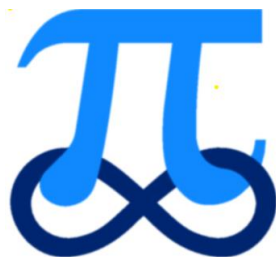


Edexcel GCSE Maths (1 – 9) Revision Pack

Non-calculator Questions Shapes



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Q1.

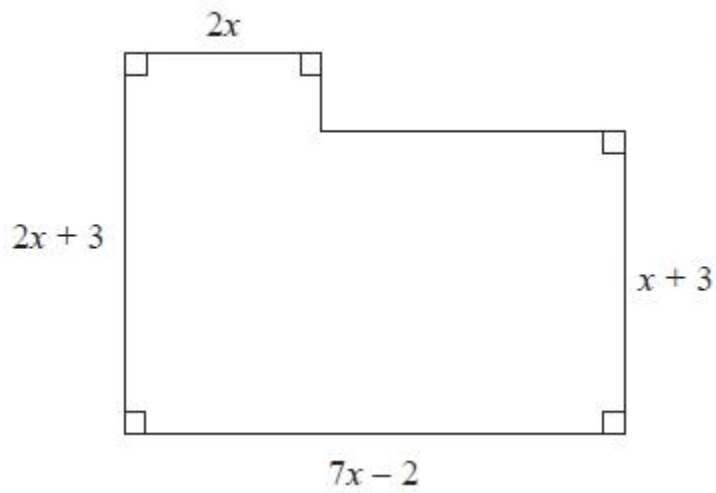


Diagram **NOT**
accurately drawn

All the measurements in the diagram are in centimetres.

The area of the shape is $A \text{ cm}^2$.

Find a formula for A in terms of x .

You must write your formula as simply as possible.

.....

Q2.

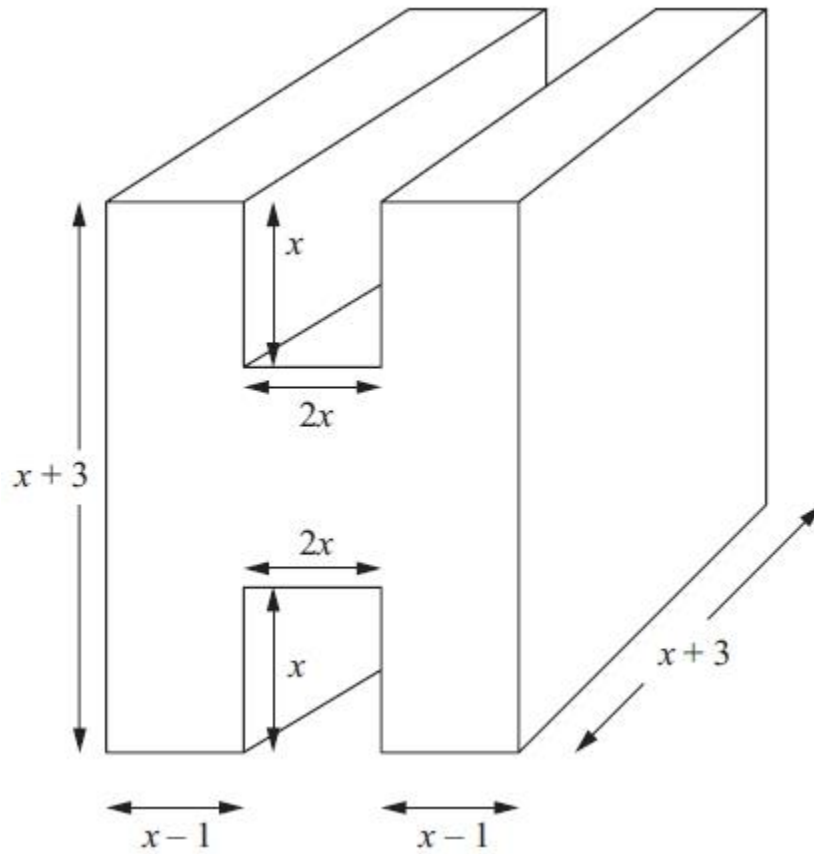


Diagram **NOT** accurately drawn

The diagram shows a prism.
All measurements are in cm.
All corners are right angles.
The volume of the prism is $V \text{ cm}^3$.
Find a formula for V .

$V = \dots\dots\dots$

Q3.

The diagram shows shape **A**.
All the measurements are in centimetres.

