

Tuesday

Adding decimals with a different number of decimal places

Fluency and reasoning

Varied Fluency

Use the place value grid to add 1.3 and 3.52

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

$$\begin{array}{r}
 1.3 \\
 + 3.52 \\
 \hline
 \\
 \hline
 \end{array}$$

Use the column method to answer these questions.

$$\begin{array}{r}
 4.4 \\
 + 7.044 \\
 \hline
 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 4.42 \\
 + 1.6 \\
 \hline
 \\
 \hline
 \end{array}$$

Whitney is cycling in a race.
She has cycled 3.145 km so far and has 4.1 km left to go. What is the total distance of the race?

Eva is trying to find the answer to



$$4.144 + 1.4$$

Here is her working out.

$$\begin{array}{r} 4.144 \\ + \quad 1.4 \\ \hline 4.248 \end{array}$$

Can you spot and explain her error?

Work out the correct answer.

Place the calculations in the correct column in the table.

$$9.99 + 0.1$$

$$9.99 + 1$$

$$9.99 + 0.001$$

$$9.99 + 0.01$$

Some calculations might need to go in more than one place.

No exchange	Exchange in the ones column	Exchange in the tenths column	Exchange in the hundredths column	Exchange in the thousandths column

Add 2 more calculations to each column.

Varied Fluency



Use the place value grid to add 1.3 and 3.52

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

$$\begin{array}{r}
 1.30 \\
 + 3.52 \\
 \hline
 4.82
 \end{array}$$



Use the column method to answer these questions.

$$\begin{array}{r}
 4.400 \\
 + 7.044 \\
 \hline
 11.444
 \end{array}$$

$$\begin{array}{r}
 4.42 \\
 + 1.60 \\
 \hline
 6.02
 \end{array}$$



Whitney is cycling in a race.

She has cycled 3.145 km so far and has 4.1 km left to go. What is the total distance of the race? **7.245 km**

Eva is trying to find the answer to



$$4.144 + 1.4$$

Here is her working out.

$$\begin{array}{r} 4.144 \\ + \quad 1.4 \\ \hline 4.248 \end{array}$$

Can you spot and explain her error?

Work out the correct answer.

The digits are lined up incorrectly.

Eva needs to line up the decimal point.

The correct answer is 5.544

Place the calculations in the correct column in the table.

$9.99 + 0.1$

$9.99 + 1$

$9.99 + 0.001$

$9.99 + 0.01$

Some calculations might need to go in more than one place.

No exchange	Exchange in the ones column	Exchange in the tenths column	Exchange in the hundredths column	Exchange in the thousandths column

Add 2 more calculations to each column.

No exchange:

$9.99 + 0.001$

Exchange in the ones column:

$9.99 + 1$

$9.99 + 0.1$

$9.99 + 0.01$

Exchange in the tenths column:

$9.99 + 0.1$

$9.99 + 0.01$

Exchange in the hundredths column:

$9.99 + 0.01$

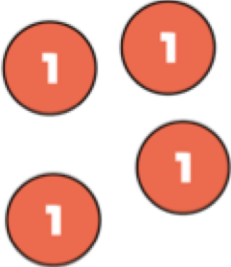
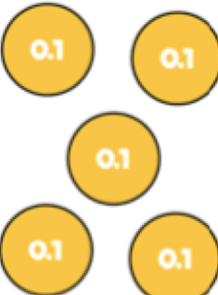
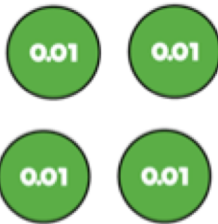
Wednesday

Subtracting decimals with a different number of decimal places

Fluency and reasoning

Varied Fluency

Use the place value grid to help subtract 1.4 from 4.54

Ones	Tenths	Hundredths
		

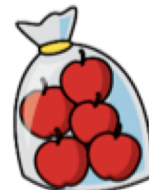
$$\begin{array}{r} 4.54 \\ - 1.4 \\ \hline \\ \hline \end{array}$$

Use the column method to work out the following.

$$\begin{array}{r} 6.06 \\ - 3.7 \\ \hline \\ \hline \end{array} \quad \begin{array}{r} 4.7 \\ - 3.825 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{l} 3.3 - 1.34 = \\ 14.41 - 1.43 = \\ 3 - 1.87 = \end{array}$$

How much change would I get from £10 if I bought a bag of apples costing £4.27?

