

Park Hall Junior
Academy's
Mathematics
Calculation Policy

Parents' guide Year 5



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The purpose of this guide is to outline the various calculation methods for addition, subtraction, multiplication and division that children are taught as they progress through the school, many of which look different to the methods that you may have been taught in your primary school days. This guide will also explain to you how we teach each method therefore creating a level of consistency between home and school. Hopefully, this consistency will prevent confusion of the teaching of too many methods and will support your child's progression in Mathematics. The methods below are mainly used for written calculations (calculations that are too difficult to complete mentally). Your child will also be taught a range of mental strategies to consolidate their understanding of number facts and begin to develop ways of recording to support their thinking and calculation methods. As children progress through the school and are taught more formal written methods, they are still encouraged to think about mental strategies they could use first and only use written methods for those calculations they cannot solve in their heads.

When faced with a calculation problem, encourage your child to ask:

Can I do this in my head?

Could I do this in my head using drawings or jottings to help me?

Do I need to use a written method?

Should I use a calculator?

Also help your child to estimate and then check the answer. Encourage them to ask:

Is the answer sensible?

We hope the explanations and examples of strategies will help you to assist your child at home.

Addition

Expanded column method with money without crossing boundaries.

At the end, children write the answer next to the calculation they have written out.

$$£ 1 4 . 6 4 + £ 2 2 . 1 2 =$$

$$£ 3 6 . 7 6$$

Children are to write the pound sign at the beginning of each row.

The decimal point is to have a box of its own.

Children are to write the place value chart out every time using $\frac{1}{100}$, $\frac{1}{10}$, 1s, 10s etc.

			10s	1s	.	$\frac{1}{10}$	$\frac{1}{100}$
£	1	4	.	60p	4p		
+	£	2	2	.	10p	2p	
£	3	6	.	70p	6p		

This is the only time they are allowed to put two digits in one square.

The pence sign to be included to remind children of its value.

The addition sign positioned on the left side on the bottom line of the addition.

Finally, children write the place value addition along with the answer.

Miss a line!

$$£ 3 6 + 70p 6p = £ 3 6 . 7 6$$

Expanded column method with money with crossing the $\frac{1}{10}$ boundary.

At the end, children write the answer next to the calculation they have written out.

$$\begin{array}{r} \text{£ } 14.64 + \text{£ } 22.18 = \\ \text{£ } 36.82 \end{array}$$

Children are to write the pound sign at the beginning of each row.

The decimal point is to have a box of its own.

Children are to write the place value chart out every time using $\frac{1}{100}, \frac{1}{10}$, ls, 10s etc.

The addition sign positioned on the left side on the bottom line of the addition.

	10	ls	.	$\frac{1}{10}$	$\frac{1}{100}$
£	1	4	.	60	4p
+	£	2	.	10	8p
£			.	10	
£	3	6	.	80	12

This is the only time they are allowed to put two digits in one square.

The pence sign to be included to remind children of its value.

Miss a line!

Add the $\frac{1}{100}$. Children are to recognise that there is a $\frac{1}{10}$ in the $\frac{1}{100}$ column. Children are to cross it out and move it across into the next column placed on the line they missed out. Add the $\frac{1}{100}$ ls and 10s columns.

Finally, children write the place value addition along with the answer.

$$\text{£ } 36 + 80 \text{ 2p} = \text{£ } 36.82$$

Expanded column method with money with crossing the 1s boundary.

At the end, children write the answer next to the calculation they have written out.

£ 1 4 . 6 4 + £ 2 2 . 7 2 =

£ 3 7 . 3 6

Children are to write the pound sign at the beginning of each row.

The decimal point is to have a box of its own.

Children are to write the place value chart out every time using $\frac{1}{100}$, $\frac{1}{10}$, 1s, 10s etc.

The addition sign positioned on the left side on the bottom line of the addition.

					10	1s	.	$\frac{1}{10}$	$\frac{1}{100}$	
	£	1	4	.	60	4p				
+	£	2	2	.	70	2p				
<hr/>										
	£	3	7	.	30	6p				

This is the only time they are allowed to put two digits in one square.

The pence sign to be included to remind children of its value.

Miss a line!

Add the $\frac{1}{100}$ and the $\frac{1}{10}$ column. The children are to recognise that there is a '£1 (100p)' in the $\frac{1}{10}$ column. Children are to cross it out and move it across into the next column placed on the line they missed out. Add the 1s and 10s columns.

Children should be aware that £1 = 100p

Finally, children write the place value addition along with the answer.

£ 3 7 + 3 0p = £ 3 7 . 3 6

Expanded column method with money with crossing the 10s boundary.

At the end, children write the answer next to the calculation they have written

$$£ 19.64 + £ 22.12 =$$

$$£ 41.76$$

Children are to write the pound sign at the beginning of each row.

The decimal point is to have a box of its own.

Children are to write the place value chart out every time using $\frac{1}{100}$, $\frac{1}{10}$, ls, 10s etc.

The addition sign positioned on the left side on the bottom line of the addition.

	10s	ls	.	$\frac{1}{10}$	$\frac{1}{100}$	
£	1	4	.	60p	4p	
+	£	2	9	.	10p	2p
£	1					
<hr/>						
£	4	1	.	70p	6p	

This is the only time they are allowed to put two digits in one square.

