# Multiplying and dividing by 10, 100, 1000 including decimals

## National Curriculum attainment targets

- Multiply and divide numbers mentally drawing upon known facts
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

## Lesson objective

- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

**Previous related lesson**

Unit 4, Week 1, Lesson 1

**Prerequisites for learning**

Pupils need to:

- recall the multiplication and division facts up to 12 × 12
- understand the effect of multiplying and dividing a number by 10, 100 and 1000.

**Vocabulary**

multiplied by, multiplication, divided by, division, thousand, hundred, ten, one, decimal, tenths, hundredths

**Future related lesson**

Unit 10, Week 1, Lesson 4

**Success criteria**

Pupils can:

- recall the multiplication and division facts of all multiplication tables up to 12 × 12 and associated facts involving multiples of 10, 100 and 1000

## Getting Started

- Choose an activity from Number – Multiplication and division.
- Choose a game or activity from *Fluency in Number Facts: Y5/Y6* – Multiplication and division.

## Teach

Collins Connect
Year 5, Unit 10, Week 1

- Review multiplying and dividing by multiples of 10. Ask and write on the board: **What is 52 × 10?** (520); **630 × 10?** (6300) **480 ÷ 10?** (48); **3600 ÷ 10?** (360)
- Ask: **What happens when a number is multiplied or divided by 10?** (When multiplied by 10 the number becomes 10 times larger and the digits move one place to the left. When divided by 10, the number becomes 10 times smaller and the digits move one place to the right.)
- Write 68 × 100, 3600 ÷ 100 and then 4800 ÷ 100 on the board.
- Ask: **What happens if we multiply or divide numbers by 100?** (When multiplied by 100 the number becomes 100 times larger and the digits move two places to the left. When divided by 100, the number becomes 100 times smaller and the digits move two places to the right.)
- Write 36 × 1000, 48000 ÷ 1000 and 36000 ÷ 1000 on the board.
- Ask: **What happens if we multiply or divide numbers by 1000?** (When multiplied by 1000 the number becomes 1000 times larger and the digits move three places to the left. When divided by 1000, the number becomes 1000 times smaller and the digits move three places to the right.) Repeat with further examples as necessary.
- Extend to dividing by 10 and then 100, where the answer results in a decimal.
- Ask: **We divided 480 by 10 and the answer was 48. What happens if I divide 48 by 10?** Write 48 ÷ 10 on the board.

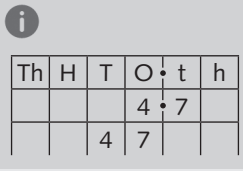
- Say: **Discuss with your partner how you would work out the answer to this question.**
- Ask for an explanation of the answer.
- Draw a place value chart on the board:

| Th | H | T | O | t | h |
|---|---|---|---|---|---|
| | | 4 | 8 | | |

- Write 48 in the correct position on the place value chart.

| Th | H | T | O | t | h |
|---|---|---|---|---|---|
| | | | 4 | 8 | |

- Show that if 48 is divided by 10, the digits move one place to the right and the answer becomes 4·8.
- Say: **We can check by thinking "I know that 40 divided by 10 is 4 so 48 divided by 10 will be close to 4."**
- Repeat with other examples, e.g. 24 ÷ 10, 35 ÷ 10, 320 ÷ 100, 560 ÷ 100.
- Ask: **Explain how you would work out the answer to 720 ÷ 100.**
- Extend to multiplying decimals by 10. Ask and write on the board: What is 4·7 × 10? (47)



| Th | H | T | O | t | h |
|---|---|---|---|---|---|
| | | | 4 | 7 | |
| | | 4 | 7 | | |

- Show how if 4·7 is multiplied by 10, the digits move one place to the left and the answer becomes 47.
- Say: **We can check by thinking, "I know that 4 multiplied by 10 is 40 so 4·7 multiplied by 10 will be close to 40."**
- Repeat with other decimal numbers, e.g. 3·8 × 10; 5·4 × 10, 6·3 × 100.
- Ask: **Explain how you would work out the answer to 7·2 × 100.**

## Individualised Learning

Refer to Activity 2 from the Learning activities on page 386.

**Pupil Book 5C:** – Page 30: Multiplying and dividing by 10, 100 and 1000, including decimals

**Progress Guide 5:** – Support, Year 5, Unit 10, Week 1, Lesson 2: Multiplying and dividing by 10, 100, 1000 including decimals

– Extension, Year 5, Unit 10, Week 1, Lesson 2: Multiplying and dividing by whole numbers and decimals

## Plenary

**Resources**

mini whiteboard, pen and eraser (per child)

- Review dividing by 10, 100 and 1000.
- Write 47 ÷ 10 = on the board.
- Say: **Explain to your partner how you would work out the answer to this question.**
- Ask for an explanation of the answer. (The number becomes 10 times smaller and the digits move one place to the right.)
- Write on the board: 36 ÷ 100 =
- Ask for an explanation of the answer. (The number becomes 100 times smaller and digits move two places to the right.)
- Write on the board: 2·4 × 10 = and 2·4 × 100 =
- Say: **Explain to your partner how these questions relate to each other.**
- Repeat for other examples, asking the children to show the answer on their mini whiteboards.
- Say: **Explain how you would work out the answer to 64 ÷ 100; 6·400 × 100.**

**Homework Guide 5**

Year 5, Unit 10, Week 1, Lesson 2: Multiplying and dividing by 10, 100, 1000 including decimals

## Overcoming Barriers

- It is important that children understand what decimals are and recognise the place value of decimal numbers and do not just complete calculations as procedures.