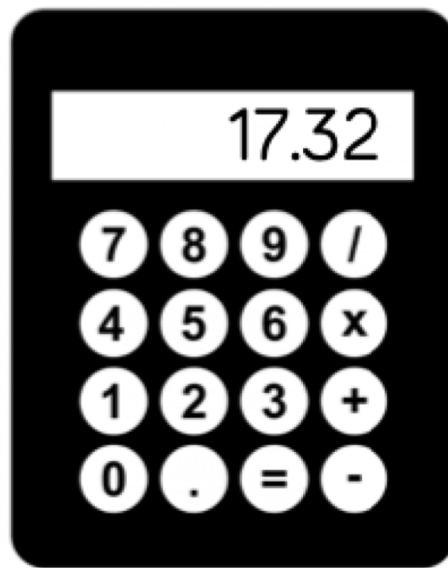




If there are 5 hundredths and I subtract nothing from it then there are still 5 hundredths.

$$\begin{array}{r} 4.9 \\ - 3.85 \\ \hline 1.15 \end{array}$$

Do you agree with Whitney?
Explain your answer.



Teddy used a calculator to solve:
 $31.4 - 1.408$

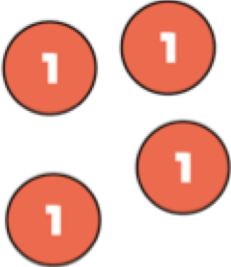
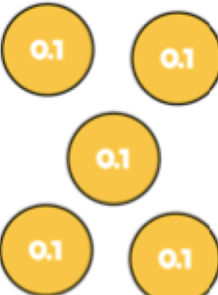
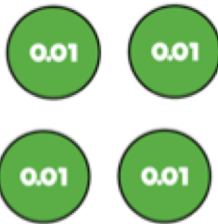
When he looked at his answer of 17.32
he realised he'd made a mistake.

He had typed all the correct digits in.

Can you spot his mistake?
What should the correct answer be?

Varied Fluency

Use the place value grid to help subtract 1.4 from 4.54

Ones	Tenths	Hundredths
		

$$\begin{array}{r}
 4.54 \\
 - 1.40 \\
 \hline
 3.14
 \end{array}$$

Use the column method to work out the following.

$$\begin{array}{r}
 6.06 \\
 - 3.70 \\
 \hline
 2.36
 \end{array}
 \qquad
 \begin{array}{r}
 4.7 \\
 - 3.825 \\
 \hline
 0.875
 \end{array}$$

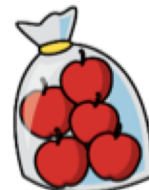
$$3.3 - 1.34 = 1.96$$

$$14.41 - 1.43 = 12.98$$

$$3 - 1.87 = 1.13$$

How much change would I get from £10 if I bought a bag of apples costing £4.27?

£5.73





If there are 5 hundredths and I subtract nothing from it then there are still 5 hundredths.

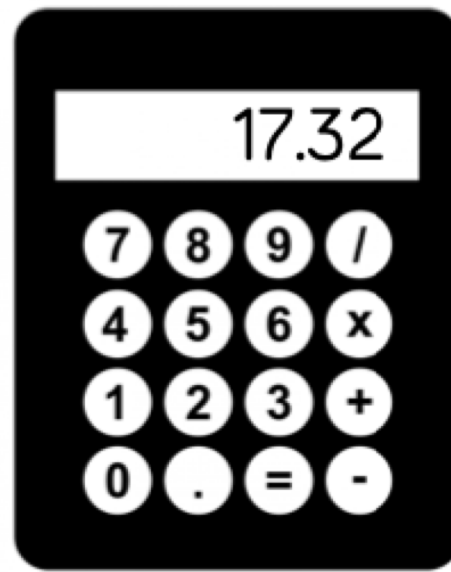
$$\begin{array}{r} 4.9 \\ - 3.85 \\ \hline 1.15 \end{array}$$

Do you agree with Whitney?
Explain your answer.

