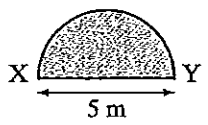1 Craig's car uses 8 litres of petrol for every 100 km travelled. He buys $54 worth of petrol at $1.35 per litre. How far will Craig travel on this amount of petrol? [ ] km

2 The diagram shows a semi-circular garden bed. The curved distance from X to Y is closest to
X [diagram] Y
5 m
A 3.9 m   B 7.9 m   C 9.7 m   D 15.7 m

3 The volume of a cube is 1728 cm³. What is the total area of all the faces of the cube?
A 144 cm²   B 576 cm²
C 864 cm²   D 1152 cm²

4 A bus travelled 336 km at an average speed of 64 kilometres per hour. If the journey began at 8:10 am, what time did it finish?
A 1:25 pm   B 1:35 pm
C 3:25 pm   D 3:35 pm

5 What is the total area of all the surfaces of the triangular prism?
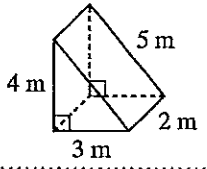
5 m
4 m
2 m
3 m
[ ] m²

6 This jug has some juice in it. Marie fills six glasses, each of which hold 125 mL, from the jug. How many millilitres of juice will remain in the jug? [ ] mL

7 When it is 8:15 am Friday in Melbourne, it is 10:15 pm Thursday in London. When it is 2:30 pm Thursday in Melbourne, it is 11:30 pm Wednesday in New York. What is the time in London when it is 9 am Monday in New York?
A 4 am Monday   B 4 pm Sunday
C 2 pm Monday   D 4 pm Monday

8 The volume of a rectangular prism is 12 m³. A second rectangular prism has its dimensions double those of the first prism. What is the volume of the second prism?
A 24 m³ B 48 m³ C 72 m³ D 96 m³

9 A megalitre (ML) is one million litres. The capacity of a dam is 18 ML. How many kilolitres is this?
A 1800   B 18 000
C 180 000   D 1 800 000

10 A truck can carry a maximum load of 25 tonnes. What is the maximum number of containers, each with a total mass of 1200 kg, that the truck can legally carry? [ ]

11 The perimeter of this rectangle is 72 metres.
[diagram] 12 m   (not to scale)
What is its area? [ ] m²

12 William is 1.8 metres tall and his shadow is 1.5 metres long. At the same time, a tree casts a shadow that is 35 metres long. How tall is the tree? [ ] m
1.8 m
1.5 m
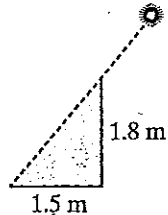
13 The area of this trapezium is 168 m². What is the area of the shaded rectangle?
15 m
5 m   5 m
5 m   5 m
27 m
A 84 m²   B 105 m²
C 108 m²   D 135 m²
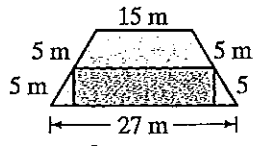
14 Jenny travels from Brisbane to Mackay passing through first Bundaberg and then Rockhampton. She notices that the distance from Brisbane to Rockhampton is the same as the distance from Bundaberg to Mackay. If Mackay is 1114 km from Brisbane and 398 km from Rockhampton, how far is it from Bundaberg to Rockhampton? [ ] km

15 Darren and Dane drove 250 km in 3½ hours. Darren drove the first 130 km at an average speed of 65 kilometres per hour. Dane then drove the rest of the way. What was Dane's average speed in kilometres per hour?
A 65   B 70   C 75   D 80

1 500 km **2** B **3** C **4** A **5** 36 m² **6** 1650 mL
7 C **8** D **9** B **10** 20 **11** 288 m² **12** 42 m
13 A **14** 318 km **15** D

1 Amount of petrol $= (54 \div 1.35)$ L
$$= 40 \text{ L}$$
Distance travelled $= (40 \div 8) \times 100$ km
$$= 500 \text{ km}$$

2 Circumference of circle $= \pi \times D$
$$= \pi \times 5 \text{ m}$$
$$= 15.70796... \text{ m}$$
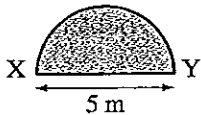
Curved distance from X to Y is half the circumference of a circle.

Distance $= (15.7096... \div 2)$ m
$$= 7.85398... \text{ m}$$

Of the options, the closest distance is 7.9 metres.

