

Unit Conversions

Maths

Level 2

Exam-style practice · 12 questions · 36 marks · Calculator allowed

Remember

Metric: $1 \text{ km} = 1,000 \text{ m}$ · $1 \text{ m} = 100 \text{ cm}$ · $1 \text{ cm} = 10 \text{ mm}$ · $1 \text{ kg} = 1,000 \text{ g}$ · $1 \text{ tonne} = 1,000 \text{ kg}$ · $1 \text{ litre} = 1,000 \text{ ml}$ · $1 \text{ litre} = 1,000 \text{ cm}^3$.

Imperial approximations (the exam gives you the ones it needs): $1 \text{ inch} \approx 2.5 \text{ cm}$ · $1 \text{ foot} = 12 \text{ inches} \approx 30 \text{ cm}$ · $1 \text{ mile} \approx 1.6 \text{ km}$ (5 miles $\approx$ 8 km) · $1 \text{ kg} \approx 2.2 \text{ lb}$ · $1 \text{ gallon} \approx 4.5 \text{ litres}$ · $1 \text{ pint} \approx 0.57 \text{ litres}$.

Bigger unit → smaller unit: multiply. Smaller → bigger: divide. $2.4 \text{ km} \rightarrow 2,400 \text{ m}$; $350 \text{ g} \rightarrow 0.35 \text{ kg}$.

Time: $1 \text{ hour} = 60 \text{ min}$; $1 \text{ day} = 24 \text{ h}$; $1 \text{ week} = 7 \text{ days}$. Quarter of an hour = 0.25 h, not 0.15 h.

Section A – Metric conversions

1. Convert: (a) 3.75 km to metres (b) 860 g to kilograms (c) 2.4 litres to millilitres (d) 1,750 mm to metres (e) 0.08 tonnes to kilograms (f) 45 cm to millimetres (6 marks)

2. A courier's van can carry 1.2 tonnes. It is loaded with 14 boxes of 35 kg, 22 boxes of 18 kg and 9 boxes of 27.5 kg. Is the van overloaded? Show your working. (3 marks)

3. A bottle holds 750 ml. How many bottles can be filled from a 30-litre barrel, and how much is left over? (2 marks)

4. A running track lap is 400 m. Nia runs 27 laps in a week. How many kilometres is that? (2 marks)

Section B – Imperial and metric

5. A delivery is 1,200 miles. The driver's app records distance in km. How many kilometres will it show? (5 miles $\approx$ 8 km) (2 marks)

6. A recipe from an American website needs 2 lb of potatoes. Potatoes are sold in 2.5 kg bags. Is one bag enough for four times the recipe? (1 kg $\approx$ 2.2 lb) (3 marks)

7. A door frame is 6 ft 6 in tall. A wardrobe is 1.95 m tall. Will it fit through the door standing up? (1 ft = 12 in, 1 in $\approx$ 2.5 cm) (3 marks)

8. A car's fuel tank holds 12 gallons. Fuel costs £1.46 a litre. How much does it cost to fill the tank from empty? (1 gallon $\approx$ 4.5 litres) (3 marks)

9. A baby weighed 7 lb 11 oz at birth (16 oz = 1 lb). What is this in kilograms, to 2 decimal places? (1 kg $\approx$ 2.2 lb) (3 marks)

Section C – Time and mixed

10. A nurse works 3 shifts of 12 h 30 min and one of 8 h 45 min. Her contract is 44 hours. How many minutes over or under is she? (3 marks)

11. A film lasts 2 h 17 min. A cinema runs it 4 times a day with 25 minutes between showings. If the first showing starts at 11:00, when does the last one finish? (3 marks)

12. A tap drips 3 ml every minute. How many litres is that in a 30-day month? (3 marks)

Unit Conversions – Answers

Level 2 · Working shown so you can check your method, not just the final number.

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Section A

1. (a) **3,750 m** (b) **0.86 kg** (c) **2,400 ml** (d) **1.75 m** (e) **80 kg** (f) **450 mm**.
2. $14 \times 35 = 490$; $22 \times 18 = 396$; $9 \times 27.5 = 247.5$. Total 1,133.5 kg = 1.1335 tonnes. **Not overloaded** (66.5 kg under).
3. $30,000 \div 750 = 40$ bottles exactly, **nothing left over**.
4. $27 \times 400 = 10,800$ m = **10.8 km**.

Section B

5. $1,200 \div 5 \times 8 = 1,920$ km.
6. 4×2 lb = 8 lb. $8 \div 2.2 = 3.64$ kg. **No** – one 2.5 kg bag is not enough; two are needed.
7. 6 ft 6 in = 78 in $\times 2.5 = 195$ cm = 1.95 m. **Only just** – it is exactly the same height, so in practice it would need to be tilted; accept 'yes, exactly fits' or 'no, no clearance' with the working.
8. $12 \times 4.5 = 54$ litres $\times 1.46 =$ **£78.84**.
9. 11 oz = $11 \div 16 = 0.6875$ lb, so 7.6875 lb $\div 2.2 =$ **3.49 kg**.

Section C

10. $3 \times 12:30 = 37:30$; $+ 8:45 = 46$ h 15 min. $46:15 - 44:00 =$ **2 h 15 min = 135 minutes over**.
11. Each cycle = $2:17 + 0:25 = 2:42$. Showings start 11:00, 13:42, 16:24, 19:06. Last one ends $19:06 + 2:17 =$ **21:23**.
12. $3 \times 60 \times 24 \times 30 = 129,600$ ml = **129.6 litres**.

Where Level 2 students lose marks on this topic

- Multiplying when you should divide: 860 g $\rightarrow$ 860,000 kg. Ask: should the number get bigger or smaller?
- Treating 6 ft 6 in as 6.6 ft. There are 12 inches in a foot, so it is 6.5 ft.
- Adding hours and minutes as decimals ($12.30 \times 3 = 36.90$). Work in minutes or carry at 60.