Whitney is not correct. She needs to use zero as a place value holder in the hundredths column of 4.9 and then exchange.

Encourage children to explore more efficient mental strategies as well as correcting the formal method.

The correct answer is 1.05



Teddy used a calculator to solve:
 $31.4 - 1.408$

When he looked at his answer of 17.32
he realised he'd made a mistake.

He had typed all the correct digits in.

Can you spot his mistake?
What should the correct answer be?

Teddy placed the
decimal point after
the 4 making
14.08 instead of
1.408

The correct
answer is 29.992

Thursday

Arithmetic

Year 5

1	$12 + 4 + 4 =$	<input type="text"/>	<input type="text"/> 1 mark
2	$43 \times 0 =$	<input type="text"/>	<input type="text"/> 1 mark
3	$109 - 10 =$	<input type="text"/>	<input type="text"/> 1 mark
4	$6 \times 4 =$	<input type="text"/>	<input type="text"/> 1 mark
5	$80 \div 1 =$	<input type="text"/>	<input type="text"/> 1 mark
6	$499 + 50 =$	<input type="text"/>	<input type="text"/> 1 mark
7	$\begin{array}{r} 354 \\ + 263 \\ \hline \end{array}$	<input type="text"/>	<input type="text"/> 1 mark

8	$43 \times 5 =$	<input type="text"/>	<input type="text"/> 1 mark
9	$\frac{3}{7} + \frac{3}{7} =$	<input type="text"/>	<input type="text"/> 1 mark
10	$72 \div 8 =$	<input type="text"/>	<input type="text"/> 1 mark
11	$4916 + 358 =$	<input type="text"/>	<input type="text"/> 1 mark
12	$\begin{array}{r} 945 \\ - 178 \\ \hline \end{array}$	<input type="text"/>	<input type="text"/> 1 mark
13	$2 \times 5 \times 3 =$	<input type="text"/>	<input type="text"/> 1 mark
14	$36.05 \times 10 =$	<input type="text"/>	<input type="text"/> 1 mark

15	$0.03 = ?\%$	<input type="text"/>	<input type="text"/> 1 mark
16	$2.9 + 5.3 =$	<input type="text"/>	<input type="text"/> 1 mark
17	$10,348 - 458 =$	<input type="text"/>	<input type="text"/> 1 mark
18	$\frac{2}{5}$ of 30 =	<input type="text"/>	<input type="text"/> 1 mark
19	$20 \times 40 =$	<input type="text"/>	<input type="text"/> 1 mark
20	$5316 \div 6 =$	<input type="text"/>	<input type="text"/> 1 mark
21	$\frac{1}{3}$ of 507 =	<input type="text"/>	<input type="text"/> 1 mark

22	$467.1 + 1000 =$	<input type="text"/>	<input type="text"/> 1 mark
23	$\begin{array}{r} 28 \\ \times 53 \\ \hline \end{array}$	<input type="text"/>	<input type="text"/> 2 marks
24	$31.8 \times 4 =$	<input type="text"/>	<input type="text"/> 1 mark
25	$2^3 + 2^2 =$	<input type="text"/>	<input type="text"/> 1 mark
26	$1\frac{1}{3} \times 2 =$	<input type="text"/>	<input type="text"/> 1 mark
27	$0.2 = \frac{?}{10}$	<input type="text"/>	<input type="text"/> 1 mark
28	$26.8 - 6.12 =$	<input type="text"/>	<input type="text"/> 1 mark
29	$\frac{5}{6} - \frac{2}{3} =$	<input type="text"/>	<input type="text"/> 1 mark

