Formula List

Area of trapezium = $\frac{1}{2}(a+b)h$
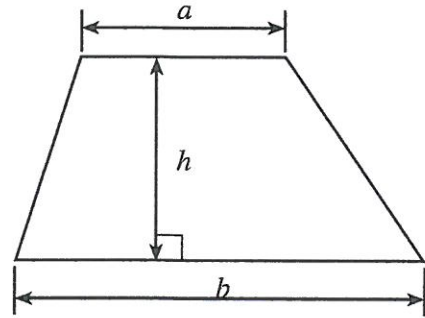
Volume of prism = area of cross-section × length

area = $l \times w$

$\frac{1}{2} \times h \times b$

(185-07)
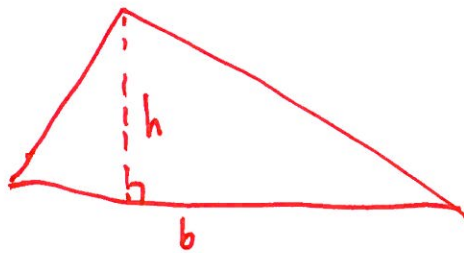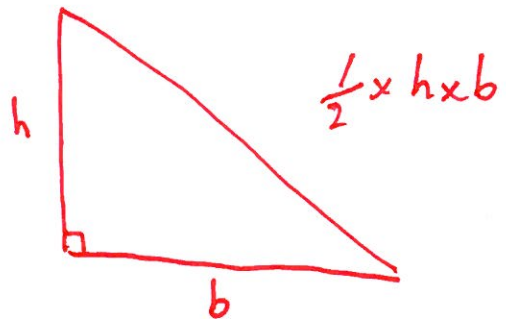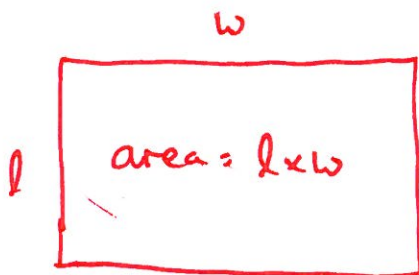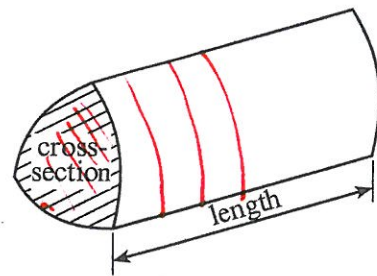
(1)

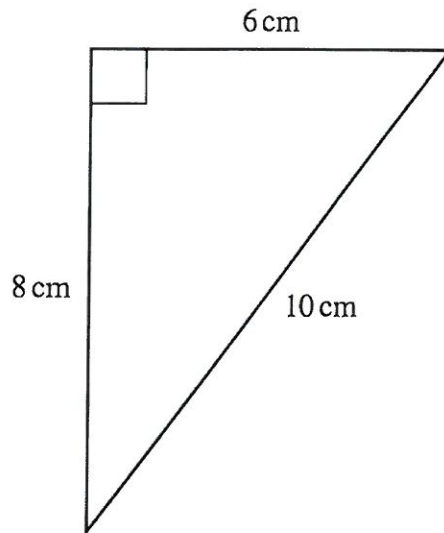(a)   Calculate the area of the following triangle.

6 cm

8 cm   10 cm

Diagram not drawn to scale.

Area: $\frac{1}{2} \times 8 \times 6 = 24 \text{ cm}^2$

[2]