The pence sign to be included to remind children of its value.

Miss a line!

$\frac{1}{100}$, $\frac{1}{10}$ and ls columns. Children are to recognise that there is a '£10' in the ls column. Children are to cross it out and move it across into the next column placed on the line they missed out. Add the 10s.

Finally, children write the place value addition along with the answer.

$$£ 41 + 70p\ 6p = £ 41.76$$

Add related fractions.

Children need to recognise that they need to change the denominator so that they are the same.

Remind children whatever happens to the denominator happens to the numerator.

They write what they are multiplying them by in the space that was left.

Leave a space between the fraction and the addition.

$$\begin{array}{r} 3 \\ \hline 4 \end{array} \times 2 \quad + \quad \frac{1}{8} = \frac{7}{8}$$

$$\frac{6}{8} \quad + \quad \frac{1}{8} = \frac{7}{8}$$

Children then re-write the addition with the new fraction. Miss a line between the two calculations.

Subtraction

Counting up on a number line. Finding change from £1

Write out the question. One digit per square.

At the end, children write the answer next to the calculation they have written out.

Children are to leave two lines between the question and the number line.

The first jump only needs to be two squares. The next jump can go to the end.

The jumps should use the two lines that were left so they can write in the jumps.

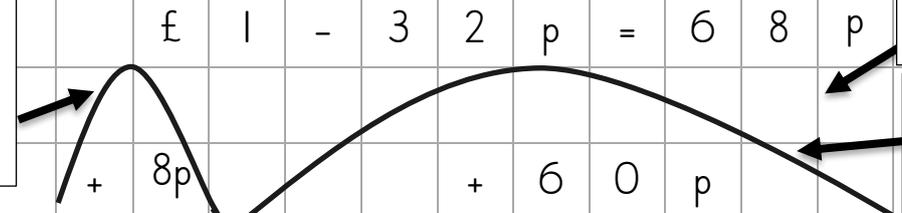
Children are to write the number they are counting from at the beginning of the number line.

Children do not need to use one digit per square here.

The first 'jump' always moves to the nearest multiple of 10.
The next 'jump' moves to the £1.

Children are to write the number they are counting up to at the end of the number line.

They may also want to write 100p underneath £1 to remind them that they are counting up to 100 and not 1. (Place value of money misconception - remind children £1 = 100p).



32p

£ 1
100p

60p + 8p = 68p

Children add up the jumps starting with the 10s.

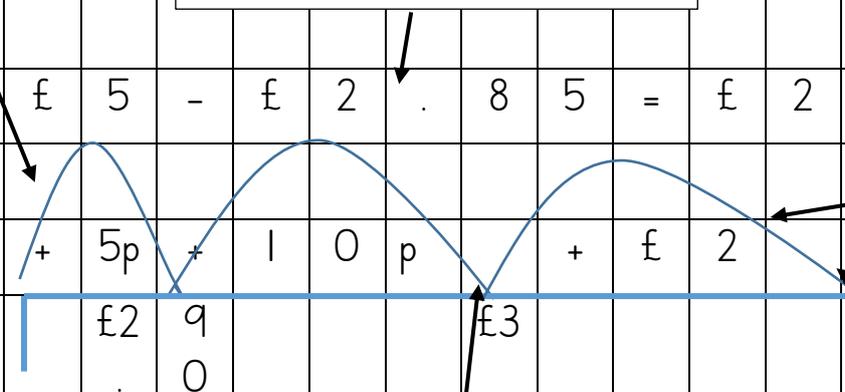
Counting up on a number line. Finding change from £5

At the end, children write the answer next to the calculation they have written out.

The first jump only needs to be two squares.

Write out the question. One digit per

Children are to write the number they are counting from at the beginning of the number line.



Children are to leave two lines between the question and the number line.

The jumps should use the two lines that were left so they can write in the jumps.

Children do not need to use one digit per square here but should put the pound sign, the ls and decimal point together in one square and the pence in the next square.

The first 'jump' always moves to the nearest multiple of 10.
The next 'jump' moves to the nearest £1.
The final 'jump' moves to the £1 total at the end.

Children are to write the number they are counting up to at the end of the number line.

$$£ 2 + 1 0 p + 5 p = £ 2 . 1 5$$

Children add up the jumps starting with the £ls.

NB Finding change for £10 is similar apart from the end number.
Along with finding change from £20 as long as the amount being taken away is over £10.
Similar to finding change from £50 as long as the amount being taken away is over £40.
Also when finding change from £100 as long as the amount being taken away is over £90.

