Spring Scheme of Learning

Year 6

#MathsEveryoneCan

2020-21

White Rose Maths

New for 2020/21

2020 will go down in history. The world has changed for all of us.

We want to do as much as we can to support children, teachers, parents and carers in these very uncertain times.

We have amended our schemes for 2020/21 to:

★ highlight key teaching points

★ recap essential content that children may have forgotten

★ flag any content that you might not have covered during the school closures period.

We hope these changes will add further value to the schemes and save you time.
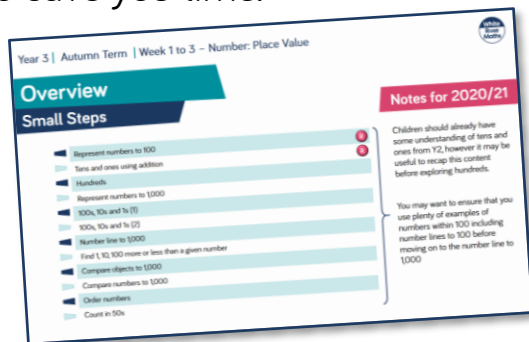
Lesson-by-lesson overviews

We've always been reluctant to produce lesson-by-lesson overviews as every class is individual and has different needs. However, many of you have said that if blended learning becomes a key feature of school life next year, a weekly plan with linked content and videos could be really useful.

As always, we've listened! We've now produced a complete lesson-by-lesson overview for Y1 to Y9 that schools can use or adapt as they choose. Each lesson will be linked to a free-to-use home learning video, and for premium subscribers, a worksheet. This means that you can easily assign work to your class, whether they are working at home or in school.

Inevitably, this lesson-by-lesson structure won't suit everyone, but if it works for you, then please do make use of this resource as much as you wish.

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Teaching for Mastery

These overviews are designed to support a mastery approach to teaching and learning and have been designed to support the aims and objectives of the new National Curriculum.

The overviews:

- have number at their heart. A large proportion of time is spent reinforcing number to build competency

- ensure teachers stay in the required key stage and support the ideal of depth before breadth.

- ensure students have the opportunity to stay together as they work through the schemes as a whole group

- provide plenty of opportunities to build reasoning and problem solving elements into the curriculum.

For more guidance on teaching for mastery, visit the NCETM website:

https://www.ncetm.org.uk/resources/47230

Concrete - Pictorial - Abstract

We believe that all children, when introduced to a new concept, should have the opportunity to build competency by taking this approach.

Concrete – children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial – alongside this children should use pictorial representations. These representations can then be used to help reason and solve problems.

Abstract – both concrete and pictorial representations should support children's understanding of abstract methods.

Need some CPD to develop this approach? Visit www.whiterosemaths.com for find a course right for you.

Supporting resources

We have produced supporting resources for every small step from Year 1 to Year 11.

The worksheets are provided in three different formats:

- Write on worksheet – ideal for children to use the ready made models, images and stem sentences.

- Display version – great for schools who want to cut down on photocopying.

- PowerPoint version – one question per slide. Perfect for whole class teaching or mixing questions to make your own bespoke lesson.

For more information visit our online training and resources centre resources.whiterosemaths.com or email us directly at support@whiterosemaths.com