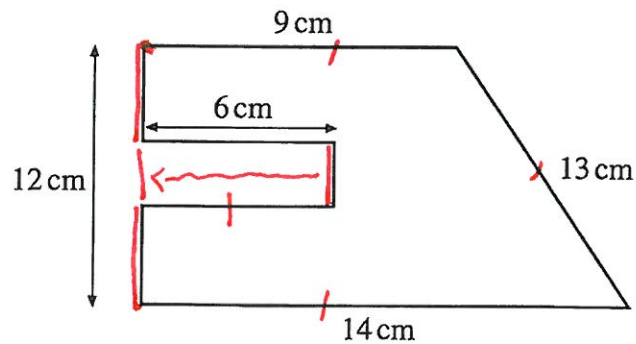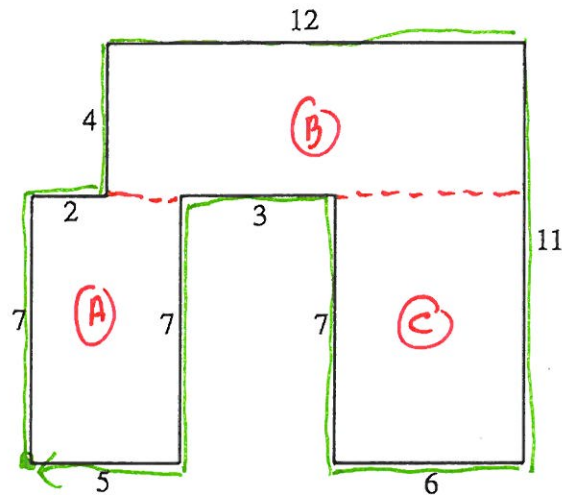(b)   Calculate the perimeter of the shape shown in the diagram below.

9 cm

6 cm

12 cm

13 cm

14 cm

Diagram not drawn to scale.

$9 + 13 + 14 + 12 + 6 + 6 = 60 \text{ cm}$

[2]

(185-07)

(2)

In the diagram below, lengths are shown in centimetres. The angles are right-angles.

$$12$$

$$4 \qquad B$$

$$2 \qquad 3$$

$$11$$

$$7 \qquad A \qquad 7 \qquad 7 \qquad C$$

$$5 \qquad 6$$

(a) Calculate the area of the shape, clearly stating the units of your answer.

Area of (A): $7 \times 5 = 35$

Area of (B): $4 \times 12 = 48$

Area of (C): $7 \times 6 = 42 +$

$$\overline{125} \ cm^2$$

[2]

(b) Calculate the perimeter of the shape, clearly stating the units of your answer.

$$7 + 2 + 4 + 12 + 11 + 6 + 7 + 3 + 7 + 5$$

$$= 64 \ cm$$

[2]

(3)

A — 8 cm — B

Ⓐ

2 cm

3 cm → D   C

5 cm

Ⓑ   4 cm

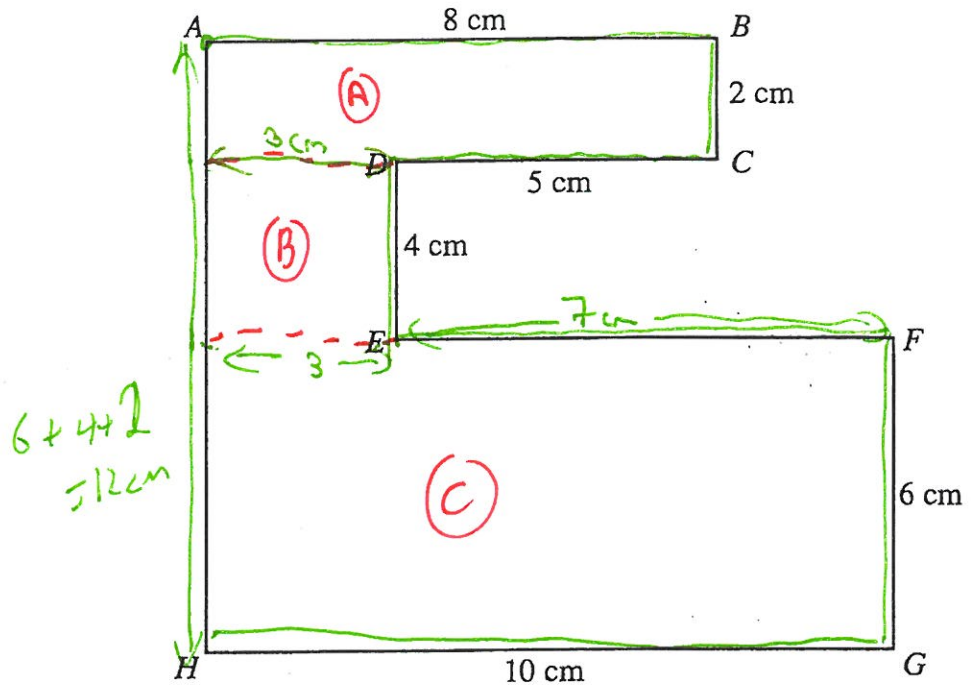6 + 4 + 2 = 12cm

E ← 3 →   7cm   F

Ⓒ   6 cm

H — 10 cm — G

Diagram not drawn to scale.