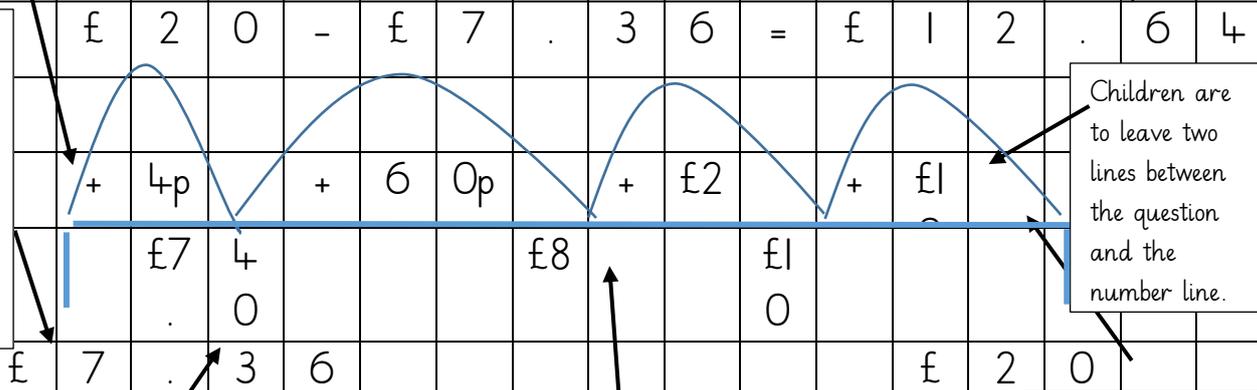
Counting up on a number line. Finding change from £20.

The first jump only needs to be two squares.

Write out the question. One digit per square.

At the end, children write the answer next to the calculation they have written out.

Children are to write the number they are counting from at the beginning of the number line.



Children are to leave two lines between the question and the number line.

Children do not need to use one digit per square here but should put the pound sign, the 1s and decimal point together in one square and the pence in the next square.

The number the children have 'jumped to' should go at the end of the jump.

The first 'jump' always moves to the nearest multiple of 10.

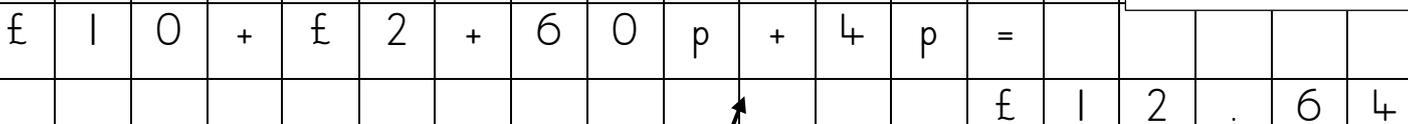
The next 'jump' moves to the nearest £1.

The next 'jump' moves to £10

The final 'jump' moves to £20

The jumps should use the two lines that were left so they can write in the jumps.

Children are to write the number they are counting up to at the end of the number line.



Children add up the jumps starting with the £10s.

NB See finding change from £5 for any amount being taken away that is over £10.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Counting up on a number line. Finding change from £50.

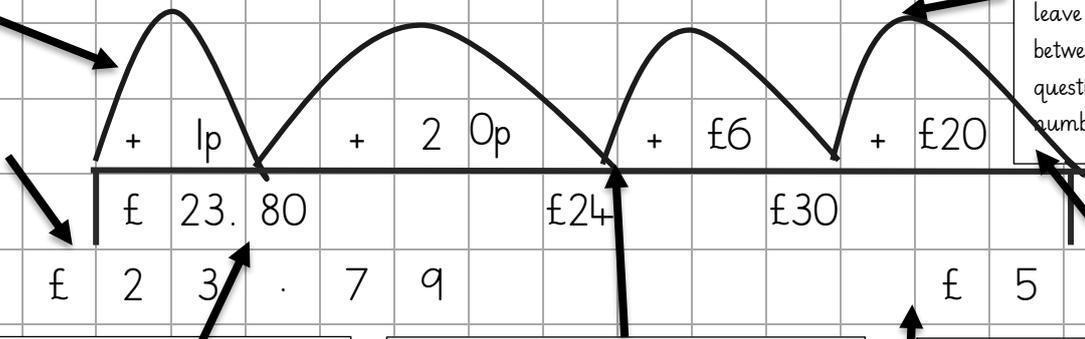
Write out the question. One digit per square.

At the end, children write the answer next to the calculation they have written out.

The first jump only needs to be two squares.

$$£ 50 - £ 23.79 = £ 26.21$$

Children are to write the number they are counting from at the beginning of the number line.



Children are to leave two lines between the question and the number line.

Children do not need to use one digit per square here but should put the pound sign in one square, the ls and 10s and decimal point together in one square and the pence in the next square.

The first 'jump' always moves to the nearest multiple of 10.

The next 'jump' moves to the nearest £1.

The next 'jump' moves to £10

The final 'jump' moves to £50

The jumps should use the two lines that were left so they can write in the jumps.

Children are to write the number they are counting up to at the end of the number line.

$$£ 20 + £ 6 + 20p + 1p =$$

$$£ 26.21$$

Children add up the jumps starting with the £10s.

NB See finding change from £5 for any amount being taken away that is over £4.0.

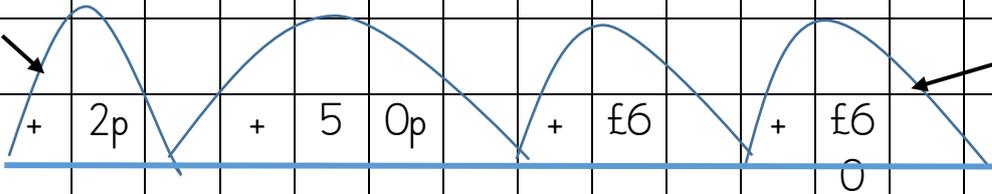
Counting up on a number line. Finding change from £100

Write out the question. One digit per square.