Mark scheme

1.	20	[1]	19.	800	[1]
2.	0	[1]	20.	886	[1]
3.	99	[1]	21.	169	[1]
4.	24	[1]	22.	0.4671	[1]
5.	80	[1]	23.	For 2 marks: 1484	[2]
6.	549	[1]		<i>Award only 1 mark if there is either one error in the multiplication steps, then added correctly, or no error in the multiplication steps but an error in the addition step.</i>	
7.	617	[1]	24.	127.2	[1]
8.	215	[1]	25.	12	[1]
9.	$\frac{6}{7}$	[1]	26.	$2\frac{2}{3}$ or equivalent	[1]
10.	9	[1]		e.g. $\frac{8}{3}$	
11.	5274	[1]	27.	$\frac{2}{10}$	[1]
12.	767	[1]	28.	20.68	[1]
13.	30	[1]	29.	$\frac{1}{6}$	[1]
14.	360.5	[1]			
15.	3%	[1]			
16.	8.2	[1]			
17.	9,890	[1]			
18.	12	[1]			

Arithmetic

Year 6

1	$495 + 1 =$	<input type="text"/>	<input type="text"/> 1 mark
2	$345 + 10 =$	<input type="text"/>	<input type="text"/> 1 mark
3	$82 \times 1 =$	<input type="text"/>	<input type="text"/> 1 mark
4	$\frac{1}{5}$ of 20 =	<input type="text"/>	<input type="text"/> 1 mark
5	$36 \times 0 =$	<input type="text"/>	<input type="text"/> 1 mark
6	$\begin{array}{r} 5813 \\ + 1359 \\ \hline \end{array}$	<input type="text"/>	<input type="text"/> 1 mark
7	$87 \div 3 =$	<input type="text"/>	<input type="text"/> 1 mark

8	$424 - 51 =$	<input type="text"/>	<input type="text"/> 1 mark
9	$5^2 =$	<input type="text"/>	<input type="text"/> 1 mark
10	$12 \times 5 \times 4 =$	<input type="text"/>	<input type="text"/> 1 mark
11	$729 \times 4 =$	<input type="text"/>	<input type="text"/> 1 mark
12	$5\% = \frac{?}{100}$	<input type="text"/>	<input type="text"/> 1 mark
13	$7624 - 931 - 87 =$	<input type="text"/>	<input type="text"/> 1 mark
14	$2.6 \times 10 =$	<input type="text"/>	<input type="text"/> 1 mark

15	$0.3 \times 3 =$	<input type="text"/>	<input type="text"/> 1 mark
16	$\frac{1}{7} = \frac{?}{21}$	<input type="text"/>	<input type="text"/> 1 mark
17	$36.4 - 27.8 =$	<input type="text"/>	<input type="text"/> 1 mark
18	15% of 90 =	<input type="text"/>	<input type="text"/> 1 mark
19	$\begin{array}{r} 729 \\ \times \underline{54} \end{array}$	<input type="text"/>	<input type="text"/> 2 marks
20	$\frac{7}{9}$ of 45 =	<input type="text"/>	<input type="text"/> 1 mark
21	$221 \div 17 =$	<input type="text"/>	<input type="text"/> 2 marks

22	$23.8 \div 1000 =$	<input type="text"/>	<input type="text"/> 1 mark
23	$63.6 \times 7 =$	<input type="text"/>	<input type="text"/> 1 mark
24	$\frac{5}{6} - \frac{2}{3} =$	<input type="text"/>	<input type="text"/> 1 mark
25	$0.6 = \frac{?}{20}$	<input type="text"/>	<input type="text"/> 1 mark
26	$\frac{4}{7} \div 2 =$	<input type="text"/>	<input type="text"/> 1 mark
27	$\frac{1}{4} \times \frac{3}{7} =$	<input type="text"/>	<input type="text"/> 1 mark
28	$2\frac{1}{8} - \frac{1}{4} =$	<input type="text"/>	<input type="text"/> 1 mark