(a)   Calculate the perimeter of the shape *ABCDEFGH* stating clearly the units of your answer.

8 + 2 + 5 + 4 + 7 + 6 + 10 + 12

= 55 cm

(b)   Calculate the area of the shape *ABCDEFGH* stating clearly the units of your answer.

Area of Ⓐ = 8 × 2 = 16
Area of Ⓑ = 4 × 3 = 12
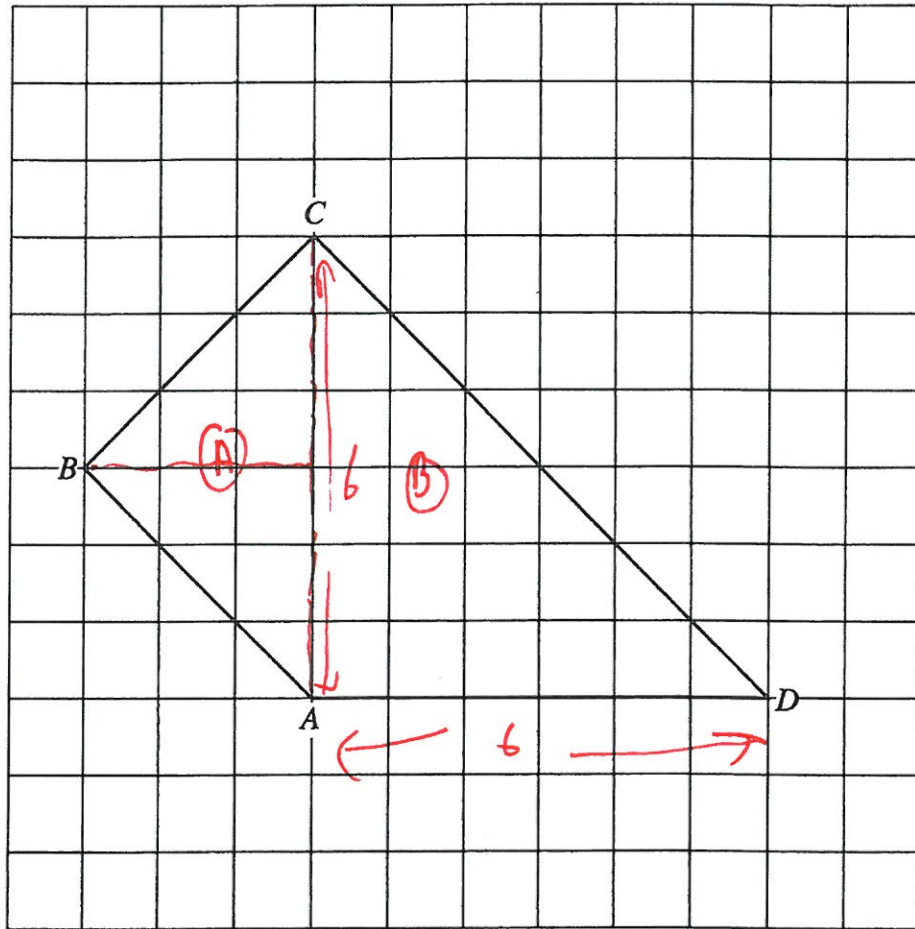Area of Ⓒ = 10 × 6 = 60

88 CM²

(4) The grid is made up of 1 cm squares. Find the exact area of the shape *ABCD*.