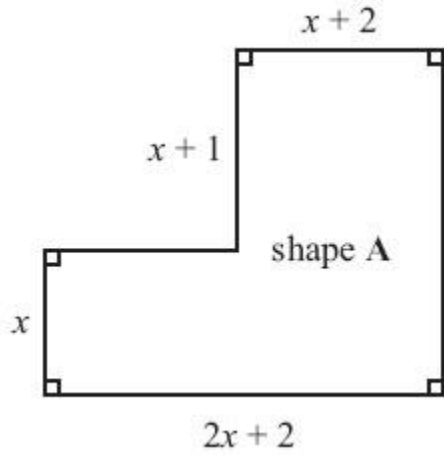


Diagram **NOT** accurately drawn

(a) Find an expression in terms of x for the area, in cm^2 , of shape **A**.
You must simplify your answer.

.....

(4)

Shape **B** is a rectangle.
Shape **B** has the same area as shape **A**.
Shape **B** has a length of $(3x + 2)$ centimetres.

(b) Find an expression in terms of x for the width, in centimetres, of shape **B**.

.....

(1)

Q4.

The diagram shows a trapezium.

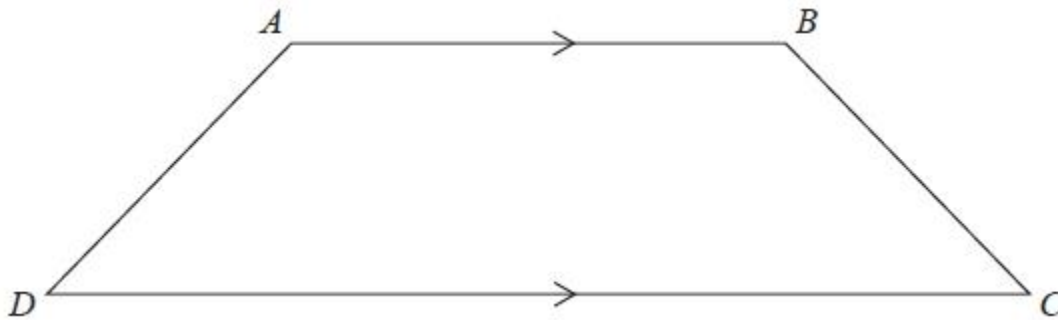


Diagram **NOT** accurately drawn

$AD = x$ cm.

BC is the same length as AD .

AB is twice the length of AD .

DC is 4 cm longer than AB .

The perimeter of the trapezium is 38 cm.

Work out the length of AD .

.....cm

Q5.

The diagram shows a trapezium.

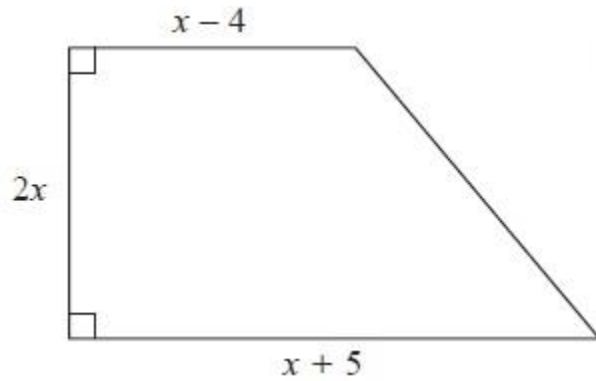


Diagram **NOT**
accurately drawn

All the measurements are in centimetres.

The area of the trapezium is 351 cm^2 .

(a) Show that $2x^2 + x - 351 = 0$

(2)

(b) Work out the value of x .

Q6.

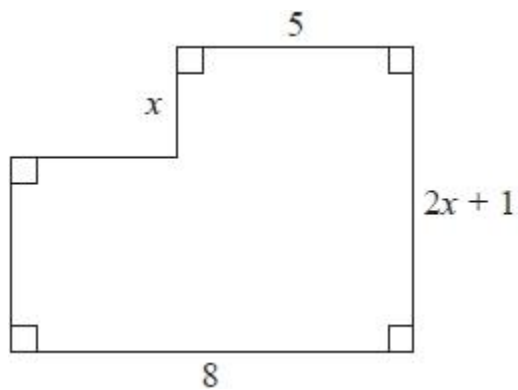


Diagram **NOT**
accurately drawn

Here is a shape.