Mark scheme

1.	496	[1]	19.	For 2 marks: 39 366	[2]
2.	355	[1]		For 1 mark:	
3.	82	[1]		$\begin{array}{r} 729 \\ \times 54 \\ \hline 2916 \\ 36\ 450 \\ \hline 39\ 366 \end{array}$	
4.	4	[1]		An error in one row, then added correctly, or an error in the addition	
5.	0	[1]	20.	35	[1]
6.	7172	[1]	21.	For 2 marks: 13	[2]
7.	29	[1]		For 1 mark: Evidence of either a long division method or short division method with only one error (carry figures must be seen in a short division method)	
8.	373	[1]	22.	0.0238	[1]
9.	25	[1]	23.	445.2	[1]
10.	240	[1]	24.	$\frac{1}{6}$	[1]
11.	2916	[1]	25.	12	[1]
12.	5	[1]	26.	$\frac{2}{7}$	[1]
13.	6606	[1]	27.	$\frac{3}{28}$	[1]
14.	26	[1]	28.	$1\frac{7}{8}$	[1]
15.	0.9	[1]			
16.	3	[1]			
17.	8.6	[1]			
18.	13.5 or $13\frac{1}{2}$	[1]			

Thursday

Adding and subtracting whole and decimal numbers

Fluency and reasoning

Varied Fluency

Use the place value grid to help add 143 and 1.45

Hundreds	Tens	Ones	Tenths	Hundredths
100	10 10 10 10	1 1 1		
		1	0.1 0.1 0.1 0.1	0.01 0.01 0.01 0.01 0.01

$$\begin{array}{r} 143. \\ + 1.45 \\ \hline \\ \hline \end{array}$$

Use the place value grid to help work out $12 - 1.2$

Tens	Ones	Tenths
10	1 1	

$$\begin{array}{r} 12. \\ - 1.2 \\ \hline \\ \hline \end{array}$$

Find the most efficient method to solve this calculations.

$$43 - 2.14 + 0.86 =$$

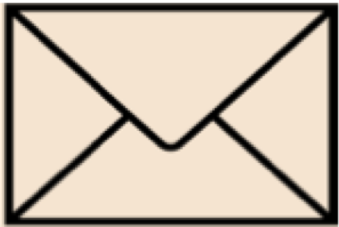
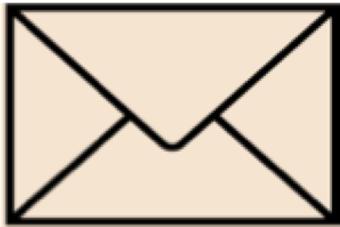
$$19 - 0.25 =$$

$$23 + 4.105 =$$

$$19 - 17.37 =$$

What are the missing digits in the calculation?

$$\begin{array}{r} 31.\text{[splash]}0 \\ - \text{[splash]}.\text{[splash]}37 \\ \hline 29.63 \end{array}$$



Two envelopes contain two different numbers.

- The sum of the numbers is 9.92
- The difference between the numbers is 2.32

What numbers are inside the envelopes?

How can this bar model help?



Varied Fluency

Use the place value grid to help add 143 and 1.45

Hundreds	Tens	Ones	Tenths	Hundredths
100	10 10 10 10	1 1 1		
		1	0.1 0.1 0.1 0.1	0.01 0.01 0.01 0.01 0.01

$$\begin{array}{r} 143. \\ + \quad 1.45 \\ \hline 144.45 \end{array}$$

Use the place value grid to help work out $12 - 1.2$

Tens	Ones	Tenths
10	1 1	

$$\begin{array}{r} 12. \\ - \quad 1.2 \\ \hline 10.8 \end{array}$$

Find the most efficient method to solve this calculations.

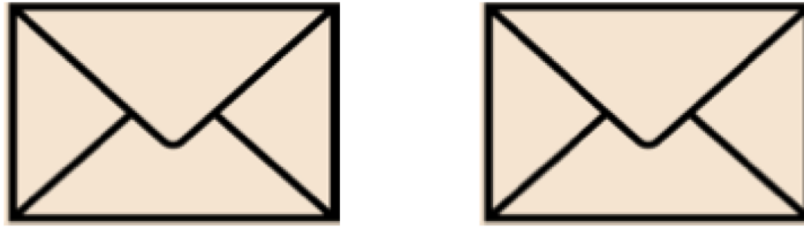
$$43 - 2.14 + 0.86 = 41.72 \quad 19 - 0.25 = 18.75$$

$$23 + 4.105 = 27.105 \quad 19 - 17.37 = 1.63$$

What are the missing digits in the calculation?