Area of ∆ABC = $\frac{1}{2}$ × 6 × 3 = 9

Area of ∆ACD = $\frac{1}{2}$ × 6 × 6 = 18 +

$\underline{\underline{27 \text{ cm}^2}}$
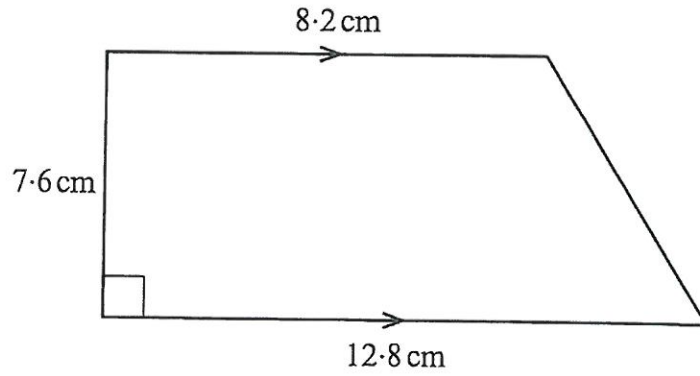
[2]

⑤ *(a)*

8·2 cm

7·6 cm

12·8 cm

Diagram not drawn to scale

Calculate the area of the trapezium.

$$\text{Area} = \frac{1}{2}(8.2 + 12.8) \times 7.6 = 79.8 \text{ cm}^2$$

[2]

⑥ A trapezium *ABCD* is such that *AB* is parallel to *DC*, *AB* = 23 cm, *DC* = 17·5 cm and the perpendicular distance between the parallel sides is 6 cm. Calculate the area of the trapezium, stating clearly the units of your answer.
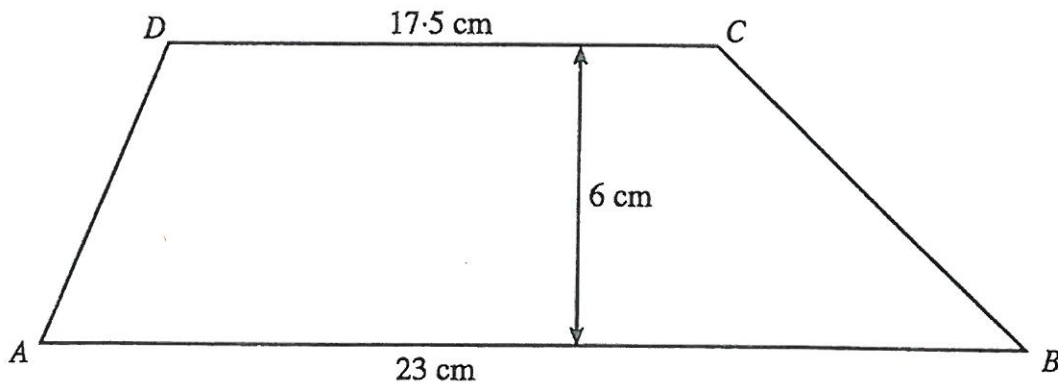
D 17·5 cm *C*

6 cm

A 23 cm *B*

Diagram not drawn to scale.

$$\text{Area} = \frac{1}{2}(17.5 + 23) \times 6 = 121.5 \text{ cm}^2$$
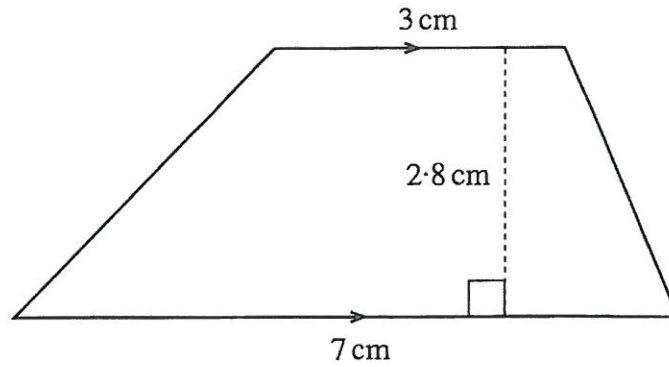
(7)

3 cm

2·8 cm

7 cm

Diagram not drawn to scale.

