

Y7 Maths Knowledge Organiser Topic 4: All 4 calculations

What must I be able to do?	Key vocabulary
<ul style="list-style-type: none"> <input type="checkbox"/> Multiply, and divide, any whole number by 10, 100, 1000, or 10 000. ➤ Sparx M113 <input type="checkbox"/> Use mental strategies to do all 4 calculations. <input type="checkbox"/> Add and subtract using formal methods. ➤ Sparx M928, M347 <input type="checkbox"/> Model and solve word problems <input type="checkbox"/> Extend existing mental calculation to include decimals <input type="checkbox"/> Multiply and divide decimals by 10, 100, 1000, or 10 000 ➤ Sparx M113 <input type="checkbox"/> Use written methods in column format for addition and subtraction of decimals ➤ Sparx M429, M152 <input type="checkbox"/> Solve word problems involving the addition and subtraction of money in decimal notation <input type="checkbox"/> Use multiplication facts to solve mental Calculations <input type="checkbox"/> Understand and use the column method to multiply integers and decimals ➤ Sparx M187, M303 <input type="checkbox"/> Divide whole numbers and decimals by whole numbers ➤ Sparx M354, M262 <input type="checkbox"/> Use the term 'remainder' <input type="checkbox"/> Represent multiplication word problems using bar models 	<p>Addition The <u>sum</u> or total of two or more numbers e.g. $3 + 4 = 7$</p> <p>Subtraction <u>Taking</u> one number <u>away</u> from another e.g. $7 - 3 = 4$ or $3 - 9 = -6$</p> <p>Multiplication <u>Repeated addition</u>, adding a particular number a specified number of times. e.g. 3×5 means 3 lots of 5, so $5 + 5 + 5 = 15$, we can say $3 \times 5 = 15$.</p> <p>Division <u>Sharing</u> one amount by another eg $8 \div 2 = 4$ or $10 \div 4 = 2.5$</p> <p>Remainder The <u>leftover</u> number when a number is <u>divided</u> by another number where the answer isn't a whole number, eg $18 \div 4 = 4$ with 2 leftover, 2 is the remainder.</p>

Fact Families

$13 + 7 = 20$
 $7 + 13 = 20$
 $20 - 7 = 13$
 $20 - 13 = 7$

This can be extended to include unknowns such as

$x + 8 = 12$
 $8 + x = 12$ and so on

Multiply/Divide by 10/100/1000

Tens	Ones	Tenths
2	0	.

 $\xrightarrow{\div 10}$

Tens	Ones	Tenths
	2	.

 $\xrightarrow{\div 10}$

Tens	Ones	Tenths
		.
		2

Long multiplication

e.g. 324×18

$$\begin{array}{r}
 324 \\
 18 \times \\
 \hline
 2592 \\
 3240 + \\
 \hline
 5832
 \end{array}$$

324×8
 324×10

Add these two parts to form the final answer

Remember that the second line of working will always have a 0 on the right due to multiplying by the tens digit.

Column methods with decimals

Line up the decimal point for addition/subtraction. Also useful for multiplication and division

e.g. $346.2 + 192.71$

$$\begin{array}{r}
 346.2 \\
 192.71 + \\
 \hline
 538.91
 \end{array}$$

1

e.g. $263.8 - 17.3$

$$\begin{array}{r}
 263.8 \\
 17.3 - \\
 \hline
 246.5
 \end{array}$$

e.g. 34.7×6

$$\begin{array}{r}
 34.7 \\
 6 \times \\
 \hline
 208.2
 \end{array}$$

2 4

e.g. $28.5 \div 3$

$$\begin{array}{r}
 09.5 \\
 3 \overline{) 28.5} \\
 \underline{27} \\
 15 \\
 \underline{15} \\
 0
 \end{array}
 = 9.5$$