

Section I — Multiple choice

1 Convert 2500 millilitres to kilolitres.

- A 0.0025 kL B 2.5 kL C 2 500 000 kL D 2 500 000 000 kL
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2 A piece of cabling sells for \$2.14 per metre. Sienna bought 1020 cm of cabling. What is the cost?

- A \$0.47 B \$0.48 C \$21.82 D \$21.83
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3 Evaluate $(7.5 \times 10^7) \times (2 \times 10^4)$.

- A 1.5×10^{11} B 1.5×10^{12} C 1.5×10^{14} D 1.5×10^{28}
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4 Express 0.00000456078 correct to 2 significant figures.

- A 0.0 B 0.1 C 0.0000045 D 0.0000046
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5 Ethan, Frank and George share a lottery prize in the ratio 2:3:4. If George's share is \$5832, what is Frank's share?

- A \$1458 B \$2916 C \$4374 D \$5832
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6 Ava made a drink by mixing water with cordial in the ratio 5:2. What amount of water is required if she used 2.5 L of cordial?

- A 2 L B 2.5 L C 5 L D 6.25 L
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7 Chloe's car uses 8 L of fuel to travel 25 km. How far can it travel on 20 L of fuel?

- A 6.25 km B 50 km C 60 km D 62.5 km
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8 A plane travels at an average speed of 750 km/h. How far will it travel in 5 hours?

- A 750 km B 755 km C 3750 km D 3000 km
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9 What is the new price when \$300 is increased by 20% then decreased by 10%?

- A \$300 B \$324 C \$330 D \$334
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Topic Test 3

Units of measurement and applications

Section II — Short answer

1 Jack completed 15 laps of a 400 m athletics track. How many kilometres did he run?

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2 The length of a pencil is exactly 8 cm. Emma measured the pencil to be 8.1 cm.

a What is the absolute error for Lily's measurement?

b What is the percentage error for Lily's measurement? (Answer correct to 2 decimal places).

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3 Write these numbers in scientific notation correct to two significant figures.

a 4610

b 0.007867

c 598 000 000 000

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4 Evaluate the following.

a $(3.9 \times 10^6)^2$

b $\frac{6 \times 10^8}{3 \times 10^{-4}}$

c $(3.8 \times 10^6) \times (2.3 \times 10^{-2})$

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5 Blake travelled 580 km in his car, using 32.5 L of petrol. At this consumption rate, how many litres does he use per 100 km? (Answer correct to 3 decimal places).

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6 Potatoes cost \$3.50/kg. How much would it cost for 160 g of potatoes?

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Topic Test 3 Units of measurement and applications

Worked solutions

Section 1	Solution	Answer
1	$2500 \text{ mL} = 2500 \div 1\,000\,000$ $= 0.0025 \text{ kL}$	A
2	$\text{Cost} = \$2.14 \times 10.20$ $= \$21.83$	D
3	$(7.5 \times 10^7) \times (2 \times 10^4) = 15 \times 10^{11}$ $= 1.5 \times 10^{12}$	B
4	$0.00000456078 = 4.56078 \times 10^6$ $\approx 4.6 \times 10^6 \text{ or } 0.0000046$	D
5	$\text{Total parts} = 2 + 3 + 4 = 9$ $4 \text{ parts} = \$5832$ $1 \text{ part} = \$1458$ $3 \text{ parts} = \$4374$	C
6	$\text{Total parts} = 5 + 2 = 7$ $2 \text{ parts} = 2.5 \text{ L}$ $1 \text{ part} = 1.25 \text{ L}$ $5 \text{ parts} = 6.25 \text{ L}$	D
7	$8 \text{ L fuel} = 25 \text{ km}$ $4 \text{ L fuel} = \frac{25}{2} \text{ km}$ $20 \text{ L fuel} = \frac{25}{2} \times 5 \text{ km}$ $= 62.5 \text{ km}$	D
8	$\text{Speed} = \frac{\text{distance}}{\text{time}}$ $750 = \frac{d}{5}$ $d = 3750 \text{ km}$	C
9	$\text{New price} = (\$300 \times 1.20) \times 0.90$ $= \$324$	B

Section II	Solution
1	Distance = 15×0.400 = 6 km Jack ran 6 km
2a	Absolute error = $8.1 - 8.0$ = 0.1 cm
2b	Percentage error = $\frac{0.1}{8.1} \times 100$ = 1.23%
3a	$4610 = 4.61 \times 10^3$ $\approx 4.6 \times 10^3$
3b	$0.007867 = 7.867 \times 10^{-3}$ $\approx 7.9 \times 10^{-3}$
3c	$598\ 000\ 000\ 000 = 5.98 \times 10^{11}$ $\approx 6.0 \times 10^{11}$
4a	$(3.9 \times 10^6)^2 = 1.521 \times 10^{13}$
4b	$\frac{6 \times 10^8}{3 \times 10^{-4}} = 2 \times 10^{12}$
4c	$(3.8 \times 10^6) \times (2.3 \times 10^{-2}) = 8.74 \times 10^4$
5	$580\text{ km} = 32.5\text{ L}$ $1\text{ km} = \frac{32.5}{580}\text{ L}$ $100\text{ km} = \frac{32.5}{580} \times 100\text{ L}$ = 5.603 L Blake used 5.603 L
6	$1\text{ kg} = \$3.50$ $1\text{ g} = \frac{\$3.50}{1000}$ $160\text{ g} = \frac{\$3.50}{1000} \times 160$ = \$0.56 Cost of potatoes is \$0.56