

Knowledge Organiser

Year Group	Subject	Topic
6	Mathematics	Decimals

The Big Picture

Children recap their understanding of numbers with up to 3 decimal places. They look at the value of each place value column and describe its value in words and digits.

Children multiply numbers with up to three decimal places by 10, 100 and 1,000. They discover that digits move to the left when they are multiplying and use zero as a place value holder. The decimal point does not move. Once children are confident in multiplying by 10, 100 and 1,000, they use these skills to investigate multiplying by multiples of these numbers e.g. 2.4×20 . They then apply this knowledge to division, which leads to converting between units of measure.

It is important that children continue to understand the importance of 0 as a place holder. Children also need to be aware that 2.4 and 2.40 are the same. Similarly, 12 and 12.0 are equivalent.

Later, they will explore the relationship between decimals and fractions. They start with a decimal and use their place value knowledge to help them convert it into a fraction.

Enquiry Question

How many tenths are there in the number? How many hundredths? How many thousandths?

Why is 0 important when multiplying by 10, 100 and 1,000?

What is happening to the value of the digit each time it moves one column to the right?

Which is bigger, 0.1, 0.01 or 0.001? Why?

How would you record your answer as a decimal and a fraction? Can you simplify your answer?

How many hundredths are equivalent to one tenth?

Key Vocabulary

decimal place

decimal fraction

recurring decimal

equivalent fraction

tenth

sharing

partitioning

exchanging

rounding to 3d.p.

hundredth

thousandth

equal to

remainder

grouping

Place Value

Tens	Ones	tenths	hundredths	thousandths
	1 1 1	0.1 0.1 0.1 0.1	0.01 0.01	0.001 0.001 0.001 0.001

$$3 + \frac{4}{10} + \frac{2}{100} + \frac{6}{1000} \longleftrightarrow 3.426 \longleftrightarrow 3 + 0.4 + 0.02 + 0.006$$

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

Fractions to Decimals

$$\begin{array}{l} \xrightarrow{\times 5} \\ \frac{7}{20} = \frac{35}{100} \text{ or } 0.35 \\ \xleftarrow{\div 5} \end{array} \quad \begin{array}{l} \xrightarrow{\times 2} \\ \frac{7}{50} = \frac{14}{100} \text{ or } 0.14 \\ \xleftarrow{\div 2} \end{array}$$

$$\begin{array}{l} \xrightarrow{\times 4} \\ \frac{7}{25} = \frac{28}{100} \text{ or } 0.28 \\ \xleftarrow{\div 4} \end{array} \quad \begin{array}{l} \xrightarrow{\div 2} \\ \frac{8}{200} = \frac{4}{100} \text{ or } 0.04 \\ \xleftarrow{\times 2} \end{array}$$

Dividing Decimals by Integers

$$8.12 \div 4$$

		2	0	3
4	8	1	¹ 2	

$$6.93 \div 3 = 2.31$$

Ones	tenths	hundredths

Multiplying and Dividing by 10, 100 and 1000

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
		2	0	8		
		$\times 10$	2	0	8	
			2	0	8	

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
		4	3	5		
$\times 100$	4	3	5			
	4	3	5			

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
			1	3	5	1
$\times 1000$	1	3	5	1		
	1	3	5	1		

0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$	$\frac{4}{10}$	$\frac{5}{10}$	$\frac{6}{10}$	$\frac{7}{10}$	$\frac{8}{10}$	$\frac{9}{10}$	1
$\frac{1}{10}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$	$\frac{5}{5}$	$\frac{6}{5}$	$\frac{7}{5}$	$\frac{8}{5}$	$\frac{9}{5}$	

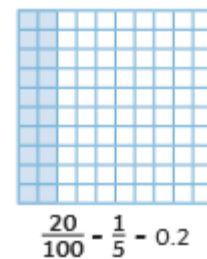
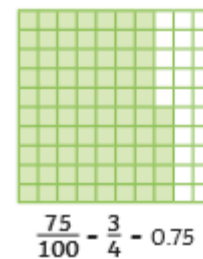
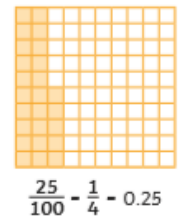
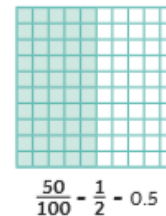
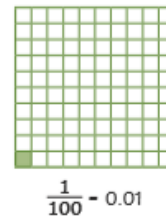
$$\frac{1}{3} = 0.33 \quad \frac{1}{8} = 0.125 \quad \frac{1}{1000} = 0.001$$

Multiplying Decimals by Integers

	3	4	5
$\times$			3
1	0	3	5
	1	1	

$$3.21 \times 3 = 9.63$$

Ones	tenths	hundredths



What can my child do at home?

- ✓ Have a look through the Knowledge Organiser and study the key terminology, ensuring that they understand what they mean.
- ✓ Use the useful links above, particularly if there is a unit that you find more difficult to grasp
- ✓ Learn weekly times tables and number facts. These will be tested on the same day as spellings.
- ✓ Login to Mathletics to revise topics taught.