

Written methods – contracted multiplication

	H	T	U
		15	4
x			3
	1	6	2

Start with the units. $4 \times 3 = 12$ units.

Rename this as 1 ten and 2 units. Put the 2 in the units column and regroup the 1 to the tens column.

3×5 plus the regrouped 1 is 16 tens.

Rename this as 1 hundred and 6 tens.

1 Practise these problems:

a

	H	T	U
			42
x			9

b

	H	T	U
			38
x			7

c

	H	T	U
			25
x			4

d

	H	T	U
			26
x			4

e

	H	T	U
			55
x			8

f

	H	T	U
			62
x			7

2 Use contracted multiplication to solve these word problems:

a On a farm, 6 lambs were born every day over 25 days. How many lambs were born in total?

	H	T	U
x			

b For my school fete day, I baked 9 trays of cupcakes. If there are 14 cupcakes on each tray, how many did I bake in total?

	H	T	U
x			

Written methods – extended multiplication

	H	T	U
		3	4
×			3
		1	2
		9	0
	1	0	2

In extended multiplication, we multiply the units and tens separately, then add the answers together.

1 Practise these problems:

a

	H	T	U
		2	3
×			4

← (4 × 3)

← (4 × 20)

b

	H	T	U
		3	6
×			5

← (5 × 6)

← (5 × 30)

c

	H	T	U
		7	4
×			6

← (___ × ___)

← (___ × ___)

d

	H	T	U
		5	2
×			7

← (___ × ___)

← (___ × ___)

2 Use extended multiplication to solve this word problem:

In a pet store, there are 7 tanks of tropical fish with 14 fish per tank.

How many fish are there altogether?

	H	T	U
×			

← (___ × ___)

← (___ × ___)

Written methods – short division

Another way to represent division is with the division symbol.

	T	U
		6
6	3	6

This is the same as $36 \div 6 = 6$

If the answer is a single digit, it should go in the units column.

1 Solve these division problems using the division symbol:

a $5 \overline{) 35}$

b $4 \overline{) 28}$

c $9 \overline{) 18}$

d $6 \overline{) 54}$

e $2 \overline{) 14}$

f $4 \overline{) 16}$

g $5 \overline{) 25}$

h $7 \overline{) 49}$

i $8 \overline{) 48}$

2 Use the division symbol to solve each problem:

a 42 cupcakes were iced by 7 kids. If they each iced the same amount, how many did they ice each?

$$\square \overline{) \begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array}}$$

b How many pots were used if 6 seeds were planted in each pot from a packet of 54?

$$\square \overline{) \begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array}}$$

c I run the same distance each day. Over 9 days the total distance is 72 km. How far did I run each day?

$$\square \overline{) \begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array}}$$

Written methods – short division with remainders

This is the way we write remainders when using the division symbol.

$$\begin{array}{r}
 2r3 \\
 6 \overline{) 15} \\
 \hline
 12 \\
 3
 \end{array}$$

This is the same as $15 \div 6 = 2$ remainder 3.

Check your work with the closest multiplication fact:

$$6 \times 2 = 12$$

$$\text{Then add on the remainder: } 12 + 3 = 15$$

1 Solve these division problems and then check them.

a
$$\begin{array}{r}
 r \\
 8 \overline{) 27} \\
 \hline
 16 \\
 11
 \end{array}$$

Check with the multiplication fact and add the remainder:

$$\begin{array}{c}
 \square \times \square + \square = \square \\
 \text{multiplication fact} \qquad \text{remainder}
 \end{array}$$

b
$$\begin{array}{r}
 r \\
 9 \overline{) 38} \\
 \hline
 27 \\
 11
 \end{array}$$

Check with the multiplication fact and add the remainder:

$$\begin{array}{c}
 \square \times \square + \square = \square \\
 \text{multiplication fact} \qquad \text{remainder}
 \end{array}$$

c
$$\begin{array}{r}
 r \\
 6 \overline{) 45} \\
 \hline
 30 \\
 15
 \end{array}$$

Check with the multiplication fact and add the remainder:

$$\begin{array}{c}
 \square \times \square + \square = \square \\
 \text{multiplication fact} \qquad \text{remainder}
 \end{array}$$

d
$$\begin{array}{r}
 r \\
 5 \overline{) 48} \\
 \hline
 25 \\
 23
 \end{array}$$

Check with the multiplication fact and add the remainder:

$$\begin{array}{c}
 \square \times \square + \square = \square \\
 \text{multiplication fact} \qquad \text{remainder}
 \end{array}$$

2 What is the question if I am checking with this multiplication fact?

$$\begin{array}{r}
 r \\
 \overline{) } \\
 \hline
 \\

 \end{array}$$

$$5 \times 6 + 3 = 33$$

Written methods – short division with 3-digit numbers

In short division with 3-digit numbers we split the number:

468 is $400 + 60 + 8$

400 divided by 2 is 200, so we put a 2 in the hundreds place.

