

Multiplying and Dividing by 10, 100 and 1000

Session 1

This is where we are going to recap the fluency of this skill.

A place value grid is a good tool to use when multiplying or dividing by 10, 100 or 1000.



Remember: Going towards the **left** <- each column gets ten times larger.

move 3 place value columns.

Multiplying

Question: 12 x 10 =

- 1) Put the number into the place value grid.
- Decide and move each digit the correct amount of place value columns.
- Place a zero digit in the ones column to hold the space open.



Task 1: Have a go at these multiplication questions

- a) 54 x 10 f) 100 x 65
- b) 45 x 100
- c) 23 x100
- d) 10 x 48
- e) 98 x 100

f) 100 x 65 g) 1000 x 8 h) 10 x 90

Task 1: ANSWERS

- a) 54 x 10 = 540
- b) 45 x 100 = 4500
- c) 23 x100 = 2300

- f) 100 x 65 = 6500
- g) 1000 x 8 = 8000
- h) 10 x 90 = 900

- d) $10 \times 48 = 480$
- e) 98 x 100 = 9800

Dividing

Question: 120 x 10 =

- 1) Put the number into the place value grid.
- Decide and move each digit the correct amount of place value columns.
- 3) When dividing you may have to put the last digits into the tenths or hundreds. This still ten times smaller than the last column.

We haven't looked at decimals or fractions yet but you have been introduced to these columns.



Task 2: Have a go at these division questions

- a) 54 ÷ 10
- b) 4500 ÷ 100
- c) 230 ÷ 10
- d) 4800 ÷ 10
- e) 9800 ÷ 100

f) 8000 ÷ 1000
g) 720 ÷ 10
h) 1010 ÷ 10

Task 2: ANSWERS

- a) 540 ÷ 10 = 54
- b) 4500 ÷ 100 = 45
- c) $230 \div 10 = 23$
- d) 4800 ÷ 10 = 480
- e) 9800 ÷ 100 = 98

f) 8000 ÷ 1000 = 8
g) 720 ÷ 10 = 72
h) 1010 ÷ 10 = 101

Session 2

These are your practise questions, you need to use your understanding to unpick these reasoning and problem solving questions.

How to solve a worded problem.

Tom has 10 boxes of eggs.

There are 12 eggs in each box.

How many eggs does he have altogether?

- 1) Underline what you know
- 2) Underline what you need to find out.
- 3) Use the place value grid to support thinking (or you could draw a picture)
- 4) Write down your answer.

120 eggs





Have a go at this similar problem

Eva walks 60 m to school.

Teddy walks 10 times as far as Eva to school.

How far does Teddy walk to school?

Teddy walks m to school.

ANSWER

Eva walks 60 m to school.

Teddy walks 10 times as far as Eva to school.

How far does Teddy walk to school?



If Teddy walks 10 times as far then Eva that means I need to multiply by 10

60 x 10 = 600

So Teddy walks 600m to school.

How to solve a 'What number do I have?' question



When you trying to solve these types of questions remember you may have to use the inverse operation.

The inverse of multiplying is divide and the inverse of adding is subtracting.

1) Choose the inverse operation to the one that was used.

- 2) Start with their answer and use the inverse operation.
- 3) If the question as for the possibilities you may need to do this for more than once.

Have a go at this similar problem

Amir thinks of a 2-digit even number.

He multiplies it by 100

His answer is greater than 3,450 but less than 3,750

Write the number that Amir is thinking of.

ANSWER

Amir thinks of a 2-digit even number.

He multiplies it by 100

His answer is greater than 3,450 but less than 3,750

Write the number that Amir is thinking of.

 I know I need to do the inverse of multiplication which is divide. So I will divide by 100

2) I also know it needs to be a 2-digit number which means the number Amir has now will need to be followed by two zeros so I can get a whole number when I divide by 100

3) Therefore if I count up from 3450 the next number I get to with only 2 other digits is 3500 but this is not even.

4) If I continue to count I will get to 3600 which would meet all the requirements. $3600 \div 100 = 36$

Now have a go at these other practise questions, some will be similar others will be different.

Write <, > or = to compare the statements.





Eva and Tommy collect gems in a computer game.

Each gem is worth 100 points.

At the end of the game, Eva has 4,300 points and Tommy has 800 points.

How many gems did they collect in total?

How did you work this out?





Session 3

Treat these like your prove it questions. Use your resources to help you but can you do it without any adult support?

Have a go at these prove it questions

True or False? Explain your reasoning

 $6,720 \div 10 = 672$

Th	Н	т	0
6	7	2	0

To divide by 10, each of the digits moves one place to the right.



00

Eva

True or False? Explain your reasoning

Ron has more sweets than Eva.

I have 30 packets of sweets with 10 sweets in each pack.



Ron

I have 10 packets of sweets with 30 sweets in each pack.



The number becomes ten times smaller.

False

They both have the same amount of sweets.

 $30 \times 10 = 300$

 $10 \times 30 = 300$

Four children are in a race. The numbers on their vests are:



Use the clues to match each vest number to a child.

- Jack's number is ten times smaller than Mo's.
- Alex's number is not ten times smaller than Jack's or Dora's or Mo's.
- Dora's number is ten times smaller than Jack's.





Use the clues to match each vest number to a child.

- Jack's number is ten times smaller than Mo's.
- Alex's number is not ten times smaller than Jack's or Dora's or Mo's.
- Dora's number is ten times smaller than Jack's.



The part-whole model does not represent multiplying by 100 Part-whole models show addition (the aggregation structure) and subtraction (the partitioning structure), so if the whole is 300 and there are two parts, the parts added together should total 300 (e.g. 100 and 200, or 297 and 3). If the parts are 100 and 3, the whole should be 103.

To show multiplying 3 by 100 as a partwhole model, there would need to be 100 parts each with 3 in.





Four children are making numbers using base 10

The table shows how many of each piece they use.

	Number of 100s	Number of 10s	
Eva	17	0	
Ron	15	8	
Dexter	16	15	
Whitney			

a) What number has Eva made?

b) Who has made the biggest number?

c) Whitney has made the same number as Eva.

She used 100s and 10s.

What pieces could Whitney have used?

Write your answer in the table.

Are there any other answers? Talk about it with a partner.



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The table shows how many of each piece they use.

		Number of 100s	Number of 10s
	Eva	17	0
	Ron	15	8
	Dexter	16	15
Various	Whitney	15	20

a) What number has Eva made?

1,700

Dexter

b) Who has made the biggest number?

c) Whitney has made the same number as Eva.

She used 100s and 10s.

What pieces could Whitney have used?

Write your answer in the table.

Are there any other answers? Talk about it with a partner.