At the end, children write the answer next to the calculation they have written out.

$$£ 100 - £ 33.48 = £ 66.52$$

The first jump only needs to be two squares.



Children are to leave two lines between the question and the number line.

$$£ 33.48 + £ 3.4 + £ 4 + £ 100 = £ 100$$

Children are to write the number they are counting from at the beginning of the number line.

Children do not need to use one digit per square here but should put the pound sign in one square, the 1s and 10s and decimal point together in one square and the pence in the next square.

The first 'jump' always moves to the nearest multiple of 10.
 The next 'jump' moves to the nearest £1.
 The next 'jump' moves to £10
 The final 'jump' moves to £100

The jumps should use the two lines that were left so they can write in the jumps.

Children are to write the number they are counting up to at the end of the number line.

$$£ 60 + £ 6 + 50p + 2p = £ 66.52$$

Children add up the jumps starting with the £10s.

NB See finding change from £5 for any amount being taken away that is over £90.

Counting up on a number line dealing with money.

At the end, children write the answer next to the calculation they have written out.

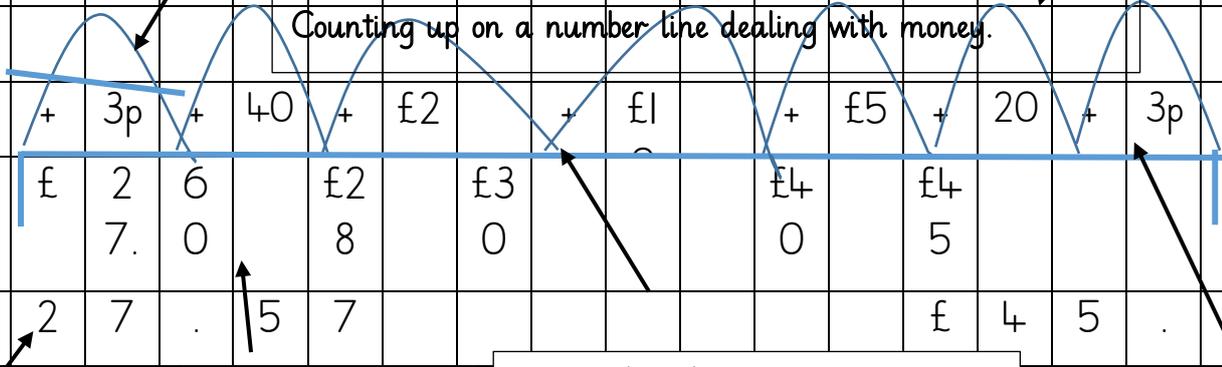
When adding the jumps children may want to cross them off as they may become confused.

Write out the question. One digit per square.

Children are to leave two lines between the question and the number line.

£ 4 5 . 2 3 - £ 2 7 . 5 7 = 1 7 . 6 6

Counting up on a number line dealing with money.



Children are to write the number they are counting from at the beginning of the number line.

Children do not need to use one digit per square here but should put the pound sign in one square, the 1s and 10s and decimal point together in one square and the pence in the next square.

The first 'jump' always moves to the nearest multiple of 10.

The next 'jump' moves to the nearest £1.

The next 'jump' moves to £10

The final 'jump' moves to £100

Children at the end may want to add 23p but they need to split this up as it will become confusing when they come to add them.

Children are to write the number they are counting up to at the end of the number line.

£ 1 0 + £ 5 + £ 2 + 4 0 p + 2 0 p +
3 p + 3 p = £ 1 7 . 6 6

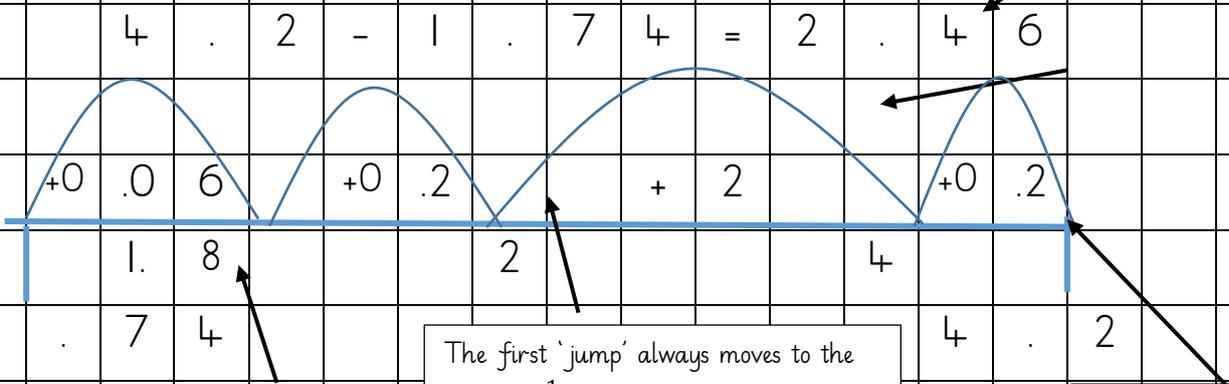
Children add up the jumps starting with the £10s.

