



Multiplication with large and small numbers

Year 7 About 75 minutes No calculator 48 marks

Date _____

A Do Now

Quick questions to start.

- A1** Last lesson [1 mark]

Work out $\frac{3}{4} \div 6$.

A2 Needed today [1 mark]

Work out 0.36×100 .

Answer _____

Answer _____

- A3** Needed today [1 mark]

Work out $4.7 \div 1000$.

A4 From chapter 10 [1 mark]

Expand $4(3x - 2)$.

Answer _____

Answer _____

B Example, then your turn

Year 7

Your teacher works through each example with you. Then try the one beside it.

EXAMPLE 1

Work out (a) 6×400 (b) 50×700 .

Hint Multiply the non-zero digits first. Then put back all the zeros.

- B1** Work out each one. [3 marks]

- (a) 8×600
(b) 70×90
(c) 400×250

Answer (a) ... (b) ... (c) ...

EXAMPLE 2

Work out (a) 0.007×8 (b) 0.6×120 .

Hint $0.007 = 7 \div 1000$. Work out 7×8 , then divide by 1000.

- B2** Work out each one. [3 marks]

- (a) 0.04×9
(b) 0.3×700
(c) 0.05×80

Answer (a) ... (b) ... (c) ...

EXAMPLE 3

Work out (a) 0.3×0.8 (b) 0.06×0.7 .

Hint Multiply the digits. The answer has as many decimal places as the two numbers have together.

B3 Work out each one.

[2 marks]

(a) 0.9×0.5

(b) 0.08×0.03

Answer (a) (b)

EXAMPLE 4

Work out (a) 30^2 (b) 0.4^2 .

Hint Squaring means multiplying a number by itself:
 $30^2 = 30 \times 30$.

B4 Work out each one.

[3 marks]

(a) 60^2

(b) 0.05^2

(c) 0.2^3

Answer (a) ... (b) ... (c) ...

c Practice

Year 7

C1 $4.6 \times 1.5 = 6.9$. Use this fact to work out

[3 marks]

(a) 46×15

(b) 0.46×1.5

(c) 460×0.15

Answer (a) ... (b) ... (c) ...

C2 Work out each one.

[2 marks]

(a) $20 \times 30 \times 0.5$

(b) $0.2 \times 0.3 \times 40$

Answer (a) (b)

C3 Which two of these have the same value?

[2 marks]

A 0.5×80 B 5×0.08

C 0.05×800 D 50×0.08

Answer ... and ...

C4 Find each missing number.

[2 marks]

(a) $0.3 \times \square = 2.1$

(b) $\square \times 40 = 1.2$

Answer (a) (b)

C5 Work out (a) 0.3^3 , (b) 200^3 . [2 marks]

Answer (a) (b)

D Exam-style questions

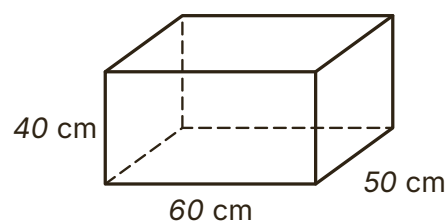
GCSE Foundation

D1 Leo says, " $0.7 \times 0.3 = 2.1$." [2 marks]

Leo is wrong. Explain his mistake and give the correct answer.

D2 A fish tank is a cuboid 60 cm long, 50 cm wide and 40 cm tall.

(a) Work out its volume in cm^3 . [2 marks]



Answer cm^3

(b) 1 litre = 1000 cm^3 . How many litres does the tank hold? [1 mark] Not drawn accurately

Answer litres

(c) Write the lengths in metres, and work out the volume in m^3 . [2 marks]

Answer m^3

Total for D2: 5 marks

D3 Ribbon costs £0.35 per metre.

(a) A shop buys 600 m of ribbon. Work out the cost. [2 marks]

Answer £

(b) Ellie buys 0.4 m of the ribbon. Work out the cost. [2 marks]

Answer £

Total for D3: 4 marks

D4 A square floor tile has sides of 0.2 m.

(a) Work out the area of one tile in m^2 .

[1 mark]



0.2 m

Answer m^2

(b) Jo lays 300 tiles. What area do they cover?

[2 marks]

Not drawn
accurately

Answer m^2

(c) Each tile costs £1.40. Work out the cost of 300 tiles.

[2 marks]

Answer £.....

Total for D4: 5 marks

D5 Kai says, "When you multiply two numbers, the answer is always bigger than both of them."

[2 marks]

Give an example to show Kai is wrong, and explain why.

E Extension

Stretch

No route is given. The hints are at the end of the sheet. Use one at a time.

E1 Two positive numbers a and b multiply to give 0.36. a is 400 times as big as b .
Find a and b .

[4 marks]

Answer $a = \dots$ $b = \dots$

Extension hints

Cover these with paper. Uncover one at a time.

- E1** **Hint 1** $a = 400b$, so $400b \times b = 0.36$.
Hint 2 So $b \times b = 0.36 \div 400 = 0.0009$.
Hint 3 Which number times itself gives 0.0009? Then $a = 400 \times b$.

How did it go?

Colour one circle on each line: not yet, nearly, yes.

I can multiply large numbers by putting back the zeros.



I can multiply decimals by counting the decimal places.



I can use these to find areas, volumes and costs.

