

Multiply by 10

Notes and guidance

In this small step, children explore multiplying by 10. They need to be able to visualise making a number 10 times the size and understand that “10 times the size” is the same as “multiply by 10”.

Children use their understanding that 1 ten is 10 times the size of 1 one and 1 hundred is 10 times the size of 1 ten to support them with this step. A place value chart is useful to show this. They recognise that when multiplying by 10 the digits move one place value column to the left and zero is needed as a placeholder in the now blank column. While children may notice a zero is always used as a placeholder when multiplying a whole number by 10, it is important that they do not develop the misconception that they just add a zero to multiply by 10, as this will cause confusion when multiplying decimals in later learning.

Things to look out for

- Children may move only one digit and misplace the placeholder, for example $45 \times 10 = 405$
- Children may not realise that calculations of the form $10 \times \underline{\quad}$ and $\underline{\quad} \times 10$ can be carried out in the same way.

Key questions

- What do you notice when multiplying by 10?
- What is a placeholder? When do you use placeholders?
- What happens to the digits in a number when you multiply by 10?
- How can you use a place value chart to show multiplying $\underline{\quad}$ by 10?
- What is $\underline{\quad}$ multiplied by 10?
- What is 10 lots of $\underline{\quad}$?

Possible sentence stems

- $\underline{\quad} \times 10 = \underline{\quad}$
- $10 \times \underline{\quad} = \underline{\quad}$
- $\underline{\quad}$ is 10 times the size of $\underline{\quad}$

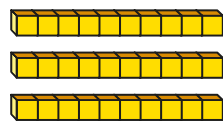
National Curriculum links

- Recall multiplication and division facts for multiplication tables up to 12×12
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 (Y5)

Multiply by 10

Key learning

- Use the base 10 to complete the sentences.



$3 \times 1 \text{ one} = \underline{\quad\quad} \text{ ones}$

$3 \times 1 \text{ ten} = \underline{\quad\quad} \text{ tens}$

$3 \times 1 = \underline{\quad\quad}$

$3 \times 10 = \underline{\quad\quad}$

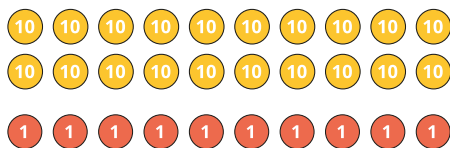
What do you notice?

- Use base 10 to complete the number sentences.

$2 \times 1 = \underline{\quad\quad} \quad 1 \times 6 = \underline{\quad\quad} \quad 7 \times 1 = \underline{\quad\quad}$

$2 \times 10 = \underline{\quad\quad} \quad 10 \times 6 = \underline{\quad\quad} \quad 10 \times 7 = \underline{\quad\quad}$

- Mo represents 21×10 using place value counters.



I need to exchange to find the answer.



What exchanges does Mo need to make?

What is 21×10 ?

- Use place value counters to complete the multiplications.

23×10

16×10

31×10

- Dexter uses a place value chart to work out 32×10

H	T	O
	● ● ●	● ●

$\times 10$ $\times 10$

I can see that when I multiply by 10, all the counters move one place to the left on a place value chart.



H	T	O
● ● ●	● ●	

$32 \times 10 = 320$

What do you notice?

Use Dexter's method to work out the multiplications.

82×10

68×10

43×10

Multiply by 10

Reasoning and problem solving

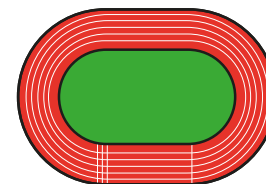
Aisha multiplies a whole number by 10

Her answer is between 440 and 540

What number could Aisha have multiplied by 10?

How many possibilities can you find?

any number
between 45 and 53



Filip runs 80 m.

Kim runs 10 times as far.

How far do they run altogether?

880 m

Is the statement always true, sometimes true or never true?

If you write a whole number in a place value chart and multiply it by 10, all the digits move one column to the left.

always true

Talk about your answer with a partner.

Max and Tiny have some money.

Tiny has 50p.

I have ten times as much money as Tiny.



£5

How much money does Max have?