Notes and Guidance
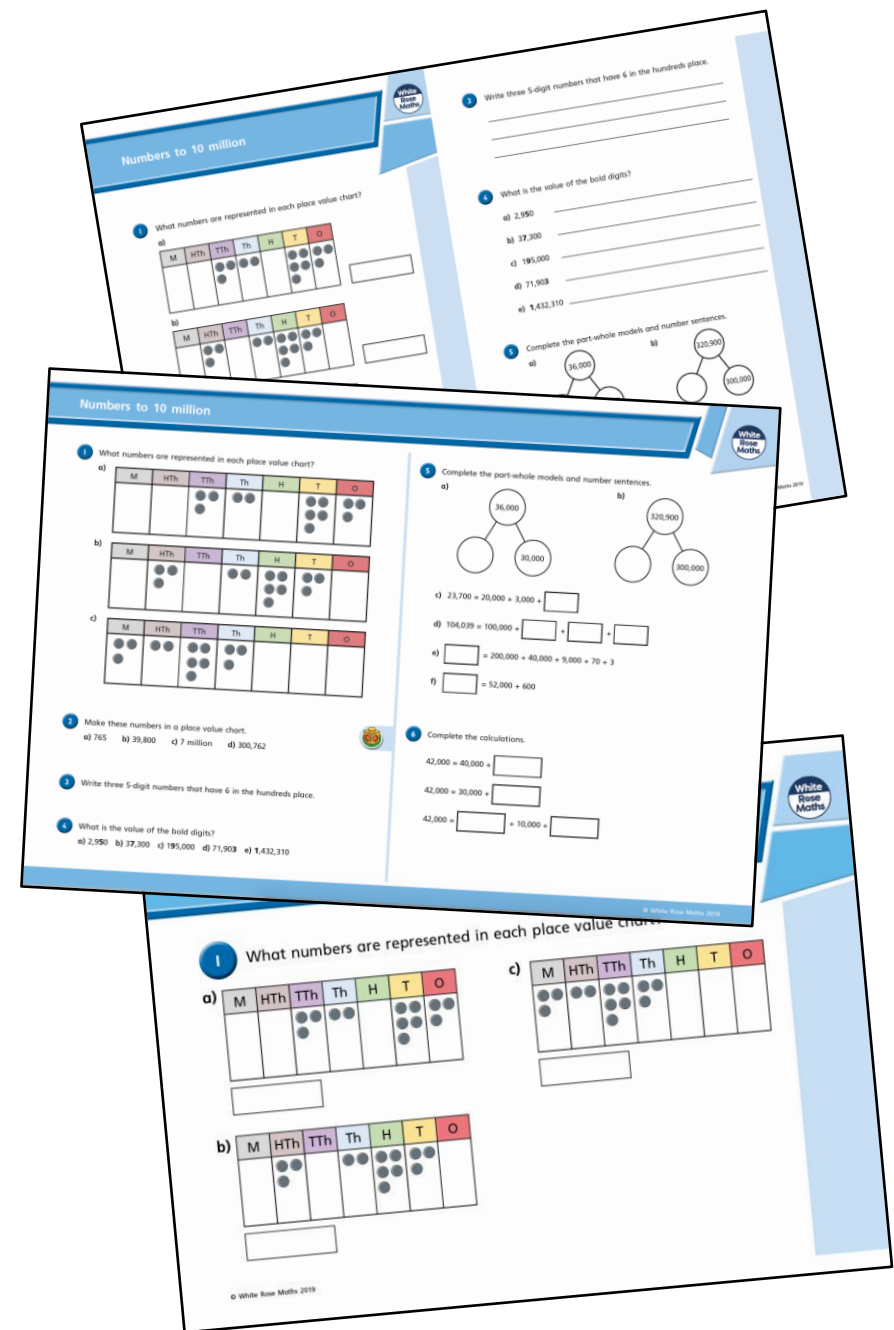
Meet the Characters

Children love to learn with characters and our team within the scheme will be sure to get them talking and reasoning about mathematical concepts and ideas. Who's your favourite?
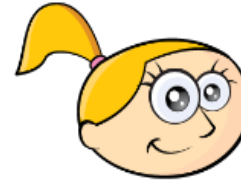
Teddy   Rosie   Mo   Eva   Alex

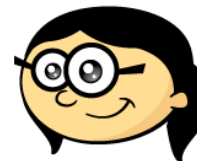Jack   Whitney   Amir   Dora   Tommy

Dexter   Ron   Annie

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	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value		Number: Addition, Subtraction, Multiplication and Division					Number: Fractions				Geometry: Position and Direction
Spring	Number: Decimals		Number: Percentages		Number: Algebra		Measurement: Converting Units	Measurement: Perimeter, Area and Volume		Number: Ratio		Statistics
Summer	Geometry: Properties of Shape			Consolidation or SATs preparation		Consolidation, investigations and preparations for KS3						

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Decimals

Overview

Small Steps

Notes for 2020/21

Decimals up to 2 decimal places	R
Understand thousandths	R
Three decimal places	
Multiply by 10, 100 and 1,000	
Divide by 10, 100 and 1,000	
Multiply decimals by integers	
Divide decimals by integers	
Division to solve problems	
Decimals as fractions	
Fractions to decimals (1)	
Fractions to decimals (2)	

The recap steps are at the beginning of this block to ensure children have a good understanding of numbers up to three decimal places before moving on to multiplication and division.

This should build on place value work in the autumn term and make use of place value grids and counters to build on previous learning.

Decimals up to 2 d.p.

Notes and Guidance

Children use place value counters and a place value grid to make numbers with up to two decimal places.

They read and write decimal numbers and understand the value of each digit.

They show their understanding of place value by partitioning decimal numbers in different ways.

Mathematical Talk

How many ones/tenths/hundredths are in the number?
How do we write this as a decimal? Why?

What is the value of the ____ in the number _____?

When do we need to use zero as a place holder?

How can we partition decimal numbers in different ways?

Varied Fluency

Which number is represented on the place value chart?

Ones	Tenths	Hundredths
	0.1	0.01 0.01
0	1	2

There are ____ ones, ____ tenths and ____ hundredths.

