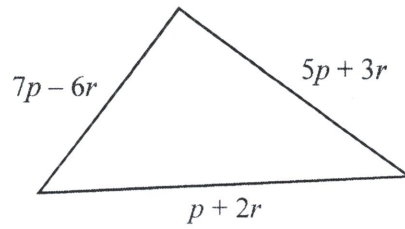# CLASSIFIED

International Examinations Papers

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MATHEMATICS -CORE

TOPIC- Perimeter and area of 2D shapes

01 **(a)**

$7p - 6r$

$5p + 3r$

$p + 2r$

NOT TO SCALE

Write an expression for the perimeter of this triangle.
Give your answer in its simplest form.

Answer(a) .... [2]

(b) Another triangle has a perimeter $12w - 2z$.

Calculate this perimeter when $w = 16$ and $z = -3$.

Answer(b) .... [2]

(c) Solve.

(i) $5a = 32$

Answer(c)(i) $a =$ .... [1]

(ii) $5b + 23 = 8$

Answer(c)(ii) $b =$ .... [2]

(iii) $5c + 7 = 2(c - 10)$

Answer(c)(iii) $c =$ .... [3]

2   In this question all the measurements are in centimetres.

2x + 3

11 − x

NOT TO
SCALE

3x
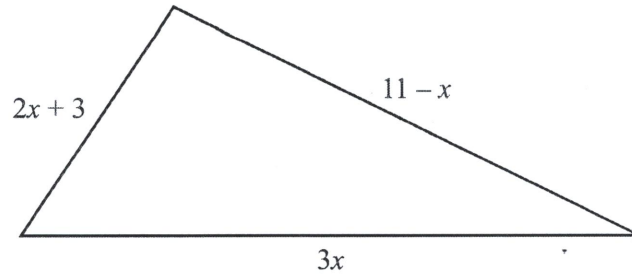
The diagram shows a triangle with sides of length   2x + 3, 11 − x and 3x.

(a) Explain why x must be less than 11.

Answer(a) ....

.... [1]

(b) Write down an expression, in terms of x, for the perimeter of the triangle.
Give your answer in its simplest possible form.

Answer(b) .... [2]

(c) The perimeter of the triangle is 32 cm.

  (i) Write down an equation in terms of x and solve it.

Answer(c)(i) x = ... [3]

  (ii) Work out the length of the shortest side of the triangle.

Answer(c)(ii) .... cm [2]

03 **(a)** A regular hexagon has side length h.

Write down an expression, in terms of h, for the perimeter of the hexagon.

.... [1]

(b) A square has side length x.

Write down an expression, in terms of x, for

(i) the perimeter of the square,

.... [1]

(ii) the area of the square.

.... [1]

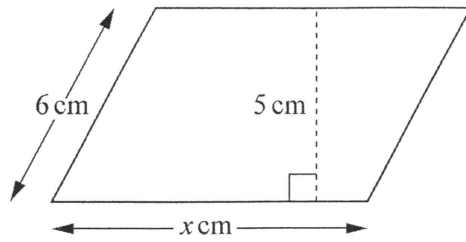**(c)** In this part, all measurements are in centimetres.

$(2x + 1)$
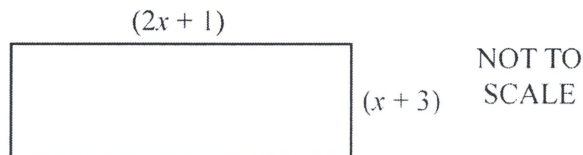
$(x + 3)$ NOT TO SCALE

A rectangle has length $(2x + 1)$ and width $(x + 3)$.
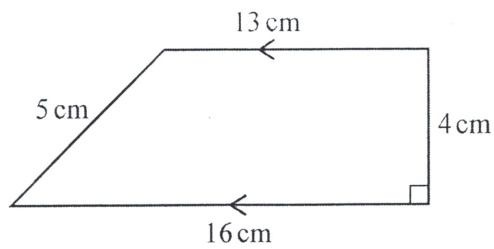The perimeter of the rectangle is 53.