Calculate the area of the trapezium shown in the diagram.

$$\text{Area} = \frac{1}{2}(3+7) \times 2\cdot 8 = \frac{1}{2} \times 10 \times 2\cdot 8 = \frac{1}{2} \times 28$$

$$= 14 \, cm^2$$

[2]

(8)

In quadrilateral *PQRS*, the line *PQ* is parallel to *SR*, with *PQ* = 16 cm and *SR* = 18 cm. The perpendicular distance between *PQ* and *SR* is 8 cm.
Calculate the area of the quadrilateral *PQRS*.
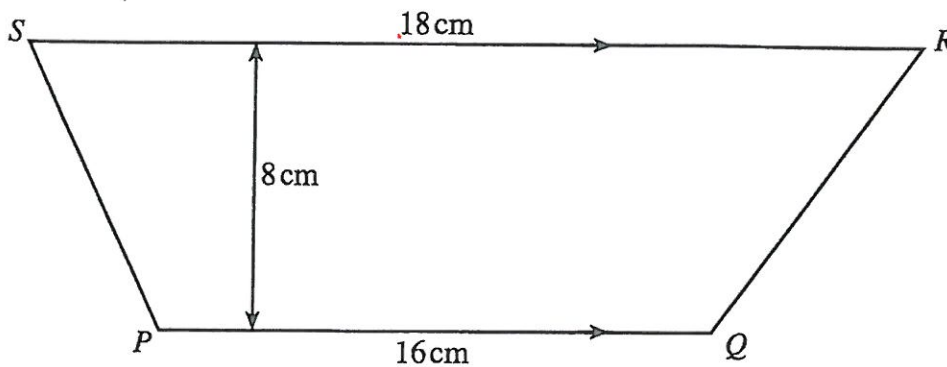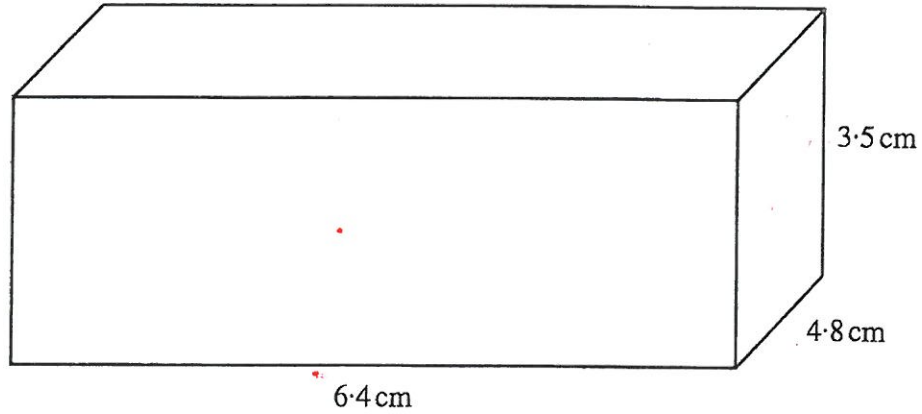
S   18 cm   *R*

8 cm

P   16 cm   *Q*

Diagram not drawn to scale.

$$\text{Area} = \frac{1}{2}(18+16) \times 8 = 136 \, cm^2$$

⑨

(a) A solid cuboid measures 6·4 cm by 4·8 cm by 3·5 cm, as shown in the diagram. Calculate its volume, clearly stating the units of your answer.

3·5 cm

4·8 cm

6·4 cm

$$Volume = 6.4 \times 4.8 \times 3.5 = 107.52 \text{ cm}^3$$

[3]

(b) Calculate the total surface area of the cuboid.

$2 \times 6.4 \times 3.5 = 44.8$
$2 \times 6.4 \times 4.8 = 61.44$
$2 \times 4.8 \times 3.5 = 33.6 \quad +$
$\overline{139.84 \text{ cm}^2}$
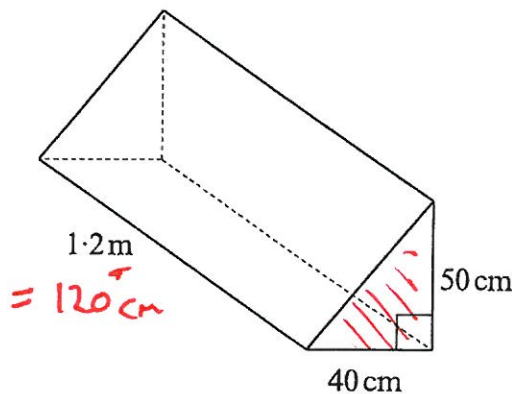
[2]