The number is ____

Represent the numbers on a place value chart and complete the stem sentences.

| 0.28 | 0.65 | 0.07 | 1.26 |

Make the numbers with place value counters and write down the value of the underlined digit.

| 2.45 | 3.04 | 4.44 | 43.34 |

$0.76 = 0.7 + 0.06 = 7$ tenths and 6 hundredths.
Fill in the missing numbers.

$0.83 = $ ____ $+ 0.03 = $ _____ and 3 hundredths.

$0.83 = 0.7 + $ ____ $= 7$ tenths and _____

How many other ways can you partition 0.83?

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Decimals up to 2 d.p.

Reasoning and Problem Solving

Dexter says there is only one way to partition 0.62
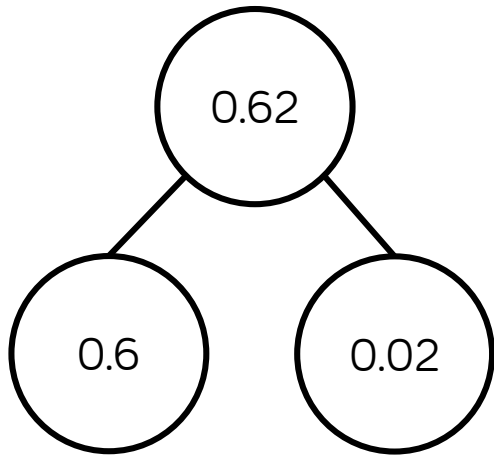
Prove Dexter is incorrect by finding at least three different ways of partitioning 0.62

0.62 = 0.12 + 0.5

0.62 = 0.4 + 0.22

0.62 = 0.3 + 0.32

0.62 = 0.42 + 0.2

0.62 = 0.1 + 0.52

0.62 = 0.03 + 0.59

etc.

Match each description to the correct number.

My number has the same amount of tens and tenths.
Teddy

My number has one decimal place.
Amir

My number has two hundredths.
Rosie

My number has six tenths.
Eva

46.2   2.64   46.02   40.46

Teddy – 40.46
Amir – 46.2
Rosie – 46.02
Eva – 2.64

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Understand Thousandths

Notes and Guidance

Children build on previous learning of tenths and hundredths and apply this to understanding thousandths.

Opportunities to develop understanding of thousandths through the use of concrete and pictorial representations need to be incorporated.

When exploring the relationships between tenths, hundredths and thousandths, consider decimal and mixed number equivalences.

Mathematical Talk

If 4 tenths = 0.4, 4 hundredths = 0.04, what is 4 thousandths equal to?

Using the place value charts:

- How many tenths are in a whole?
- How many hundredths are there in 1 tenth?
- Using place value counters complete the final chart.
- How many thousandths in 1 hundredth?
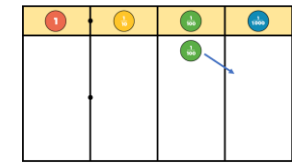
Varied Fluency

Eva is using Base 10 to represent decimals.

= 1 whole   = 1 tenth   = 1 hundredth   = 1 thousandth

Use Base 10 to build:
- 4 wholes, 4 tenths, 4 hundredths, 4 thousandths
- 5 tenths, 7 hundredths and 5 thousandths
- 2.357

Use the place value counters to help you fill in the final chart.
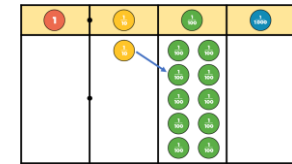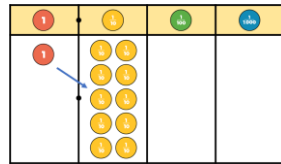
1 = ___ tenths $\frac{1}{10}$ = ___ hundredths $\frac{1}{100}$ = ___ thousandths
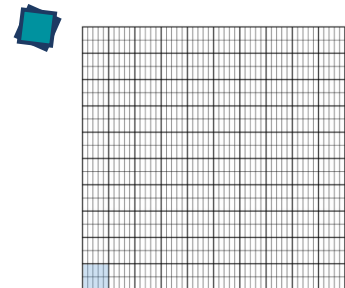
What has this hundred square been divided up into?
How many thousandths are there in one hundredth?
How many thousandths are in one tenth?

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Understand Thousandths

Reasoning and Problem Solving

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Rosie thinks the 2 values are equal.
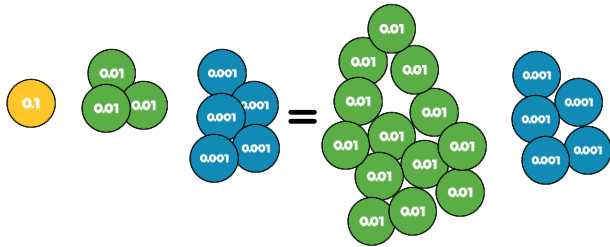
Do you agree?
Explain your thinking.

