

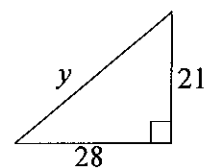
Topic Test 8

Applications of perimeter, area and volume

Section I — Multiple choice

1 What is the length of y correct to the nearest whole number?

- A 18 B 19
C 34 D 35

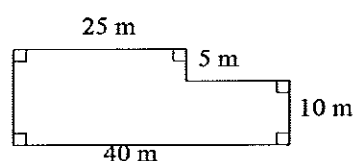


2 What is the perimeter of a circle with a diameter of 10 mm? (Answer correct to 1 decimal place.)

- A 15.7 mm B 31.4 mm C 78.5 mm D 314.2 mm

3 What is the perimeter of the composite shape?

- A 80 mm B 110 mm
C 95 mm D 600 mm

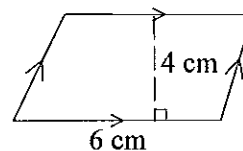


4 What is the area of a square with a side length of 30 cm?

- A 120 cm^2 B 300 cm^2 C 450 cm^2 D 900 cm^2

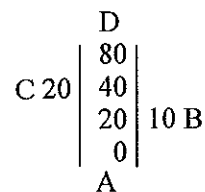
5 What is the area of the parallelogram?

- A 10 cm^2 B 12 cm^2
C 20 cm^2 D 24 cm^2



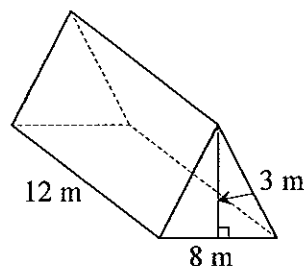
6 What is the area of ABCD using the field book entry?

- A 80 units^2 B 1200 units^2
C 2400 units^2 D 4800 units^2



7 What is the volume of the triangular prism?

- A 144 m^3
B 288 m^3
C 576 m^3
D 960 m^3

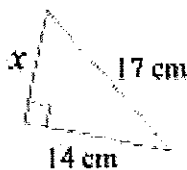
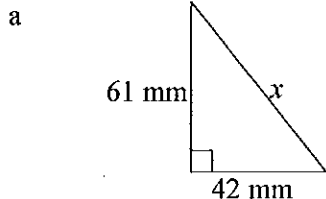


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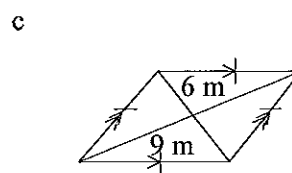
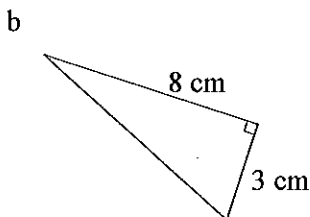
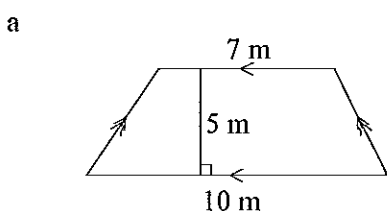
Section II — Short answer

1 Find the value of the pronumeral, correct to two decimal places.



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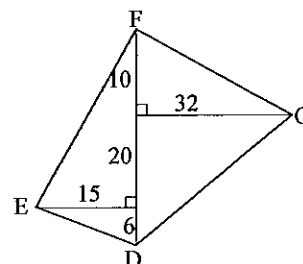
2 Find the area of each shape. (Answer correct to one decimal place.)



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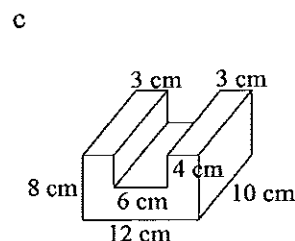
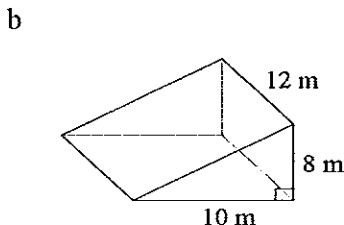
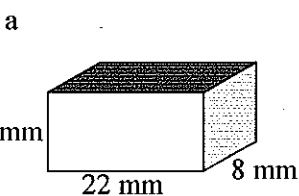
3 The diagram on the right shows a block of land that has been surveyed. All measurements are in metres.

