

Metric Unit Conversions

Solutions

For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Each question is shown in grey, followed by the working, one step per line. The final answer is in a box. *Marks* shows how the marks are usually given in the exam, and **Tip** points out a common mistake.

1 (1 mark)

Change 90 millimetres into centimetres.

$$10 \text{ mm} = 1 \text{ cm}$$

Millimetres to centimetres: divide by 10.

$$90 \div 10 = 9$$

Answer: 9

Tip: Centimetres are bigger than millimetres, so the number gets smaller. Divide by 10 (not 100).

2 (1 mark)

Change 6 metres to centimetres.

$$1 \text{ m} = 100 \text{ cm}$$

Metres to centimetres: multiply by 100.

$$6 \times 100 = 600$$

Answer: 600

3 (1 mark)

Change 3000 millilitres to litres.

1000 ml = 1 litre

Millilitres to litres: divide by 1000.

$$3000 \div 1000 = 3$$

Answer: 3

Tip: There are 1000 ml in a litre, not 100. Dividing by 100 gives 30, which is wrong.

4 (2 marks)

(a) Change 258 cm into metres.

100 cm = 1 m

Centimetres to metres: divide by 100.

$$258 \div 100 = 2.58$$

Answer: 2.58

(b) Change 3.4 kg into grams.

1 kg = 1000 g

Kilograms to grams: multiply by 1000.

$$3.4 \times 1000 = 3400$$

Answer: 3400

5 (1 mark)

Write 170 minutes in hours and minutes.

1 hour = 60 minutes, so 2 hours = 120 minutes.

$$170 - 120 = 50 \text{ minutes left over.}$$

So 170 minutes = 2 hours 50 minutes.

Answer: 2 hours 50 minutes

Tip: A calculator gives $170 \div 60 = 2.83 \dots$. This does **not** mean 2 hours 83 minutes. Take off the whole hours instead.

6 (1 mark)

Change 5 weeks into days.

1 week = 7 days

$5 \times 7 = 35$

Answer: 35

7 (2 marks)

A plank of wood is 2.4 metres long.

Nina cuts a piece 85 centimetres long from the plank.

Work out the length of the plank that is left.

Give your answer in centimetres.

Change the length of the plank into centimetres.

$2.4 \text{ m} = 2.4 \times 100 = 240 \text{ cm}$

Length left = $240 - 85$

= 155

Answer: 155

Tip: Use the same units before you subtract. $2.4 - 85$ makes no sense because the units are different.

Marks: 1 mark for 240 cm. 1 mark for 155.

8 (1 mark)

A bottle holds n litres of water.

Write down an expression, in terms of n , for the total number of millilitres of water in 3 of these bottles.

1 litre = 1000 ml

So one bottle holds $1000 \times n = 1000n$ ml.

Three bottles hold $3 \times 1000n = 3000n$ ml.

Answer: $3000n$

Tip: Check with a number: if $n = 2$, three bottles hold 6 litres = 6000 ml, and $3000 \times 2 = 6000$. Do not write units in the expression.

9 (2 marks)

Riley travels by bus and then by train.

The bus journey takes 1 hour 35 minutes.

He then waits 25 minutes for the train.

The train journey takes 2 hours 50 minutes.

Work out Riley's total journey time.

Give your answer in hours and minutes.

Bus + wait: 1 h 35 min + 25 min

$35 + 25 = 60$ minutes = 1 hour, so this is 2 h 0 min.

Add the train: 2 h + 2 h 50 min

= 4 h 50 min

Answer: 4 hours 50 minutes

Marks: 1 mark for a correct method to add the times. 1 mark for 4 hours 50 minutes.

10 (3 marks)

Tom has 3 bottles of water.
Each bottle contains 1.5 litres of water.
Tom pours water into glasses.
Each glass holds 200 millilitres.

How many glasses can Tom fill completely?

Total water = $3 \times 1.5 = 4.5$ litres

Change to millilitres: $4.5 \times 1000 = 4500$ ml

$4500 \div 200 = 22.5$

Only 22 glasses can be filled completely.

Answer: 22

Tip: The question says “completely”, so round 22.5 **down**. Half a glass does not count.

Marks: 1 mark for 4.5 litres or 4500 ml. 1 mark for dividing by 200. 1 mark for 22.

11 (3 marks)

Each day, Ben walks 2.4 km to school.
He walks home by a different route, which is 1800 m long.
He goes to school on 5 days.

Work out the total distance Ben walks in the 5 days.
Give your answer in kilometres.

Change the metres into kilometres: $1800 \text{ m} = 1800 \div 1000 = 1.8$ km

Each day: $2.4 + 1.8 = 4.2$ km

In 5 days: $5 \times 4.2 = 21$ km

Answer: 21 km

Marks: 1 mark for 1.8 km. 1 mark for 5×4.2 . 1 mark for 21.

12 (2 marks)

A parcel weighs 5.5 pounds.

1 kg = 2.2 pounds

Work out the weight of the parcel in kilograms.

Each kilogram is 2.2 pounds.

Find how many lots of 2.2 there are in 5.5:

$$5.5 \div 2.2 = 2.5$$

Answer: 2.5 kg

Tip: A kilogram is heavier than a pound, so the number of kilograms is smaller. Divide by 2.2.

Marks: 1 mark for $5.5 \div 2.2$. 1 mark for 2.5.

13 (3 marks)

A bottle contains 0.2 litres of medicine.

Ella takes three 5 ml spoonfuls of the medicine each day.

For how many full days will the bottle of medicine last?

You must show all your working.

Each day: $3 \times 5 = 15$ ml

Change the bottle to millilitres: $0.2 \text{ litres} = 0.2 \times 1000 = 200$ ml

$$200 \div 15 = 13.3 \dots$$

It lasts for 13 full days.

Answer: 13

Marks: 1 mark for 15 ml per day. 1 mark for 200 ml and $200 \div 15$. 1 mark for 13.