Can you write this amount as a decimal and as a fraction?

Agree.

We can exchange ten hundredth counters for one tenth counter.

$0.135 = \frac{135}{1000}$

0.394

= 3 tenths, 9 hundredths and 4 thousandths

$= \frac{3}{10} + \frac{9}{100} + \frac{4}{1000}$

$= 0.3 + 0.09 + 0.004$

Write these numbers in three different ways:

0.472   0.529   0.307

$0.472 = 4$ tenths, seven hundredths and 2 thousandths
$= \frac{4}{10} + \frac{7}{100} + \frac{2}{1000}$
$= 0.4 + 0.07 + 0.002$

$0.529 = 5$ tenths, two hundredths and 9 thousandths
$= \frac{5}{10} + \frac{2}{100} + \frac{9}{1000} = 0.5 + 0.02 + 0.009$

$0.307 = 3$ tenths and 7 thousandths
$= \frac{3}{10} + \frac{7}{1000} = 0.3 + 0.007$

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Three Decimal Places

Notes and Guidance

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 use concrete resources to investigate exchanging between columns e.g. 3 tenths is the same as 30 hundredths.

Mathematical Talk

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

Can you make the number on the place value chart?

How many hundredths are the same as 5 tenths?

What is the value of the zero in this number?

Varied Fluency

◾ Complete the sentences.
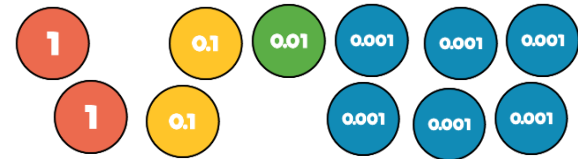
There are ____ ones, ____ tenths, ____ hundredths and ____ thousandths.
The number in digits is _____

◾ Use counters and a place value chart to represent these numbers.

| 3.456 | 72.204 | 831.07 |

Hundreds	Tens	Ones	• Tenths	Hundredths	Thousandths

◾ Write down the value of the 3 in the following numbers.

0.5**3**   **3**62.44   7**3**9.8   0.01**3**   **3**,420.98

Three Decimal Places

Reasoning and Problem Solving

Tommy says,

> The more decimal places a number has, the smaller the number is.

Do you agree?
Explain why.

Possible answer:

I do not agree with this as the number 4.39 is smaller than the number 4.465, which has more decimal places.

Alex says that 3.24 can be written as 2 ones, 13 tenths and 4 hundredths.

Do you agree?

How can you partition 3.24 starting with 2 ones?
How can you partition 3.24 starting with 1 one?
Think about exchanging between columns.

Possible answer:

I disagree; Alex's numbers would total 3.34. I could make 3.24 by having 2 ones, 12 tenths and 4 hundredths or 1 one, 22 tenths and 4 hundredths.

Four children are thinking of four different numbers.

3.454   4.445

4.345   3.54

Teddy: "My number has four hundredths."

Alex: "My number has the same amount of ones, tenths and hundredths."

Dora: "My number has less ones that tenths and hundredths."

Jack: "My number has 2 decimal places."

Match each number to the correct child.

Teddy: 4.345

Alex: 4.445

Dora: 3.454

Jack: 3.54

Multiply by 10, 100 and 1,000

Notes and Guidance

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

Mathematical Talk

What number is represented on the place value chart?

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

What patterns do you notice?

What is the same and what is different when multiplying by 10, 100, 1,000 on the place value chart compared with the Gattegno chart?

Varied Fluency

Identify the number represented on the place value chart.

Thousands	Hundreds	Tens	Ones	•	Tenths	Hundredths
			🔴🔴		🔴	

Multiply it by 10, 100 and 1,000 and complete the sentence stem for each.
When multiplied by ____ the counters move ____ places to the _____.

Use a place value chart to multiply the following decimals by 10, 100 and 1,000

$\boxed{6.4}$ $\boxed{6.04}$ $\boxed{6.004}$

Fill in the missing numbers in these calculations

$32.4 \times \boxed{} = 324$ $1.562 \times 1{,}000 = \boxed{}$

$\boxed{} \times 100 = 208$ $4.3 \times \boxed{} = 86$

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Multiply by 10, 100 and 1,000

Reasoning and Problem Solving

Using the digit cards 0-9 create a number with up to 3 decimal places e.g. 3.451
Cover the number using counters on your Gattegno chart.