Work out the value of x.

$x =$ .... [5]

0580/33/O/N/16

04

6 cm   5 cm   NOT TO SCALE

← x cm →

The area of this parallelogram is 51.5 cm².

Work out the value of x.

x = ... [2]

05

13 cm

5 cm   4 cm   NOT TO SCALE

16 cm

Calculate the area of this trapezium.

.... cm² [2]

0 6 This is an accurate drawing of quadrilateral *ABCD*.
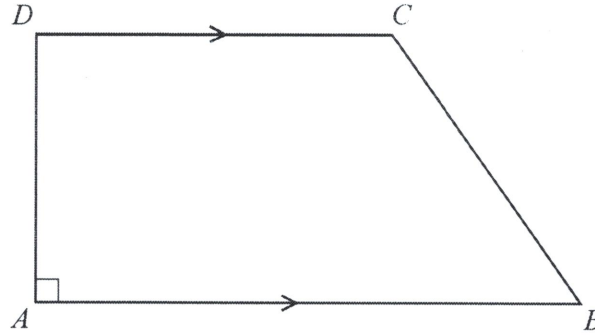
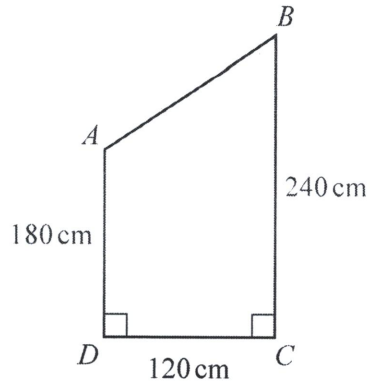**(a)** Write down the mathematical name for quadrilateral *ABCD*.

Answer(a) .... [1]

(b) Measure the size of the acute angle.

Answer(b) .... [1]

(c) By taking suitable measurements from the diagram, work out the area of *ABCD*.

Answer(c) .... cm^2 [3]

B

A

240 cm

NOT TO
SCALE

180 cm

D   120 cm   C

The diagram shows the cross section *ABCD* of a shed.
AD = 180 cm, *DC* = 120 cm and *BC* = 240 cm.

(a) **(i)** Write down the mathematical name of the cross section *ABCD*.

Answer(a)(i) .... [1]

(ii) Calculate the area of the cross section *ABCD*.
Give the units of your answer.

Answer(a)(ii) .... [3]

(iii) The shed is a prism of length 2.5 **metres**.

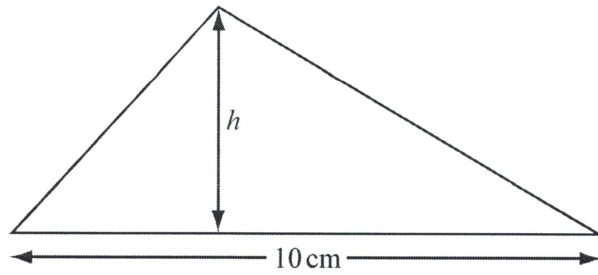Calculate the volume of the shed.
Give your answer in cubic metres.

Answer(a)(iii) .... m³ [2]

(iv) Calculate the length AB.

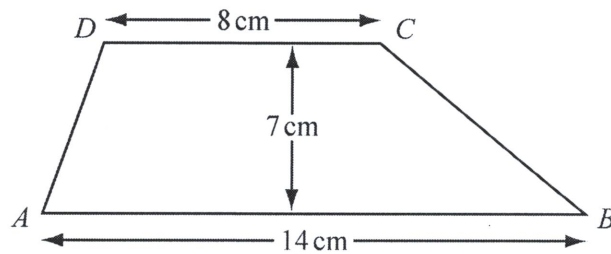*Answer(a)*(iv) AB = ... cm [3]

8 **(a)**

NOT TO
SCALE

The triangle has an area of 30 cm² and a base of 10 cm.