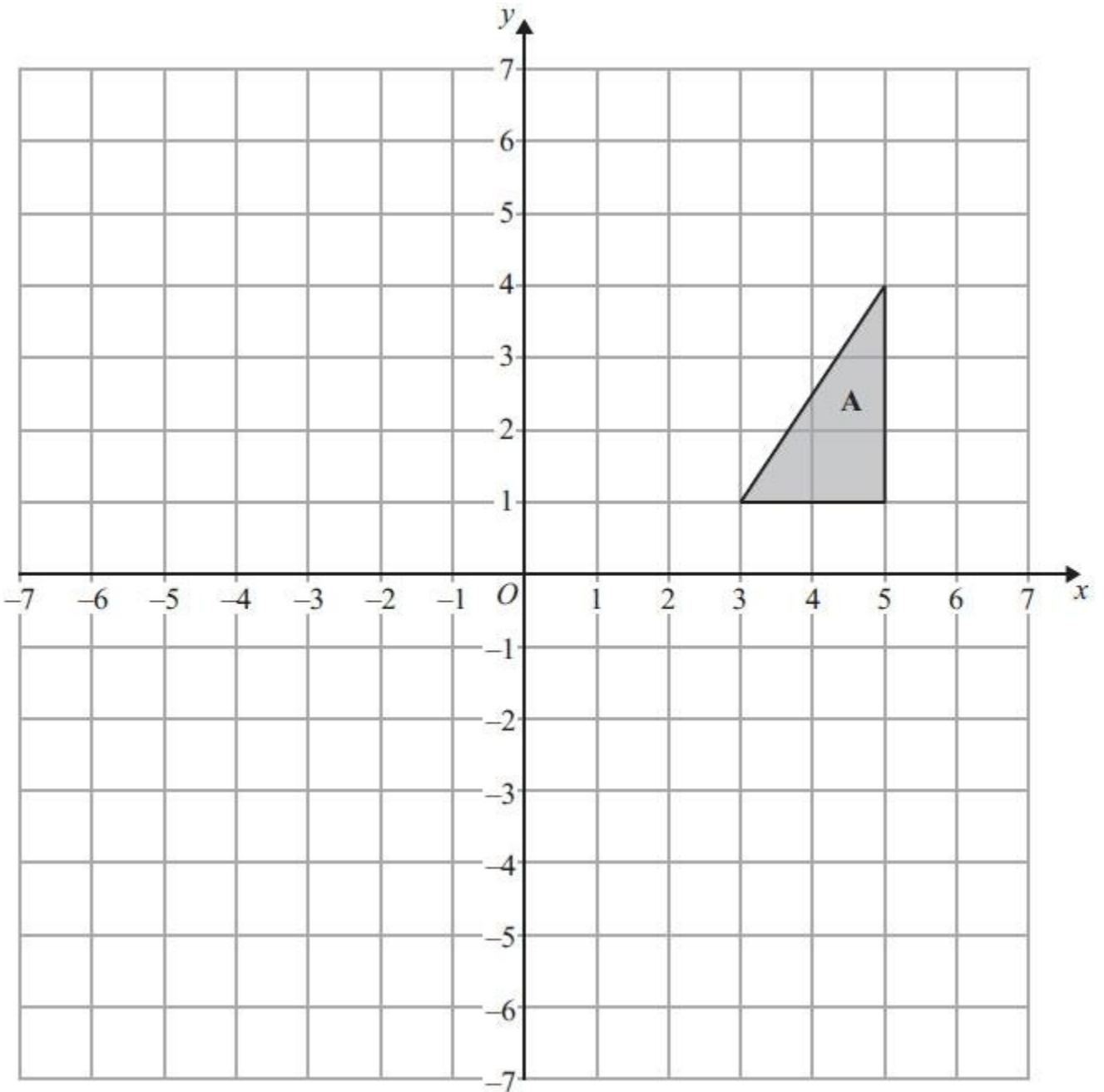
All the measurements are in metres.

The area of the shape is $A \text{ m}^2$.

Find a formula for A in terms of x .

.....

Q7.