10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000
1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
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

Explore what happens when you multiply your number by 10, then 100, then 1,000

What patterns do you notice?

Children will be able to see how the counter will move up a row for multiplying by 10, two rows for 100 and three rows for 1,000. They can see that this happens to each digit regardless of the value.
For example, 3.451×10 becomes 34.51
Each counter moves up a row but stays in the same column.

Dora says,

When you multiply by 100, you should add two zeros.

Do you agree?
Explain your thinking.

Children should explain that when you multiply by 100 the digits move two places to the left.

For example:
$0.34 \times 100 = 0.3400$ is incorrect as 0.34 is the same as 0.3400
Also:
$0.34 + 0 + 0 = 0.34$

Children show $0.34 \times 100 = 34$

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Divide by 10, 100 and 1,000

Notes and Guidance

Once children understand how to multiply decimals by 10, 100 and 1,000, they can 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.

Mathematical Talk

What happens to the counters/digits when you divide by 10, 100 or 1,000?

Why is zero important when dividing by 10, 100 and 1,000?

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

What are the relationships between tenths, hundredths and thousandths?

Varied Fluency

Use the place value chart to divide the following numbers by 10, 100 and 1,000
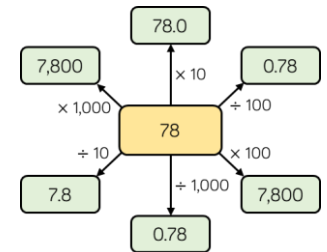
Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

| 44 | 1.36 | 107 | 5 |

Tick the correct answers. Can you explain the mistakes with the incorrect answers?

Complete the table.

	÷10	÷ 100	÷ 1,000
30			
3 kg			
	0.9		
			9.0
		9.09	

17

Divide by 10, 100 and 1,000

Reasoning and Problem Solving

Using the following rules, how many ways can you make 70?

- Use a number from column A
- Use an operation from column B.
- Use number from column C.

A	B	C
0.7		0.1
7		1
70	×	10
700	÷	100
7,000		1,000

Can you find a path from 6 to 0.06?
You cannot make diagonal moves.

6	× 10	× 10	÷ 100
÷ 10	× 100	× 100	÷ 10
× 10	÷ 10	÷ 1,000	÷ 100
÷ 1,000	× 1,000	× 100	0.06

Is there more than one way?

Possible answers:

0.7×100
7×10
70×1
$700 \div 10$
$7,000 \div 100$
$70 \div 1$

6	× 10	× 10	÷ 100
÷ 10	× 100	× 100	÷ 10
× 10	÷ 10	÷ 1,000	÷ 100
÷ 1,000	× 1,000	× 100	0.06

Eva says,

When you divide by 10, 100 or 1,000 you just take away the zeros or move the decimal point.

Do you agree?
Explain why.

Eva is wrong, the decimal point never moves. When dividing, the digits move right along the place value columns.

Possible examples to prove Eva wrong:

$24 \div 10 = 2.4$

$107 \div 10 = 17$
This shows that you cannot just remove a zero from the number

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Multiply Decimals by Integers

Notes and Guidance

Children use concrete resources to multiply decimals and explore what happens when you exchange with decimals.

Children use their skills in context and make links to money and measures.

Mathematical Talk

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

How many 0.1s do you need to exchange for a whole one?

Can you draw a bar model to represent the problem?

Can you think of another way to multiply by 5? (e.g. multiply by 10 and divide by 2).

Varied Fluency

Use the place value counters to multiply 1.212 by 3
Complete the calculation alongside the concrete representation.

Tens	Ones	•	Tenths	Hundredths	Thousandths
	1		0.1 0.1	0.01	0.001 0.001
	1		0.1 0.1	0.01	0.001 0.001
	1		0.1 0.1	0.01	0.001 0.001

A jar of sweets weighs 1.213 kg.
How much would 4 jars weigh?

Rosie is saving her pocket money. Her mum says,

> "Whatever you save, I will give you five times the amount."

If Rosie saves £2.23, how much will her mum give her?
If Rosie saves £7.76, how much will her mum give her? How much will she have altogether?

Multiply Decimals by Integers

Reasoning and Problem Solving

Whitney says,

When you multiply a number with 2 decimal places by an integer, the answer will always have more than 2 decimal places.

Do you agree?
Explain why.

Possible answer:

I do not agree because there are examples such as 2.23 × 2 that gives an answer with only two decimal places.