$$\begin{array}{r} 31.\text{[splash]}0 \\ - \text{[splash]}.37 \\ \hline 29.63 \end{array}$$

$$\begin{array}{r} 31.\textcolor{red}{0}0 \\ - \textcolor{red}{1}.37 \\ \hline 29.63 \end{array}$$

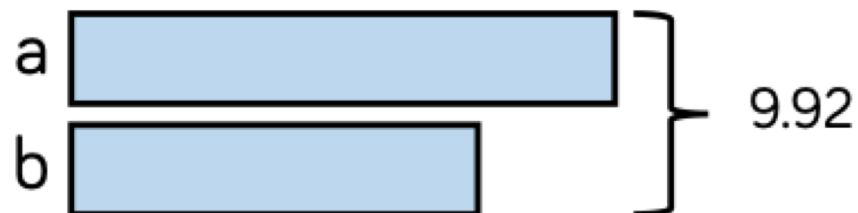


Two envelopes contain two different numbers.

- The sum of the numbers is 9.92
- The difference between the numbers is 2.32

What numbers are inside the envelopes?

How can this bar model help?






Friday

Decimal sequences

Fluency and reasoning

Varied Fluency

Complete the sequence.

				
1st	2nd	3rd	4th	5th
1.21	1.32	1.43		

What do increasing and decreasing mean?

Is the sequence increasing by the same amount each time? By how much?

What is the same about each term? What is changing in each term?

What will the next term in the sequence be?

Can you work out the next number (term) in each sequence.

What is the pattern?

Write the rules for each sequence.

• 0.45, 0.6, 0.75, 0.9 The rule is

• 1.25, 2.5, 3.75, 5, 6.25 The rule is

Generate the first 5 terms of this sequence.

The 1st term is 1.74
The sequence decreases by 0.24 each time.

9.48 9.52 9.56 9.6 ...

The number 9.7 will be in this sequence.



Do you agree with Jack?
Explain your answer.

	1 st sequence	Relationship →	2 nd sequence
1 st term	0.1		1
2 nd term	0.2		2
3 rd term	0.3		3
4 th term	0.4		4
5 th term			

Eva compared the two sequences above.
What do you notice about the differences
between the terms in the two
sequences?




Investigate Eva's sequences below and
explain your thinking.



I wonder what the
differences would be
between sequences that
go up in + 0.01 and +1
sequence...

Varied Fluency

Complete the sequence.

				
1st	2nd	3rd	4th	5th
1.21	1.32	1.43	1.54	1.65

Write the rules for each sequence.

• 0.45, 0.6, 0.75, 0.9

The rule is

+ 0.15

• 1.25, 2.5, 3.75, 5, 6.25

The rule is

+ 1.25

Generate the first 5 terms of this sequence.

1.74, 1.50, 1.26, 1.02, 0.78, 0.54

The 1st term is 1.74

The sequence decreases by 0.24 each time.

9.48 9.52 9.56 9.6 ...

The number 9.7 will be in this sequence.



Do you agree with Jack?
Explain your answer.

Jack is incorrect,
9.68 and 9.72 will
be in the sequence
but not 9.7

The terms are
increasing by 0.04
therefore 9.7 will
not be in the
sequence.

	1 st sequence	Relationship →	2 nd sequence
1 st term	0.1		1
2 nd term	0.2		2
3 rd term	0.3		3
4 th term	0.4		4
5 th term			

Eva compared the two sequences above. What do you notice about the differences between the terms in the two sequences?

Investigate Eva's sequences below and explain your thinking.



I wonder what the differences would be between sequences that go up in + 0.01 and +1 sequence...

The difference between the terms is increasing by 0.9 each time e.g.

$$1^{\text{st}} + 0.9$$

$$2^{\text{nd}} + 1.8$$

$$3^{\text{rd}} + 2.7$$

$$4^{\text{th}} + 3.6$$

Children may also notice that the terms in the 2nd sequence are ten times larger than in the first.

The differences would increase by 0.99 each time.