When adding the jumps children may want to cross them off as they may become confused.

Counting up on a number line. Subtracting decimals.

Write out the question. One digit per square.

At the end, children write the answer next to the calculation they have written out.



Children are to write the number they are counting from at the beginning of the number line.

Children do not need to use one digit per square here but should put addition and 1s in a square, the decimal points and 10ths in another and the 100ths in a separate one.

The first 'jump' always moves to the nearest $\frac{1}{10}$.
 The next 'jump' moves to the nearest 1.
 The next 'jump' moves to 1s value in the end number.
 The final 'jump' moves to the end number.

The jumps should use the two lines that were left so they can write in the jumps.

Children are to write the number they are counting up to at the end of the number line.

$$2 + 0.2 + 0.2 + 0.06 = 2.46$$

Children add up the jumps starting with the 1s.

Compact column subtraction with exchanging for numbers with up to 5 digits

$$16324 - 8516 = 7808$$

Children write the subtraction they are solving before they present it in a column.

At the end, children write the answer next to the calculation they have written out.

Remind children that this stands for '14' ones, '1' ten, '13' hundreds, '15' thousands.

Miss two lines between the question and the working out.

When exchanging, children are to cross out the previous number and write the new number above.

The subtraction sign positioned on the left side on the bottom line of the subtraction.

Children can add in a zero when there is no digit in a place value column.

The children need to recognise that they cannot subtract the 1s (the Commutative Law does not work for either subtraction or division). Children need to make the '4' larger by **exchanging** (do not use the term 'borrowing'). We take '10' from '2' (remind children this means 2 tens so the same as 20) and add it to the '4'. The '20' becomes '10'. Now subtract the 1s.

The children subtract the 10s.

The children then need to recognise that they cannot subtract the 100s (the Commutative Law does not work for either subtraction or division). Children need to make the '3' (remind children this means 3 hundreds so the same as 300) larger by **exchanging** (do not use the term 'borrowing'). We take '1000' from '6' (remind children this means 6 thousands so the same as 6000) and add it to the '3' (remind children this now means 13 hundreds so the same as 1300). Now subtract the 100s.

The children then need to recognise that they cannot subtract the 1000s (the Commutative Law does not work for either subtraction or division). The children need to make the '5' (remind children this means 5 thousands so the same as 5000) larger by **exchanging** (do not use the term 'borrowing'). We take '10,000' from '1' (remind children this means 1 ten-thousand so the same as 10,000) and add it to the '5' (remind children this means 15 thousands so the same as 15,000). Now subtract the 1000s.

They then subtract the 10,000s.

Compact column subtraction with exchanging for larger numbers.

$$34685 - 16458 = 18227$$

Children write the subtraction they are solving before they present it in a column.

At the end, children write the answer next to the calculation they have written out.

Miss two lines between the question and the working out.

Remind children that this stands for '15' ones, '7' tens, '14' thousands, '2' ten-thousands.

Children can add in a zero when there is no digit in a place value column.

When exchanging, children are to cross out the previous number and write the new number above.

The subtraction sign positioned on the left side on the bottom line of the subtraction.

The children need to recognise that they cannot subtract the 1s (the Commutative Law does not work for either subtraction or division). Children need to make the '5' larger by **exchanging** (do not use the term 'borrowing'). We take '10' from '8' (remind children this means 8 tens so the same as 80) and add it to the '5'. The '80' becomes '70'. Now subtract the 1s.

The children subtract the 10s.

The children subtract the 100s.

The children then need to recognise that they cannot subtract the 1000s (the Commutative Law does not work for either subtraction or division). The children need to make the '4' (remind children this means 4 thousands so the same as 4,000) larger by **exchanging** (do not use the term 'borrowing'). We take '10,000' from '3' (remind children this means 3 ten-thousands so the same as 30,000) and add it to the '4' (remind children this means 14 thousands so the same as 14,000). Now subtract the 1000s.

They then subtract the 10,000s.

Subtract related fractions.

Children need to recognise that they need to change the denominator so that they are the same.

Remind children whatever happens to the denominator happens to the numerator.

They write what they are multiplying them by in the space that was left.

Children then re-write the subtraction with the new fraction. Miss a line between the two calculations.

Leave a space between the fraction and the subtraction.

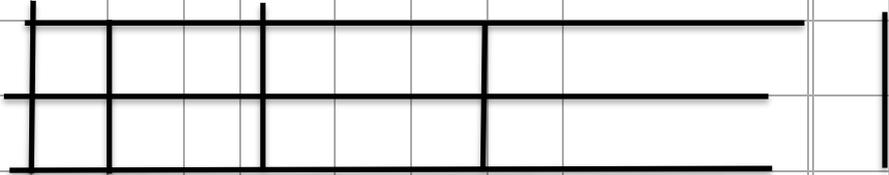
$$\begin{array}{r} 3 \\ \hline 4 \end{array} \times 2 \quad - \quad \begin{array}{r} 1 \\ \hline 8 \end{array} = \begin{array}{r} 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \\ \hline 8 \end{array} - \begin{array}{r} 1 \\ \hline 8 \end{array} = \begin{array}{r} 5 \\ \hline 8 \end{array}$$