Fill in the blanks

$$3 \cdot 4 \quad 5$$
$$\times \qquad \boxed{}$$
$$0 \cdot 3 \quad 0$$
$$\boxed{} \cdot 4 \quad 0$$
$$1 \quad \boxed{} \cdot 0 \quad 0$$
$$\boxed{} \, \boxed{} \cdot \boxed{} \, \boxed{}$$

$$3 \cdot 4 \quad 5$$
$$\times \qquad \qquad 6$$
$$0 \cdot 3 \quad 0$$
$$2 \cdot 4 \quad 0$$
$$1 \quad 8 \cdot 0 \quad 0$$
$$2 \quad 0 \cdot 7 \quad 0$$

Chocolate eggs can be bought in packs of 1, 6 or 8
What is the cheapest way for Dexter to buy 25 chocolate eggs?

1 chocolate egg
52p

6 chocolate eggs
£2.85

8 chocolate eggs
£4

£11.92

He should buy four packs of 6 plus an individual egg.

Divide Decimals by Integers

Notes and Guidance

Children continue to use concrete resources to divide decimals and explore what happens when exchanges take place.

Children build on their prior knowledge of sharing and grouping when dividing and apply this skill in context.

Mathematical Talk

Are we grouping or sharing?

How else could we partition the number 3.69? (For example, 2 ones, 16 tenths and 9 hundredths.)

How could we check that our answer is correct?

Varied Fluency

Divide 3.69 by 3

Use the diagrams to show the difference between grouping and by sharing?

Use these methods to complete the sentences.

3 ones divided by 3 is _____ ones.

6 tenths divided by 3 is _____ tenths.

9 hundredths divided by 3 is _____ hundredths.

Therefore, 3.69 divided by 3 is _____

Decide whether you will use grouping or sharing and use the place value chart and counters to solve:
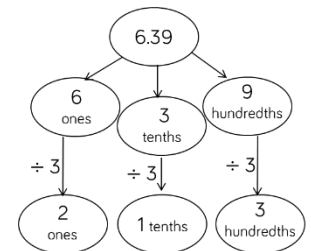
$$7.55 \div 5 \qquad 8.16 \div 3 \qquad 3.3 \div 6$$

Amir solves $6.39 \div 3$ using a part whole method.

Use this method to solve

$$8.48 \div 2 \qquad 6.9 \div 3 \qquad 6.12 \div 3$$

Divide Decimals by Integers

Reasoning and Problem Solving

When using the counters to answer 3.27 divided by 3, this is what Tommy did:

Ones	Tenths	Hundredths
1 1 1	0.1 0.1	0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

Tommy says,

I only had 2 counters in the tenths column, so I moved one of the hundredths so each column could be grouped in 3s.

Do you agree with what Tommy has done? Explain why.

Possible answer:

Tommy is incorrect because he cannot move a hundredth to the tenths.
He should have exchanged the 2 tenths for hundredths to get an answer of 1.09

$$C \text{ is } \frac{1}{4} \text{ of } A$$
$$B = C + 2$$

Use the clues to complete the division.

$$\begin{array}{c} 0 \ . \ B \ B \\ A \overline{)\, C \ . \ {}^{C}B\ {}^{C}2} \end{array}$$

Children may try A as 8 and C as 2 but will realise that this cannot complete the whole division.

Therefore A is 4, B is 3 and C is 1

$$\begin{array}{c} 0 \ . \ 3 \ 3 \\ 4 \overline{)\, 1 \ . \ {}^{1}3\ {}^{1}2} \end{array}$$

Division to Solve Problems

Notes and Guidance

Children will apply their understanding of division to solve problems in cases where the answer has up to 2 decimal places.

Children will continue to show division using place value counters and exchanging where needed.

Mathematical Talk

How can we represent this problem using a bar model?

How will we calculate what this item costs?

How will we use division to solve this?

How will we label our bar model to represent this?

Varied Fluency

▢ Mrs Forbes has saved £4,960
She shares the money between her 15 grandchildren.
How much do they each receive?

▢ Modelling clay is sold in two different shops.
Shop A sells four pots of clay for £7.68
Shop B sells three pots of clay for £5.79
Which shop has the better deal?
Explain your answer.

▢ A box of chocolates costs 4 times as much as a chocolate bar.
Together they cost £7.55
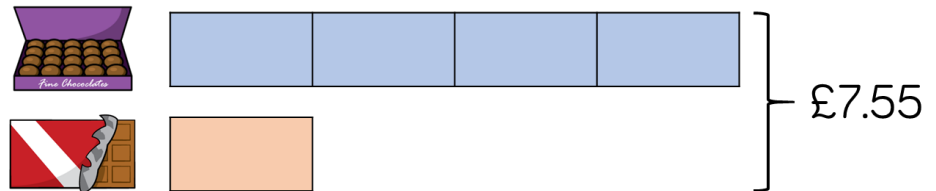
How much does each item cost?
How much more does the box of chocolates cost?

