

YR6 Knowledge Organiser - Decimals

Key Concepts

- Associate a fraction with division and calculate fraction equivalents (for example, 0.375) for a simple fraction (for example, 3/8).
- Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places.
- Multiply one-digit numbers with up to 2 decimal places by whole numbers.
- Use written division methods in cases where the answer has up to 2 decimal places.
- Solve problems which require answers to be rounded to specified degrees of accuracy.

Key Vocabulary

- decimal
- fraction
- equivalent
- convert
- value
- digit
- integer
- round
- tenths / hundredths / thousandths



Three Decimal Places

Our knowledge of place value helps us to identify the value of each digit in numbers with up to 3 decimal places.



"There are 2 ones, 1 tenth, 3 hundredths and 6 thousandths. The number is 2.136"

Multiply and Divide by 10, 100 and 1,000

When we multiply by 10, each digit moves 1 place to the left. When we multiply by 100, each digit moves 2 places to the left. When we multiply by 1,000 each digit moves 3 places to the left.

$$0.824 \times 1,000 = 824$$

100s	10s	1s	0.1s	0.01s	0.001s
		0	8	2	4
8	2	4			



When we divide by 10, 100 and 1,000 each digit moves the same number of places to the right.

$$759 \div 1,000 = 0.759$$

100s	10s	1s	0.1s	0.01s	0.001s
7	5	9			
		0	7	5	9

We use 0 as a place holder where needed.

Multiply Decimals by Integers

Concrete resources can help us to multiply decimals with integers.

$$1.302 \times 3 = 3.906$$

1s	0.1s	0.01s	0.001s
1	0.1, 0.1, 0.1		0.001, 0.001
1	0.1, 0.1, 0.1		0.001, 0.001
1	0.1, 0.1, 0.1		0.001, 0.001

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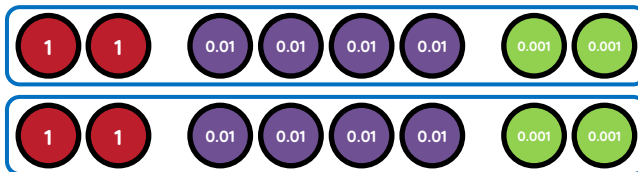
We can also multiply using written methods and apply our skills in context. This example links to the measure of mass.

	5	•	4	9
×				6
3	2	•	9	4

$$5.49\text{kg} \times 6 = 32.94\text{kg}$$

Divide Decimals by Integers

Concrete resources can help us to divide decimals with integers.



$$4.084 \div 2 = 2.042$$

We can also divide using written methods and apply our skills in context. This example links to the measure of length.

	2	•	3	7
4	9	•	¹ 4	² 8

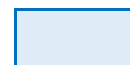
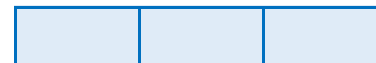
$$9.48\text{m} \div 4 = 2.37\text{m}$$

Division to Solve Problems

Now that we can divide decimals by integers, we can solve problems with division where the answer has up to 2 decimal places.



"A doll is three times more expensive than a figure. They cost £33.16 altogether. How much does each toy cost?"



£33.16

$$£33.16 \div 4 = £8.29 \text{ so the figure is } £8.29$$

$$£8.29 \times 3 = £24.87 \text{ so the doll is } £24.87$$

You may also be asked to round your answers to a given degree of accuracy, e.g. Anita may want to know the cost of each toy to the nearest pound.

The figure is £8 to the nearest pound.

The doll is £25 to the nearest pound.

Convert Decimals to Fractions

Our place value knowledge can be used to convert a decimal to a fraction. We can then write the fraction in its simplest form.

$$0.8 = \frac{8}{10} = \frac{4}{5}$$

$$0.65 = \frac{65}{100} = \frac{13}{20}$$

Convert Fractions to Decimals

We use equivalent fractions with denominators of 10, 100 or 1,000 to convert fractions to decimals.

$$\frac{9}{25} = \frac{36}{100} = 0.36$$

$$\frac{4}{200} = \frac{2}{100} = 0.02$$

We can also divide the numerator by the denominator to convert a fraction to a decimal.

$$\frac{5}{8} \text{ is the same as } 5 \div 8$$

	0	•	6	2	5
8	5	•	⁵ 0	² 0	⁴ 0