Calculate the perpendicular height *h* of the triangle.

Answer(a) h = ... cm [2]

(b)

NOT TO
SCALE

AB is parallel to *CD*.
AB is 14 cm and *CD* is 8 cm.
The perpendicular distance between *AB* and *CD* is 7 cm.

(i) Write down the mathematical name for the quadrilateral *ABCD*.

Answer(b)(i) .... [1]

(ii) Calculate the area of *ABCD*.

Answer(b)(ii) .... cm² [2]

(c) An isosceles triangle has an angle of 40°.
Tikka draws the triangle with angles 40°, 70° and 70°.
Kanwarpreet draws a different correct triangle.

What angles did Kanwarpreet use?

Answer(c) 40°, ... , ... [2]

Question 9 is printed on the next page.

09

7 cm

6 cm

10 cm
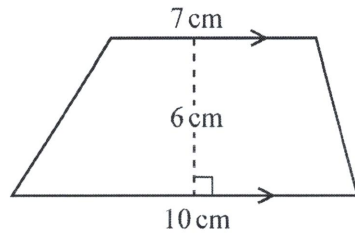
NOT TO
SCALE

(a) Calculate the area of the trapezium.

.... cm² [2]

(b) The trapezium is the cross section of a prism.
The length of the prism is 12 cm.

Calculate the volume of the prism.
Give the units of your answer.

.... [2]

Question 23 is printed on the next page.

10 The actual measurements of the hall are length 44 m and width 34 m.

NOT TO SCALE

34 m

44 m
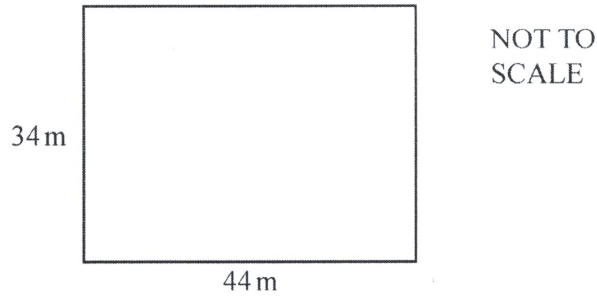
(i) The teacher says a 'good estimator' has both estimates no more than 5 m from the actual measurements.

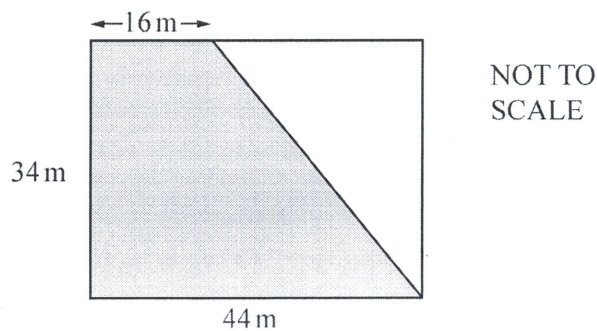Write down the letters of the students who are 'good estimators'.

.... [2]

(ii) Work out the perimeter of the hall.

.... m [1]

(iii) Calculate the length of a diagonal of the hall.

.... m [2]

(e) The hall is divided into two areas.

←16 m→

NOT TO SCALE

34 m

44 m

Find the shaded area.

.... m² [2]

11

12 cm

4 cm

12 cm

18 cm

18 cm

NOT TO
SCALE

34 cm
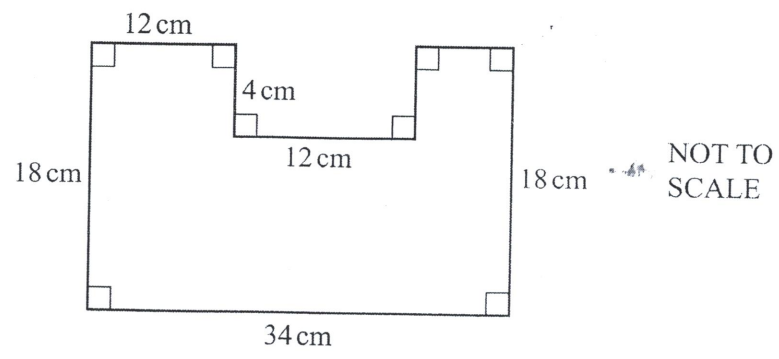
For the shape above, work out

(a) the perimeter,

Answer(a) .... cm [2]

(b) the area.