Division to Solve Problems

Reasoning and Problem Solving

Each division sentence can be completed using the digits below.

1   2   3   4   5   6

$\boxed{}.3 \div \boxed{} = 0.26$

$12.\boxed{} \div \boxed{} = 4.2$

$4.\boxed{}8 \div \boxed{} = 1.07$

$1.3 \div 5 = 0.26$
$12.6 \div 3 = 4.2$
$4.28 \div 4 = 1.07$

Jack and Rosie are both calculating the answer to $147 \div 4$

Jack says,

The answer is 36 remainder 3

Rosie says,

The answer is 36.75

Who do you agree with?

They are both correct.

Rosie has divided her remainder of 3 by 4 to get 0.75 whereas Jack has recorded his as a remainder.

Decimals as Fractions

Notes and Guidance

Children 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.

Children will use their previous knowledge of exchanging between columns, for example, 3 tenths is the same as 30 hundredths.

Once children convert from a decimal to a fraction, they simplify the fraction to help to show patterns.

Mathematical Talk

How would you record your answer as a decimal and a fraction? Can you simplify your answer?
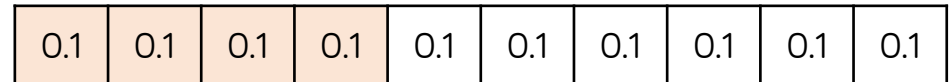
How would you convert the tenths to hundredths?

What do you notice about the numbers that can be simplified in the table?

Can you have a unit fraction that is larger than 0.5? Why?

Varied Fluency

What decimal is shaded?
Can you write this as a fraction?

0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Complete the table.

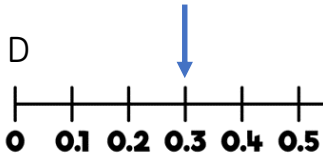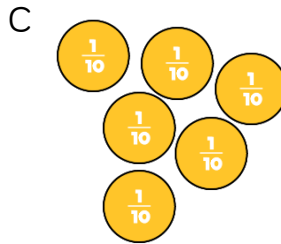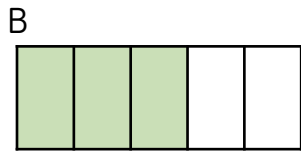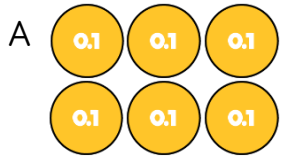| Decimal	Fraction in tenths or hundredths	Simplified fraction
0.6	$\frac{6}{10}$	$\frac{3}{5}$
0.1 0.1 0.1		
		(fraction bar: 1 of 4 shaded)
0 ↓ 1 (number line)		
0.95		

Three friends share a pizza. Sam ate 0.25 of the pizza, Mark ate 0.3 of the pizza and Jill ate 0.35 of the pizza.
- Can you write the amount each child ate as a fraction?
- What fraction of the pizza is left?

White Rose Maths

Decimals as Fractions

Reasoning and Problem Solving

Odd one out.

A

0.1 0.1 0.1
0.1 0.1 0.1

B

C

$\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$

D

0   0.1 0.2 0.3 0.4 0.5

E
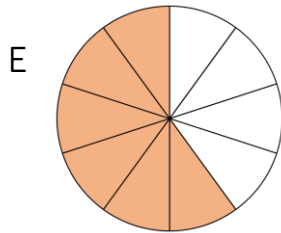
F 0.2×3

Which is the odd one out and why?

Possible response:

D is the odd one out because it shows 0.3

Explore how the rest represent 0.6

Alex says,

0.84 is equivalent to $\frac{84}{10}$

Do you agree?
Explain why.

Possible response:

Alex is wrong because 0.84 is 8 tenths and 4 hundredths and $\frac{84}{10}$ is 84 tenths.

Fractions to Decimals (1)

Notes and Guidance

At this point children should know common fractions, such as thirds, quarters, fifths and eighths, as decimals.

Children explore how finding an equivalent fraction where the denominator is 10, 100 or 1,000 makes it easier to convert from a fraction to a decimal.

They investigate efficient methods to convert fractions to decimals.

Mathematical Talk

How many hundredths are equivalent to one tenth?

How could you convert a fraction to a decimal?

Which is the most efficient method? Why?

Which equivalent fraction would be useful?

Varied Fluency

Match the fractions to the equivalent decimals.

$\frac{2}{5}$ 0.04

$\frac{1}{25}$ 0.4

$\frac{1}{4}$ 0.25

Use your knowledge of known fractions to convert the fractions to decimals. Show your method for each one.