60 divided by 2 is 30, so we put a 3 in the tens place.

8 is divided by 2 is 4, so we put a 4 in the units place.

H	T	U
2	3	4
2)	4 6 8

1 Practise splitting these:

a 368 is _____ + _____ + _____

b 445 is _____ + _____ + _____

c 567 is _____ + _____ + _____

d 235 is _____ + _____ + _____

2 Now put these split numbers back together:

a $500 + 70 + 8$ is _____

b $700 + 90 + 4$ is _____

c $200 + 40 + 6$ is _____

d $800 + 50 + 5$ is _____

3 Solve these division problems with 3-digit numbers:

a
$$\begin{array}{r} \square \square \square \\ 4 \overline{) 8 \ 4 \ 4} \end{array}$$

b
$$\begin{array}{r} \square \square \square \\ 3 \overline{) 6 \ 9 \ 3} \end{array}$$

c
$$\begin{array}{r} \square \square \square \\ 2 \overline{) 8 \ 4 \ 2} \end{array}$$

d
$$\begin{array}{r} \square \square \square \\ 2 \overline{) 4 \ 8 \ 8} \end{array}$$

4 Here are two division problems with missing numbers in the questions. Find out the missing numbers by using the numbers that are part of the answer as clues.

a
$$\begin{array}{r} \square \square \square \\ \square \overline{) 4 \ \square \ 4} \end{array}$$

b
$$\begin{array}{r} \square \square \square \\ 3 \overline{) \square \ 3 \ 6} \end{array}$$

Written methods – short division with 3-digit numbers

Sometimes we need to split the number a different way,

for example: $515 = 500 + 15$

500 divided by 5 is 100, so we put a 1 in the hundreds place.

15 divided by 5 is 3, so we put a 3 in the units place.

What goes in the tens place?

A zero does. The zero has the very important job of keeping the other numbers in their place!

H	T	U
1	0	3
5	5	15

5 Practise these problems. We have put the zero in to remind you:

a $4 \overline{) \begin{array}{|c|c|c|} \hline \square & 0 & \square \\ \hline \end{array}} \begin{array}{|c|c|c|} \hline 8 & 1 & 2 \\ \hline \end{array}$

b $3 \overline{) \begin{array}{|c|c|c|} \hline \square & 0 & \square \\ \hline \end{array}} \begin{array}{|c|c|c|} \hline 9 & 2 & 4 \\ \hline \end{array}$

c $3 \overline{) \begin{array}{|c|c|c|} \hline \square & 0 & \square \\ \hline \end{array}} \begin{array}{|c|c|c|} \hline 9 & 1 & 2 \\ \hline \end{array}$

d $4 \overline{) \begin{array}{|c|c|c|} \hline \square & 0 & \square \\ \hline \end{array}} \begin{array}{|c|c|c|} \hline 8 & 2 & 4 \\ \hline \end{array}$

6 Practise these problems. This time, you need to remember the zero!

a $3 \overline{) \begin{array}{|c|c|c|} \hline \square & \square & \square \\ \hline \end{array}} \begin{array}{|c|c|c|} \hline 9 & 1 & 8 \\ \hline \end{array}$

b $6 \overline{) \begin{array}{|c|c|c|} \hline \square & \square & \square \\ \hline \end{array}} \begin{array}{|c|c|c|} \hline 6 & 1 & 2 \\ \hline \end{array}$

c $4 \overline{) \begin{array}{|c|c|c|} \hline \square & \square & \square \\ \hline \end{array}} \begin{array}{|c|c|c|} \hline 8 & 3 & 2 \\ \hline \end{array}$

d $4 \overline{) \begin{array}{|c|c|c|} \hline \square & \square & \square \\ \hline \end{array}} \begin{array}{|c|c|c|} \hline 8 & 1 & 6 \\ \hline \end{array}$