Multiplication

Children are to draw a grid.
 2 rows down.
 Column 1 – 1 square
 Column 2 – 2 squares
 Column 3 – 3 squares
 Column 4 – 4 squares

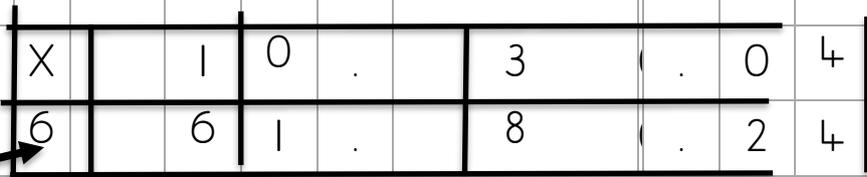
Grid method using numbers with up to 2 decimal places x 1-digit numbers.



$$1.34 \times 6 = .04$$

At the end, children write the answer next to the calculation they have written out.

The multiplication sign positioned in the top left corner of the grid.



The 1-digit number goes underneath the multiplication sign.

Children need to place the numbers into the correct place value in the columns.

The children need to partition the number into 1s, 10ths and 100ths. The 1s go into the column next to the multiplication sign then the 10ths, then the 100ths.
 Children then need to multiply the 1-digit number by the partitioned number.
 If children struggle with multiplying the 100ths and 10ths e.g. 0.3×6 . Remind them to solve 3×6 then make it 10 times smaller. Or 0.04×6 . Remind them to solve 4×6 then make it 100 times smaller.

$$6 + 1.8 + 0.4 = 8.04$$

The children then add the answers to the multiplications. They can use any method taught to add numbers do not use a new method if it hasn't been taught yet.

Long Multiplication 2-digit numbers x 'teen' numbers.

$$48 \times 16 = 768$$

Children are to write out the question then write the numbers in the column layout.

Make sure the numbers are lined up in the correct place value columns – children are to write the place value above each column.

Always write an extra place value column in case the answer requires it.

At the end, children write the answer next to the calculation they have written out.

The multiplication sign positioned on the left side on the bottom line of the multiplication.

Explain to children that we are going to partition the second number '16 = 10 + 6'

We are then going to multiply the first number by each of the two numbers we have after partitioning '48 x 10' and '48 x 6'

Miss 2 lines!

1st line – Carrying of the second multiplication.

2nd line – Carrying of the addition.

The carried '100' from the addition.

Children then add up the answers to the multiplication. Remind children to leave a line as they would do for column addition.

Remind children not to add the carried numbers that are crossed out.

Firstly, children multiply '10 x 48'. Remind children when we multiply a number by 10 we make it 10 times bigger and all the digits move one place to the left and a Zero fills the 1s column.

Next, children multiply '6 x 8'. This equals '48'. They put the '8' in the 1s column and carry the '40' into the 10s column and place it on the row below.

The children then multiply '6 x 40' and add the carried digit and cross it out so they do not add it when adding up.

Make sure children are crossing out the carried digits when they have added them.

100s 10s 1s

48

x 16

480

(10 x 48)

x 48

288

(6 x 8) +

(6 x 40)

4

The carried '40' from '6 x 8'

1

768

Long Multiplication 3-digit numbers x 'teen' numbers.

$$382 \times 16 = 6112$$

Children are to write out the question then write the numbers in the column layout.

Make sure the numbers are lined up in the correct place value columns – children are to write the place value above each column.

Always write an extra place value column in case the answer requires it.

At the end, children write the answer next to the calculation they have written out.

Explain to children that we are going to partition the second number '16 = 10 + 6'

We are then going to multiply the first number by each of the two numbers we have after partitioning '382 x 10' and '382 x 6'

The multiplication sign positioned on the left side on the bottom line of the multiplication.

	1000s	100s	10s	1s
		3	8	2
x			1	6
	3	8	2	0
	2	2	9	2

$$(10 \times 382)$$

$$(6 \times 2) + (6 \times 80) + (6 \times 300)$$

Miss 2 lines!

1st line – Carrying of the second multiplication.

2nd line – Carrying of the addition.

The carried '100' and '1000' from the addition.

Children then add up the answers to the multiplication. Remind children to leave a line as they would do for column addition.

Remind children not to add the carried numbers that are crossed out.

The carried '10' from '6 x 2' and the carried '400' from '80 x 6'

Firstly, children multiply '10 x 382'. Remind children when we multiply a number by 10 we make it 10 times bigger and all the digits move one place to the left and a Zero fills the 1s column. Next, children multiply '6 x 2'. This equals '12'. They put the '2' in the 1s column and carry the '10' into the 10s column and place it on the row below.

The children then multiply '6 x 80' and add the carried digits. This equals '490' They put the '90' in the 10s column and carry the '400' into the 100s column and place it on the row below.

Finally, they multiply '6 x 300' and add the carried digits.

Make sure children are crossing out the carried digits when they have added them.

Long Multiplication 4-digit numbers x 'teen' numbers.

Children are to write out the question then write the numbers in the column layout.

Make sure the numbers are lined up in the correct place value columns – children are to write the place value above each column.