$\frac{7}{20}$ $\frac{3}{4}$ $\frac{2}{5}$ $\frac{6}{200}$

Mo says that $\frac{63}{100}$ is less than 0.65

Do you agree with Mo?
Explain your answer.

Fractions to Decimals (1)

Reasoning and Problem Solving

Amir says,

> The decimal 0.42 can be read as 'four tenths and two hundredths'.

Teddy says,

> The decimal 0.42 can be read as 'forty-two hundredths'.

Who do you agree with?
Explain your answer.

Both are correct. Four tenths are equivalent to forty hundredths, plus the two hundredths equals forty-two hundredths.

True or False?

$$0.3 \text{ is bigger than } \frac{1}{4}$$

Explain your reasoning.

True because $\frac{1}{4}$ is 25 hundredths and 0.3 is 30 hundredths. Therefore, 0.3 is bigger.

Dora and Whitney are converting $\frac{30}{500}$ into a decimal.

- Dora doubles the numerator and denominator, then divides by 10

- Whitney divides both the numerator and the denominator by 5

- Both get the answer $\frac{6}{100} = 0.06$

Which method would you use to work out each of the following?

$$\frac{25}{500} \quad \frac{125}{500} \quad \frac{40}{500} \quad \frac{350}{500}$$

Explain why you have used a certain method.

Possible response:

$\frac{25}{500}$ - divide by 5, known division fact.

$\frac{125}{500}$ - double, easier than dividing 125 by 5

$\frac{40}{500}$ - divide by 5, known division fact.

$\frac{350}{500}$ - double, easier than dividing 350 by 5

Fractions to Decimals (2)

Notes and Guidance

It is important that children recognise that $\frac{3}{4}$ is the same as $3 \div 4$. They can use this understanding to find fractions as decimals by then dividing the numerator by the denominator.

In the example provided, we cannot make any equal groups of 5 in the ones column so we have exchanged the 2 ones for 20 tenths. Then we can divide 20 into groups of 5

Mathematical Talk

Do we divide the numerator by the denominator or divide the denominator by the numerator? Explain why.
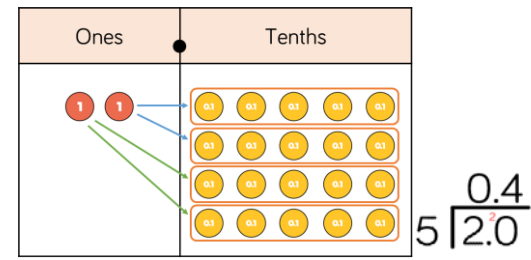
When do we need to exchange?

Are we grouping or are we sharing? Explain why.

Why is it useful to write 2 as 2.0 when dividing by 5?

Why is it not useful to write 5 as 5.0 when dividing by 8?

Varied Fluency

Deena has used place value counters to write $\frac{2}{5}$ as a decimal. She has divided the numerator by the denominator.

Use this method to convert the fractions to decimals. Give your answers to 2 decimal places.

$$\frac{1}{2} \qquad \frac{3}{4}$$

Use the short division method to convert the fractions to decimals. Write the decimals to three decimal places.

$$\frac{5}{8} \qquad \frac{4}{5} \qquad \frac{8}{5}$$

8 friends share 7 pizzas.
How much pizza does each person get?
Give your answer as a decimal and as a fraction.

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Fractions to Decimals (2)

Reasoning and Problem Solving

Rosie and Tommy have both attempted to convert $\frac{2}{8}$ into a decimal.

I converted $\frac{2}{8}$ into 0.25
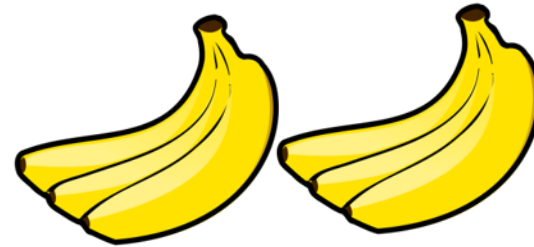
I converted $\frac{2}{8}$ into 4

Who is correct?
Prove it.

Rosie is correct and Tommy is incorrect.

Tommy has divided 8 by 2 rather than 2 divided by 8 to find the answer.

Mo shares 6 bananas between some friends.

Each friend gets 0.75 of a banana.

How many friends does he share the bananas with?
Show your method.

Mo shares his 6 bananas between 8 friends because 6 divided by 8 equals 0.75

Children may show different methods:

Method 1: Children add 0.75 until they reach 6. This may involve spotting that 4 lots of 0.75 equals 3 and then they double this to find 8 lots of 0.75 equals 6

Method 2: Children use their knowledge that 0.75 is equivalent to $\frac{3}{4}$ to find the equivalent fraction of $\frac{6}{8}$