3 Volume of cube $= (\text{length of side})^3$
Length of side $= \sqrt[3]{1728}$ cm
$$= 12 \text{ cm}$$
Area of each face $= (12 \times 12)$ cm²
$$= 144 \text{ cm}^2$$
There are six faces.
Total area of all faces $= 6 \times 144$ cm²
$$= 864 \text{ cm}^2$$

4 Time taken $= (336 \div 64)$ h
$$= 5.25 \text{ h}$$
$$= 5\frac{1}{4} \text{ h}$$
$$= 5 \text{ h } 15 \text{ min}$$
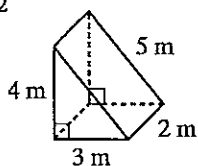5 hours after 8:10 am is 1:10 pm.
15 minutes after 1:10 pm is 1:25 pm.
The journey finished at 1:25 pm.

5 Area of 2 triangular faces
$$= 2 \times (\frac{1}{2} \times \text{base} \times \text{height})$$
$$= (2 \times \frac{1}{2} \times 3 \times 4) \text{ m}^2$$
$$= 12 \text{ m}^2$$

Area of 3 rectangular faces
$$= (3 \times 2 + 4 \times 2 + 5 \times 2) \text{ m}^2$$
$$= 24 \text{ m}^2$$
Total area $= (12 + 24)$ m²
$$= 36 \text{ m}^2$$

6 The amount of juice in the jug is 2.4 litres or 2400 mL.
Juice in six glasses $= 6 \times 125$ mL
$$= 750 \text{ mL}$$
Amount remaining $= (2400 - 750)$ mL
$$= 1650 \text{ mL}$$

7 When it is 8:15 am Friday in Melbourne, it is 10:15 pm Thursday in London.
London is 10 hours behind Melbourne time.
When it is 2:30 pm Thursday in Melbourne, it is 11:30 pm Wednesday in New York.
New York is 15 hours behind Melbourne time.
So New York is 5 hours behind London time.
London is 5 hours ahead of New York time.
When it is 9 am Monday in New York it will be 2 pm Monday in London.

8 First prism has volume 12 m³.
The length of the second prism is twice that of the first.
The width of the second prism is twice that of the first.
The height of the second prism is twice that of the first.
So the number of times that the volume is greater $= 2 \times 2 \times 2$
$$= 8$$
The volume of the second prism $= 8 \times 12$ m³
$$= 96 \text{ m}^3$$

9 1 ML = 1 000 000 L
1 kL = 1000 L
So 1 ML = 1000 kL
18 ML = 18 000 kL

10 25 t = 25 000 kg
Number of containers $= 25\,000 \div 1200$
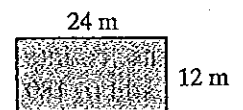$$= 20.8333....$$
So the truck can carry at most 20 of the containers.
[The answer is closer to 21, but 21 containers would exceed the maximum load limit.]

11 Perimeter = 72 m
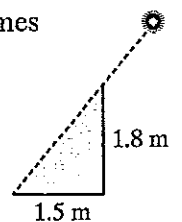Length + width $= (72 \div 2)$ m
$$= 36 \text{ m}$$
Length $= (36 - 12)$ m
$$= 24 \text{ m}$$

Area = length × width
$$= (24 \times 12) \text{ m}^2$$
$$= 288 \text{ m}^2$$

12 William's height is $\frac{1.8}{1.5}$ or 1.2 times the length of the shadow.
The height of the tree will also be 1.2 times the length of its shadow.
Height of tree $= 1.2 \times 35$ m
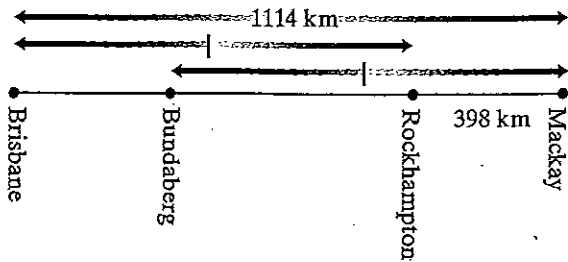$$= 42 \text{ m}$$

13 The area of the shaded rectangle is half the area of the trapezium.

Area of rectangle $= (168 \div 2)$ m²
$$= 84 \text{ m}^2$$

14 Distance from Brisbane to Rockhampton
$= (1114 - 398)$ km
$= 716$ km

So the distance from Bundaberg to Mackay is also 716 km.

The distance from Bundaberg to
Rockhampton $= (716 - 398)$ km
$= 318$ km

15 Total distance is 250 km in $3\frac{1}{2}$ hours.

Darren's driving time $= (130 \div 65)$ h
$= 2$ h

Remaining distance $= (250 - 130)$ km
$= 120$ km

Remaining time $= (3\frac{1}{2} - 2)$ h
$= 1\frac{1}{2}$ h

Dane's average speed $= (120 \div 1\frac{1}{2})$ km/h
$= 80$ km/h