At the end, children write the answer next to the calculation they have written out.

Always write an extra place value column in case the answer requires it.

Explain to children that we are going to partition the second number '16 = 10 + 6'

We are then going to multiply the first number by each of the two numbers we have after partitioning '382 x 10' and '382 x 6'

The multiplication sign positioned on the left side on the bottom line of the multiplication.

	10000s	1000s	100s	10s	1s	
		1	0	8	5	
x				1	6	
	1	0	8	5	0	(10 x 1085)
		6	5	1	0	(6 x 5) + (6 x 80) + (6 x 0) + (6 x 1000)

Miss 2 lines!

1st line – Carrying of the second multiplication.

2nd line – Carrying of the addition.

The carried '100' and '1000' from the addition.

Children then add up the answers to the multiplication. Remind children to leave a line as they would do for column addition.

Children may want to add in zeros to help them when working out the total.

Remind children not to add the carried numbers that are crossed out.

The carried '30' from '6 x 5' and the carried '400' from '80 x 6'

Firstly, children multiply '10 x 1085'. Remind children when we multiply a number by 10 we make it 10 times bigger and all the digits move one place to the left and a Zero fills the 1s column.

Next, children multiply '6 x 5'. This equals '30'. They put the '0' in the 1s column and carry the '30' into the 10s column and place it on the row below.

The children then multiply '6 x 80' and add the carried digits. This equals '510' They put the '10' in the 10s column and carry the '500' into the 100s column and place it on the row below.

Then they multiply '6 x 0' and add the carried digits.

Finally, they then multiply '6 x 1000'.

Make sure children are crossing out the carried digits when they have added them.

Short multiplication 2-digit x 1-digit numbers

$$23 \times 8 = 184$$

At the end, children write the answer next to the calculation they have written out.

Always write an extra place value column in case the answer requires it.

100s 10s 1s

Children are to write out the question then write the numbers in the short multiplication layout.

Make sure the numbers are lined up in the correct place value columns- children are to write the place value above each column.

The multiplication sign positioned on the left side on the bottom line of the multiplication.

x

8

Miss a line!

~~2~~

1 8 4

The carried '20' from '3 x 8'

When using short multiplication, always start with the lowest value (the 1s) being multiplied.

Children start with '3 x 8' which is '24'. Children write the '4' in the 1s column in the answer space and carry the '20' into the 10s column and place it on the line above the answer space.

Then children solve '20 x 8' which is '160'. Next the children need to add the '20' which was carried over - '180'. There is nothing left to multiply so 180 can go in the correct columns in the answer space.

Children need to cross off the carried numbers when they have added them.

Short multiplication 3-digit x 1-digit numbers

$$278 \times 3 = 834$$

At the end, children write the answer next to the calculation they have written out.

Always write an extra place value column in case the answer requires it.

1000s 100s 10s 1s

Children are to write out the question then write the numbers in the short multiplication layout.

Make sure the numbers are lined up in the correct place value columns—children are to write the place value above each column.

The multiplication sign positioned on the left side on the bottom line of the multiplication.

x

$$\begin{array}{r} 278 \\ \times 3 \\ \hline 834 \end{array}$$

Miss a line!

The carried '20' from '8 x 3' and the carried 200 from '70 x 3'.

When using short multiplication, always start with the lowest value (the 1s) being multiplied.

Children start with '8 x 3' which is '24'. Children write the '4' in the 1s column in the answer space and carry the '20' into the 10s column and place it on the line above the answer space.

Then children solve '70 x 3' which is '210'. Next they add the carried '20' – '230'. They place the '30' (remind children that we only write '3' as '3 tens' = '30') in the 10s column in the answer space and carry the '200' into the 100s column and place it on the line above the answer space.

Next, they solve '200 x 3' which is '600' and add the carried '200' – '800' and place it in the 100s column in the answer space (again remind children that they only put an '8' as '8 hundreds = 800').

Short multiplication 4-digit x 1-digit numbers

$$4312 \times 6 = 25872$$

10000s 1000s 100s 10s 1s

4 3 1 2

x

6

2 5 8 7 2

Always write an extra place value column in case the answer requires it.

The multiplication sign positioned on the left side on the bottom line of the multiplication.

At the end, children write the answer next to the calculation they have written out.

Children are to write out the question then write the numbers in the short multiplication layout.

Make sure the numbers are lined up in the correct place value columns—children are to write the place value above each column.

Miss a line!

The carried '10' from '2 x 6' and the carried 1000 from '300 x 6'.

When using short multiplication, always start with the lowest value (the 1s) being multiplied.

Children start with '2 x 6' which is '12'. Children write the '2' in the 1s column in the answer space and carry the '10' into the 10s column and place it on the line above the answer space.

Then children solve '10 x 6' which is '60'. Next they add the carried '10' – '70'. They place the '70' (remind children that we only write '7' as '7 tens' = '70') in the 10s column in the answer space.

Next, they solve '300 x 6' which is '1800'. Children write the '800' (remind children that we only write '8' as '8 hundreds = 800) in the 100s column in the answer space and carry '1000' into the 1000s column and place it on the line above the answer space.