Answer(b) .... cm² [2]

2 **(b)**

2 cm

5 cm

8 cm

12 cm
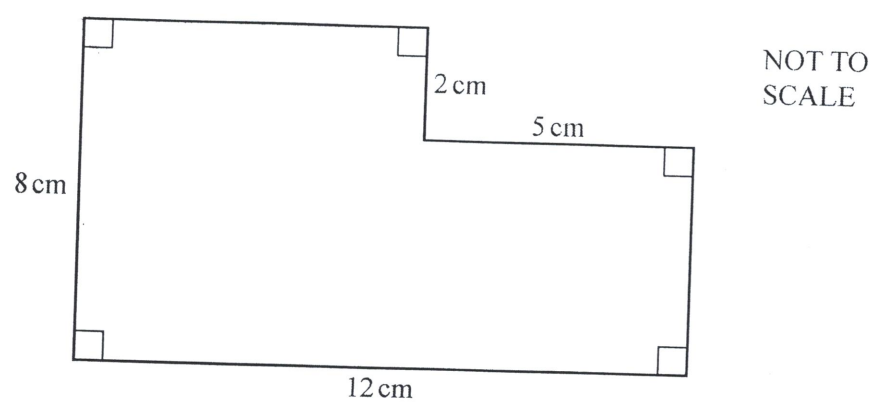
NOT TO
SCALE

(i) Find the perimeter of this shape.

Answer(b)(i) .... cm [1]

(ii) Find the area of this shape.
Give the units of your answer.

12

5x + 4

x + 1

NOT TO
SCALE

3x

2x
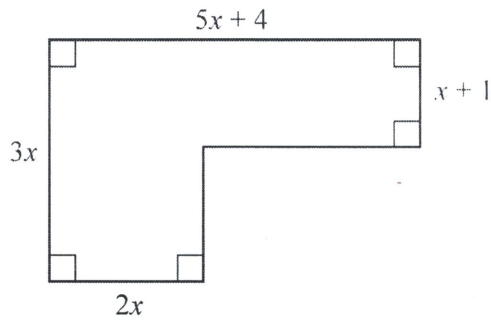
In the diagram, all lengths are in centimetres.

(i) Find an expression, in terms of *x*, for the perimeter of the shape.
Give your answer in its simplest form.

.... [2]

(ii) The perimeter of the shape is 72 cm.

Work out the value of *x*.

x = ... [2]

(iii) Calculate the total area of the shape.

.... cm² [3]

13 Jared is building a house.

(a)

11.8 m

7.5 m

2.8 m

3.2 m   3.2 m
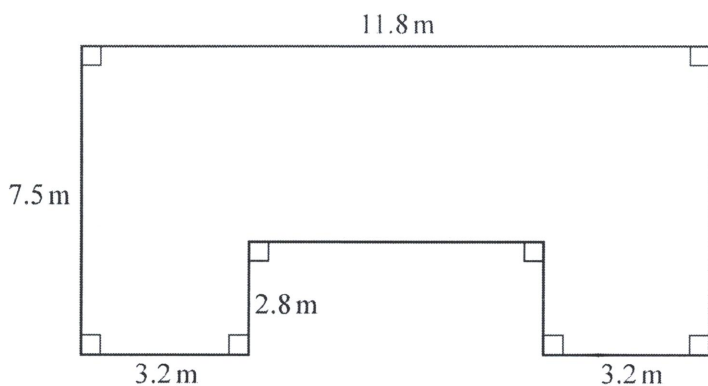
NOT TO SCALE

The diagram shows the plan of the floor of the house.

(i) Find the area of the floor.

