text{kg} = 250\text{g}$ $\frac{1}{2}\text{kg} = 0.5\text{kg} = 500\text{g}$ $\frac{3}{4}\text{kg} = 0.75 = 750\text{g}$		Converting Capacity $1000\text{ml} = 1\text{l}$ $\frac{1}{10}\text{l} = 0.1\text{l} = 100\text{ml}$ $\frac{1}{4}\text{l} = 0.25\text{l} = 250\text{ml}$ $\frac{1}{2}\text{l} = 0.5\text{l} = 500\text{ml}$ $\frac{3}{4}\text{l} = 0.75\text{l} = 750\text{ml}$ $\frac{1}{100}\text{l} = 0.01\text{l} = 10\text{ml}$
	Converting Length $1000\text{m} = 1\text{km}$ $100\text{cm} = 1\text{m}$ $10\text{mm} = 1\text{cm}$ $\frac{1}{2}\text{m} = 0.5\text{m} = 50\text{cm}$ $\frac{1}{4}\text{m} = 0.25\text{m} = 25\text{cm}$ $\frac{3}{4}\text{m} = 0.75\text{m} = 75\text{cm}$ $\frac{1}{10}\text{m} = 0.01\text{m} = 10\text{cm}$		

Converting Units		Knowledge Organiser									
Miles to Kilometres You might measure the length of a road or the distance between two cities in miles or kilometres. $\div 5$ $\times 8$ miles (m) → kilometres (km) $\times 5$ $\div 8$ kilometres (km) → miles (m) $5 \text{ miles} = 8 \text{ kilometres}$ $\approx$ means approximately equal to		Time Minute 1 minute = 60 seconds Hour 1 hour = 60 minutes Day 1 day = 24 hours Week 1 week = 7 days Year 1 year = 12 months = 52 weeks = 365 days									
Imperial Measures Things that could be measured using imperial units: - Someone's height in feet and inches - The mass of a bag of sugar in ounces - The mass of a sack of potatoes in pounds - A person's mass in stones - A carton of milk in pints - The amount of water in a bath in gallons $1 \text{ foot} = 12 \text{ inches}$ $1 \text{ pound} = 16 \text{ ounces}$ $1 \text{ stone} = 14 \text{ pounds}$ $1 \text{ gallon} = 8 \text{ pints}$		Metric to Imperial Conversions <table border="1"> <thead> <tr> <th>metric (new)</th> <th>imperial (old)</th> </tr> </thead> <tbody> <tr> <td>2.5 centimetres</td> <td>1 inch</td> </tr> <tr> <td>1 kilogram</td> <td>2.2 pounds</td> </tr> <tr> <td>4.5 litres</td> <td>1 gallon</td> </tr> </tbody> </table> $\div 2.5$ $\times 2.5$ centimetres ↔ inches $\div 4.5$ $\times 4.5$ litres ↔ gallons $\div 2.2$ $\times 2.2$ kilograms ↔ pounds		metric (new)	imperial (old)	2.5 centimetres	1 inch	1 kilogram	2.2 pounds	4.5 litres	1 gallon
metric (new)	imperial (old)										
2.5 centimetres	1 inch										
1 kilogram	2.2 pounds										
4.5 litres	1 gallon										