- a Find the area of the quadrilateral DEFG. (Answer correct to one decimal place.)
- b What is the length of DE? (Answer correct to the nearest metre.)



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4 Find the volume of the following solids.



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5 An open cylinder with a radius of 10 cm and a height of 12 cm. Calculate the area of the outer surface.

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Topic Test 8 Applications of perimeter, area and volume

Worked solutions

| Section 1 | Solution | Answer |
|-----------|--|--------|
| 1 | $y^2 = 21^2 + 23^2$ $y = \sqrt{21^2 + 23^2}$ $= 35$ | D |
| 2 | $P = \pi d$ $= \pi \times 10$ $\approx 31.4 \text{ mm}$ | B |
| 3 | $P = 25 + 5 + 15 + 10 + 40 + 15$ $= 110 \text{ m}$ | B |
| 4 | $A = s^2$ $= 30^2$ $= 900 \text{ cm}^2$ | D |
| 5 | $A = bh$ $= 6 \times 4$ $= 24 \text{ cm}^2$ | D |
| 6 | $A = \frac{1}{2}bh$ $= \frac{1}{2} \times 80 \times 20$ $= 800 \text{ units}^2$ <p>Total area = 800 + 400</p> $= 1200 \text{ units}^2$ | B |
| 7 | $A = \frac{1}{2}bh$ $= \frac{1}{2} \times 8 \times 3$ $= 12 \text{ m}^2$ $V = Ah$ $= 12 \times 12$ $= 144 \text{ m}^3$ | A |

| Section II | Solution | |
|------------|---|--|
| 1a | $x^2 = 42^2 + 61^2$ $x = \sqrt{42^2 + 61^2} \approx 74.06 \text{ mm}$ | |
| b | $17^2 = x^2 + 14^2$ $x = \sqrt{17^2 - 14^2} \approx 9.64 \text{ cm}$ | |
| 2a | $A = \frac{1}{2}(a+b)h$ $= \frac{1}{2} \times (7+10) \times 5 = 42.5 \text{ m}^2$ | |
| b | $A = \frac{1}{2}bh$ $= \frac{1}{2} \times 8 \times 3 = 12 \text{ cm}^2$ | |
| c | $A = \frac{1}{2}xy$ $= \frac{1}{2} \times 6 \times 9 = 27 \text{ cm}^2$ | |
| 3a | $A = \frac{1}{2}bh$ $= \frac{1}{2} \times 36 \times 15 = 270 \text{ m}^2$ | $A = \frac{1}{2}bh$ $= \frac{1}{2} \times 36 \times 32 = 576 \text{ m}^2$ <p>Total area = $270 + 576 = 846 \text{ m}^2$</p> |
| b | $DE^2 = 15^2 + 6^2$ $x = \sqrt{15^2 + 6^2} \approx 16 \text{ m}$ | |
| 4a | $V = Ah$ $= 22 \times 8 \times 7 = 1232 \text{ mm}^3$ | |
| b | $A = \frac{1}{2}bh$ $= \frac{1}{2} \times 10 \times 8 = 40 \text{ m}^2$ | $V = Ah$ $= 40 \times 12$ $= 480 \text{ m}^3$ |
| c | $A = (12 \times 8) - (6 \times 4)$ $= 72 \text{ cm}^2$ | $V = Ah$ $= 72 \times 10$ $= 720 \text{ cm}^3$ |
| 5 | $V = 2\pi rh$ $= 2 \times \pi \times 10 \times 12$ $\approx 753.98 \text{ cm}^2$ | |