⑩

1·2 m
$= 120 \text{ cm}$

50 cm

40 cm

Diagram not drawn to scale

Calculate the volume of the triangular prism, giving your answer in cm³.
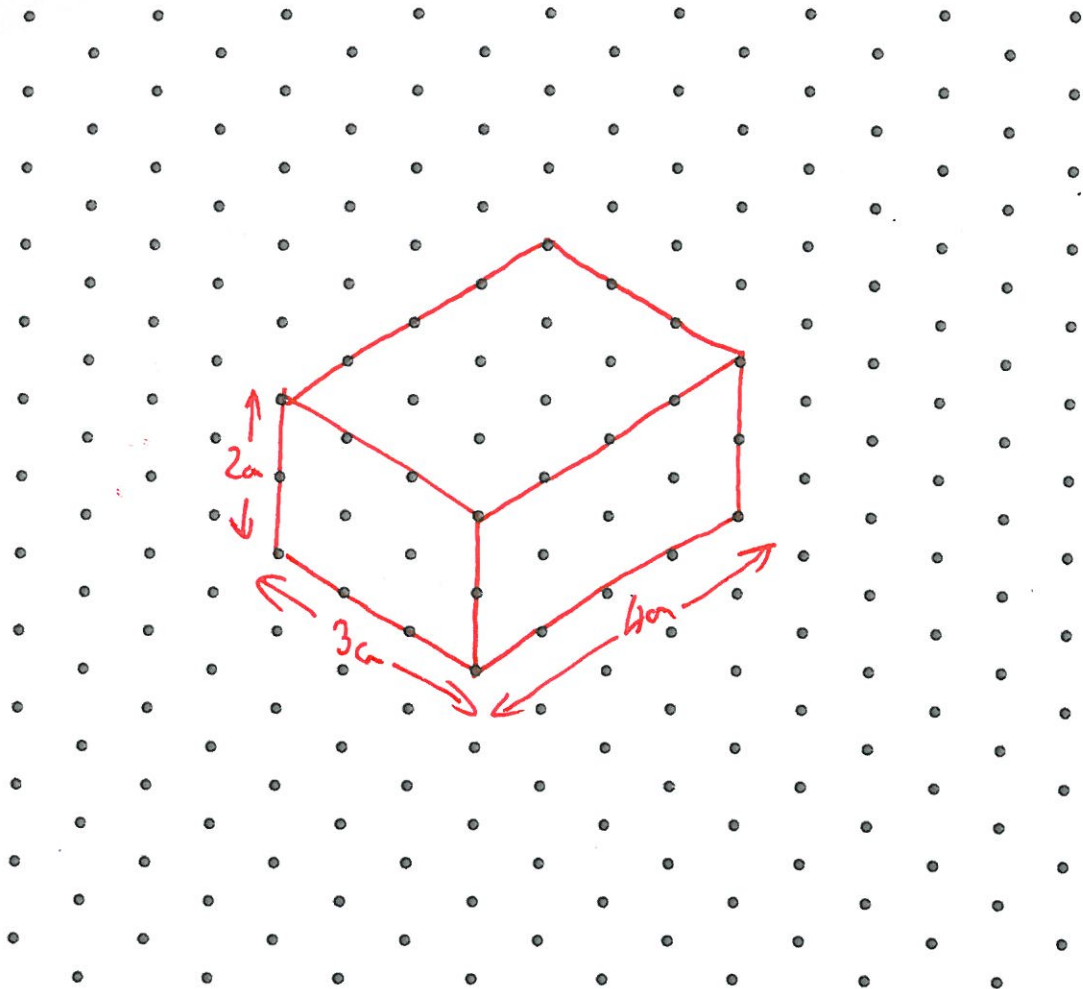
Area of cross section $= \frac{1}{2} \times 40 \times 50 = 1000 \text{ cm}^2$

$Volume = 1000 \times 120 = 120\,000 \text{ cm}^3$

(11) *(a)* On the isometric grid below, draw a cuboid of dimensions 4 cm by 3 cm by 2 cm. [2]

2cm
3cm
4cm

(b) A water tank has the shape of a cuboid with a base of length 30 cm and width 20 cm. Find the depth of water when 9000 cm^3 of water is poured into the tank.

$V = \ell \times w \times h$

$9000 = 30 \times 20 \times h$

$9000 = 600 \times h$

$\dfrac{9000}{600} = h$

$h = 15 \text{ cm}$

[2]