Metric Unit Conversions & Time

Practice Worksheet (Foundation · Target Grade 5)

I Do

(a) Change 3.4 metres into centimetres.

.....cm *(1 mark)*

(b) Change 2650 grams into kilograms.

.....kg *(1 mark)*

(c) A train leaves Exeter at 14:35 and arrives in Bristol at 15:52.
How long does the journey take? Give your answer in hours and minutes.

.....hours .....minutes *(1 mark)*

(Total for Question is 3 marks)

We Do

(a) Change 4.8 metres into centimetres.

.....cm *(1 mark)*

(b) Change 3420 grams into kilograms.

.....kg *(1 mark)*

(c) A train leaves York at 09:42 and arrives in Leeds at 11:18.
How long does the journey take? Give your answer in hours and minutes.

.....hours .....minutes *(1 mark)*

(Total for Question is 3 marks)

You Do 1

(a) Change 2.75 kilometres into metres.

.....m *(1 mark)*

(b) Change 1850 millilitres into litres.

.....litres *(1 mark)*

(c) A coach leaves Oxford at 13:50 and arrives in Cardiff at 16:15.
How long does the journey take? Give your answer in hours and minutes.

.....hours .....minutes *(1 mark)*

(Total for Question is 3 marks)

You Do 2

(a) Change 465 millimetres into centimetres.

.....cm *(1 mark)*

(b) Change 0.68 kilograms into grams.

.....g *(1 mark)*

(c) A flight departs at 18:45 and the journey takes 2 hours 40 minutes.
What time does the flight arrive?

..... *(1 mark)*

(Total for Question is 3 marks)

You Do 3

(a) Change 5.2 centimetres into millimetres.

.....mm *(1 mark)*

(b) Change 0.045 kilometres into centimetres.

.....cm *(1 mark)*

(c) A ferry arrives at its destination at 08:12 after a journey lasting 3 hours 35 minutes.
What time did the ferry depart?

..... *(2 marks)*

(Total for Question is 4 marks)

Challenge 1

(a) A roll of ribbon is 4.5 metres long.
Lengths of 35 centimetres are cut from the roll.

Work out the maximum number of complete 35 cm lengths that can be cut from the roll, and find the length of ribbon left over in centimetres.

Number of lengths: ..... Left over: .....cm *(3 marks)*

(b) A film starts at 19:48 and lasts for 137 minutes.
At what time does the film finish?

..... *(2 marks)*

(Total for Question is 5 marks)

Challenge 2

(a) Change $2.4\,\text{m}^2$ into cm^2.

.....cm^2 *(1 mark)*

(b) Change $4500\,\text{cm}^3$ into litres.

.....litres *(1 mark)*

(c) A train travels a distance of 189 km at a constant average speed of 84 km/h.
The train departs at 11:40.

Work out the time at which the train arrives.
Show all of your working clearly.

..... *(3 marks)*

(Total for Question is 5 marks)

Extreme Challenge

(a) A high-speed train travels at 144 km/h.
Change 144 km/h into m/s.

.....m/s *(2 marks)*

(b) A cargo ship leaves Port A at 22:45 on Monday and sails 210 km at an average speed of 25 km/h.
It then stops at Port B for 45 minutes before sailing a further 120 km to Port C at an average speed of 30 km/h.

Work out the day and time (in 24-hour clock format) when the ship arrives at Port C.
Show all of your working clearly.

Day: ..... Time: ..... *(4 marks)*

(Total for Question is 6 marks)

Worked Answers

I Do
(a) $3.4 \times 100 =$ **340 cm**
(b) $2650 \div 1000 =$ **2.65 kg**
(c) 14:35 to 15:35 is 1 hour; 15:35 to 15:52 is 17 minutes.
Answer: 1 hour 17 minutes.

We Do
(a) $4.8 \times 100 =$ **480 cm**
(b) $3420 \div 1000 =$ **3.42 kg**
(c) 09:42 to 10:42 is 1 hour; 10:42 to 11:00 is 18 minutes; 11:00 to 11:18 is 18 minutes.
$18 + 18 = 36$ minutes.
Answer: 1 hour 36 minutes.

You Do 1
(a) $2.75 \times 1000 =$ **2750 m**
(b) $1850 \div 1000 =$ **1.85 litres**
(c) 13:50 to 15:50 is 2 hours; 15:50 to 16:15 is 25 minutes.
Answer: 2 hours 25 minutes.

You Do 2
(a) $465 \div 10 =$ **46.5 cm**
(b) $0.68 \times 1000 =$ **680 g**
(c) 18:45 $+2$ hours $=$ 20:45; 20:45 $+40$ minutes $=$ **21:25**.

You Do 3
(a) $5.2 \times 10 =$ **52 mm**
(b) 0.045 km $\times 1000 = 45$ m; 45 m $\times 100 =$ **4500 cm**
(c) Subtract 3 hours from 08:12 to get 05:12.
Subtract 35 minutes from 05:12: $05:12 - 12$ min $= 05:00$; $05:00 - 23$ min $=$ **04** : **37**.

Challenge 1

(a) Convert 4.5 m to centimetres: $4.5 \times 100 = 450$ cm.
Divide 450 by 35: $35 \times 12 = 420$, with a remainder of $450 - 420 = 30$ cm.
Answer: 12 lengths, with **30 cm** left over.

(b) Convert 137 minutes to hours and minutes: $137 = 2 \times 60 + 17 = 2$ hours 17 minutes.
Add to 19:48: $19 : 48 + 2$ hours $= 21 : 48$; $21 : 48 + 17$ minutes $=$ **22** : **05**.

Challenge 2

(a) Since 1 m $= 100$ cm, 1 m$^2 = 100^2$ cm$^2 = 10\,000$ cm^2.
$2.4 \times 10\,000 =$ **24 000 cm^2**.

(b) Since 1 litre $= 1000$ cm^3:
$4500 \div 1000 =$ **4.5 litres**.

(c) Calculate the journey time using $\text{Time} = \dfrac{\text{Distance}}{\text{Speed}}$:

$\text{Time} = \dfrac{189}{84} = 2.25$ hours.
Convert 0.25 hours to minutes: $0.25 \times 60 = 15$ minutes, so the journey takes 2 hours 15 minutes.
Arrival time $= 11 : 40 + 2$ hours 15 minutes $=$ **13** : **55**.

Extreme Challenge

(a) Convert kilometres to metres and hours to seconds (1 hour $= 3600$ seconds):
144 km/h $= \dfrac{144 \times 1000}{3600} = \dfrac{144\,000}{3600} =$ **40 m/s**.

(b) 1. Time for Port A to Port B:
$\dfrac{210}{25} = 8.4$ hours.
$0.4 \times 60 = 24$ minutes $\implies 8$ hours 24 minutes.
2. Stop at Port B: 45 minutes.
3. Time for Port B to Port C:
$\dfrac{120}{30} = 4$ hours.
4. Total elapsed time:
8 h 24 min $+ 45$ min $+ 4$ h $= 12$ h 69 min $= 13$ hours 9 minutes.
5. Add 13 hours 9 minutes to Monday 22:45:
Monday 22:45 $+13$ hours $=$ Tuesday 11:45.
Tuesday 11:45 $+9$ minutes $=$ **Tuesday at 11:54**.