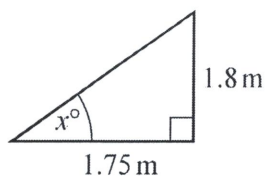... m² [3]

(ii) For every square metre of floor area, it costs $2175 to build the house.

Calculate the cost of building the house.
Give your answer correct to 3 significant figures.

$... [2]

(b)

NOT TO SCALE

1.8 m

$x°$

1.75 m

The diagram shows a section of the roof.

Using trigonometry, calculate the value of x.

$x =$ .... [2]

(c) Jared invests $50 000 for three years at a rate of 2% per year compound interest.

Calculate the total amount Jared receives at the end of the three years.

$.. [3]

(d) Jared also built an apartment for $180 000.
He sells it for $198 000.

Calculate the percentage profit that he makes.

....% [3]

14
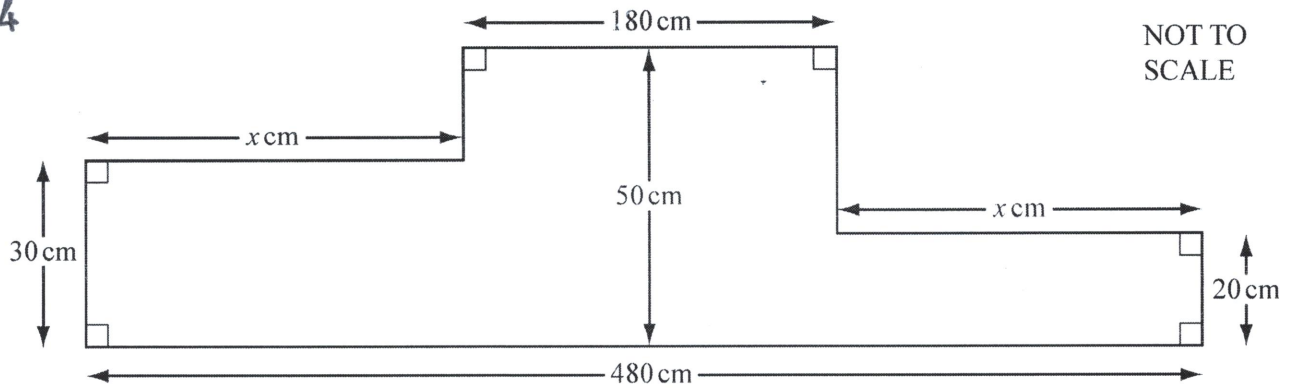
NOT TO
SCALE

The diagram shows the cross section of a medal presentation platform.

(a) Show that $x = 150$.

Answer(a)

[2]

(b) Work out the perimeter of the cross section.

Answer(b) .... cm [2]

(c) (i) Calculate the area of the cross section.

Answer(c)(i) .... cm² [2]

(ii) The platform is a prism, 170 cm deep.

Find the volume of the platform.

Answer(c)(ii) .... cm³ [1]
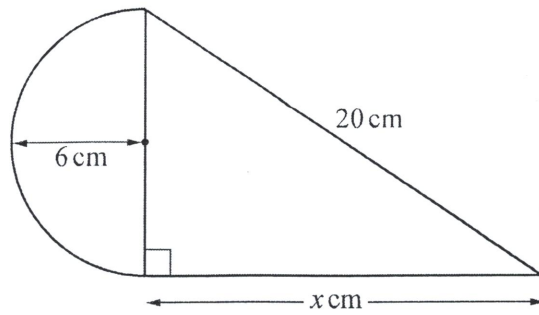
(iii) The prism is completely filled with a light material.
1 **cubic metre** of this material has mass 16 kg.

Calculate the mass of the material used.

Answer(c)(iii) .... kg [2]

15

NOT TO SCALE

The diagram shows a shape made from a semi-circle, radius 6 cm, and a right-angled triangle.

(i) Show that $x = 16$.

[2]

(ii) Calculate the area of the shape.

.... cm^2 [5]