Finally, they solve '4000 x 6' which is '24,000' and add the carried '1000' – '25,000'. There is nothing left to multiply so children can place the '25,000' in the correct place value columns in the answer space.

Multiplying fractions by 1-digit numbers.

The numerator is positioned in the square above the denominator. Then a line (vinculum) is to be drawn to separate them.

$$\frac{3}{4} \times 6 = \frac{18}{4}$$

Leave a space between the fraction, the multiplication sign, the whole number and the equals sign.

The question needs to be adjusted so that the whole number becomes a fraction.

When writing a whole, children are to use 2 squares.

The whole number is turned into a fraction by putting it out of 1.

Children are to draw these arches to remind them they need to multiply the two numerators and the two denominators.

$$\frac{3}{4} \times \frac{6}{1} = \frac{3 \times 6}{4 \times 1} = \frac{18}{4}$$

Numerators

Denominators

They are to then write the multiplications out as a fraction.

Division

Written division method. Dividing 3-digit numbers by 1-digit numbers.

Explain there are two ways to say this division. 135 divided by 6 or how many lots of 6 go into 135?

At the end, children write the answer next to the calculation they have written out.

Encourage children to always start with the 10th multiple unless the answer is less than this.
Some children may recognize that they can take more than one lots of 10 which they could also do.

	1	3	5	÷	6	=	2	2	r	3	
							13				
			x	6	=	1	3	5			
	1	0	x	6	=	6	0				
								7	5		
	1	0	x	6	=	6	0				
								1	5		
	2	x	6	=	1	2					
								3			

Children are to write out the question then write the numbers in the written division layout.
Remind children that division is the inverse of multiplication and we can multiplication to help us solve this.

Children are to circle how many lots of '3' they have been subtracting to remind them they need to add these later on.

Children should recognise they can no longer take any more lots of '3' away and use this as a remainder.

Remind children to place numbers in the correct place value so that they do not become confused when subtracting.

$$10 + 10 + 2 = 22 \text{ r } 3$$

They then need to add the lots of '3' they have been subtracting.

Short division. Dividing 3-digit numbers by 1-digit numbers.

Explain there are two ways to say this division. 139 divided by 3 or how many lots of 3 go into 139?

$$139 \div 3 = 46 \text{ r } 1$$

$$\begin{array}{r} 046 \text{ r } 1 \\ 3 \overline{) 139} \end{array}$$

Children are to write out the question then write the numbers in short division layout.

Remind children that division is the inverse of multiplication and we can use multiplication to help us solve this.

Firstly, children work out how many '3s' go into '1'. They recognise they cannot do that so they put a '0' above the '1' and then look at how many '3s' go into '13' - '4 r 1'. They place the '4' above the '3' and carry the '1' to the '9'.

They then work out how many '3s' go into '19' - '6 r 1'. They place the '6' above the '9'. There is nothing left to carry the '1' to so they leave it as a remainder.

Finding unit-fractions of amounts.

The numerator is positioned in the square above the denominator. Then a line (vinculum) is to be drawn to separate them.

$$\frac{1}{8} \text{ of } 36 = 4$$

At the end, children write the answer next to the calculation they have written out.

Explain what the questions means/is asking them to do and try to put it into context- 'If I was sharing 36 sweets between 8 people, how many would 1 person get?'

The question needs to be adjusted so that the whole number is being divided by the denominator then multiplied by the numerator.

$$36 \div 8 = 4$$

$$4 \times 1 = 4$$

It is important that children complete this step as they will struggle to understand or forget to do this when finding non-unit fractions of amounts.

Finding non-unit-fractions of amounts.

The numerator is positioned in the square above the denominator. Then a line (vinculum) is to be drawn to separate them.

$$\frac{3}{4} \text{ of } 48 = 36$$

Leave a space between the fraction, the 'of', the whole number and the equals sign.

At the end, children write the answer next to the calculation they have written out.

Explain what the questions means/is asking them to do and try to put it into context- 'If I was sharing 48 sweets between 4 people, how many would 3 people get?'

The question needs to be adjusted so that the whole number is being divided by the denominator then multiplied by the numerator.

$$48 \div 4 = 12$$

$$12 \times 3 = 36$$

Turn improper fractions into mixed numbers.

Leave a space between the fraction, and the equals sign.

$$\frac{9}{4} = 2 \frac{1}{4}$$

When writing a whole, children are to use 2 squares.

Explain we are dividing the numerator by the denominator.

$$9 \div 4 = 2 \text{ r } 1$$

The remainder then needs to be turned into a fraction. Explain that we still have a denominator of 4 and the remainder is now the numerator.

$$= 2 \frac{1}{4}$$

Turn mixed numbers into improper fractions.

When writing a whole, children are to use 2 squares.

Remind children what the whole number represents. E.g. $2 = \frac{8}{4}$ as we have 2 lots of $\frac{4}{4}$. It is always useful to show them using diagrams.

$$2 \frac{1}{4} = \frac{9}{4}$$

$$= \frac{8}{4} + \frac{1}{4} = \frac{9}{4}$$

The whole number is multiplied by the denominator and then you add the fraction.

$$(2 \times 4) + 1$$

$$\frac{\quad}{4}$$

The denominator always stays the same as it is still 'out of 4'