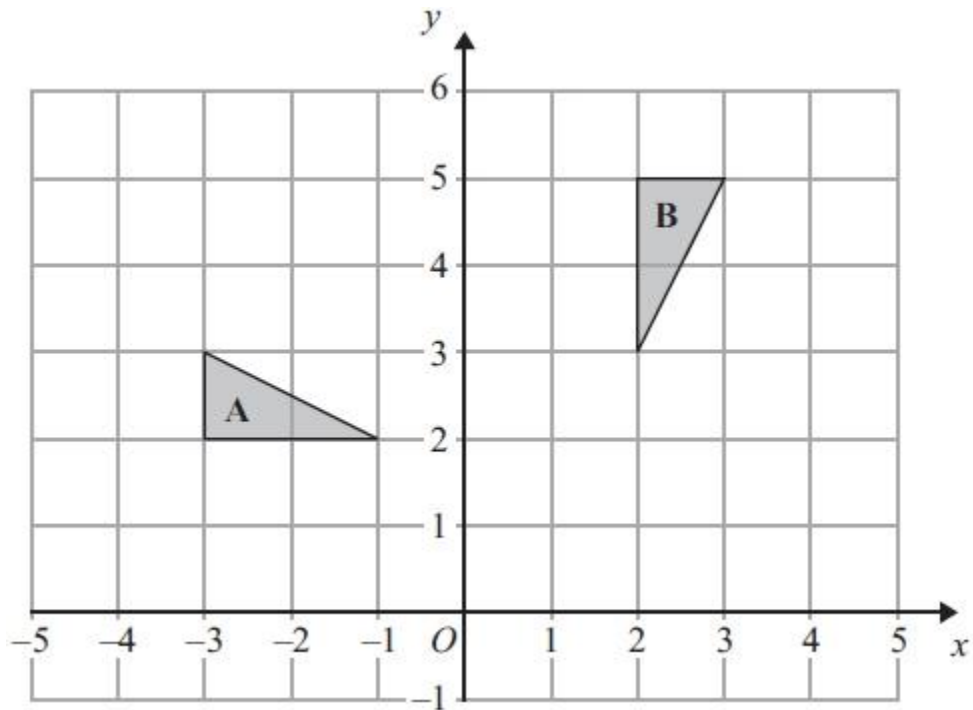
Triangle **A** is reflected in the x -axis to give triangle **B**.

Triangle **B** is then reflected in the line $x = 1$ to give triangle **C**.

Describe fully the single transformation that maps triangle **A** onto triangle **C**.

.....
.....
.....

Q8.

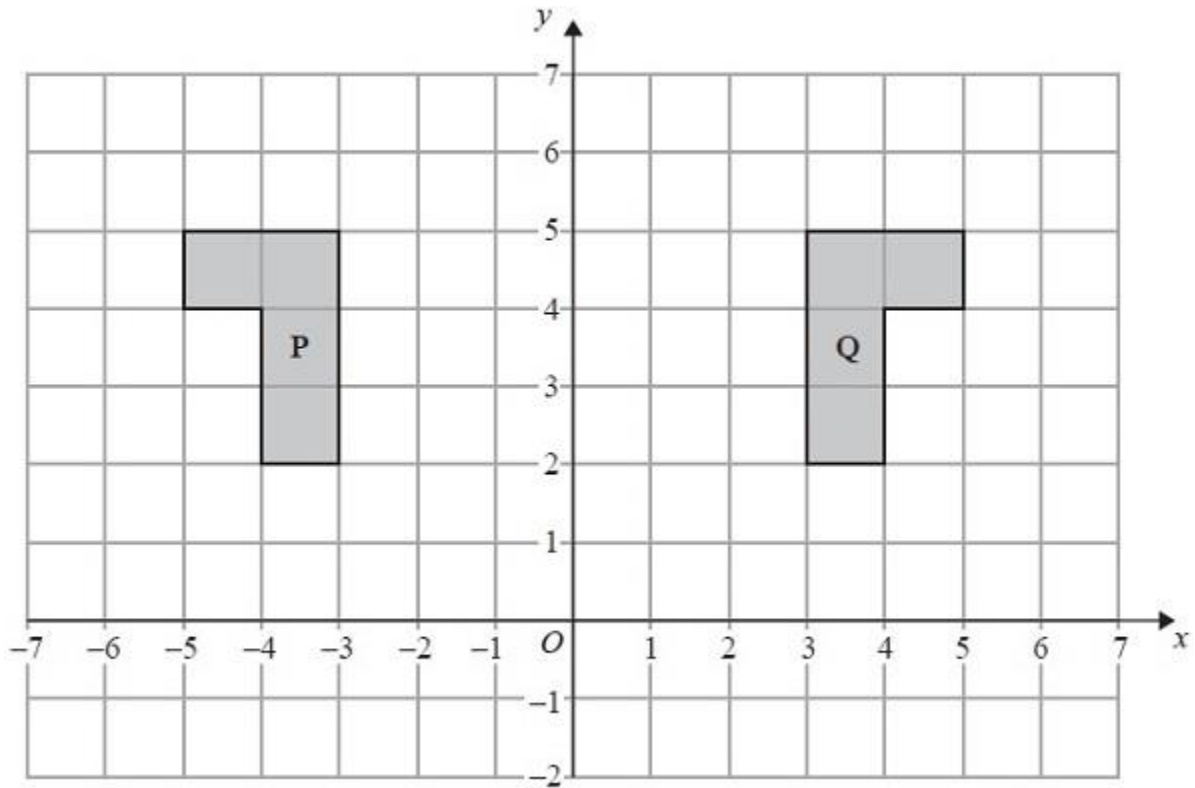


Describe fully the single transformation which maps triangle **A** onto triangle **B**.

.....
.....
.....
.....

Q9.

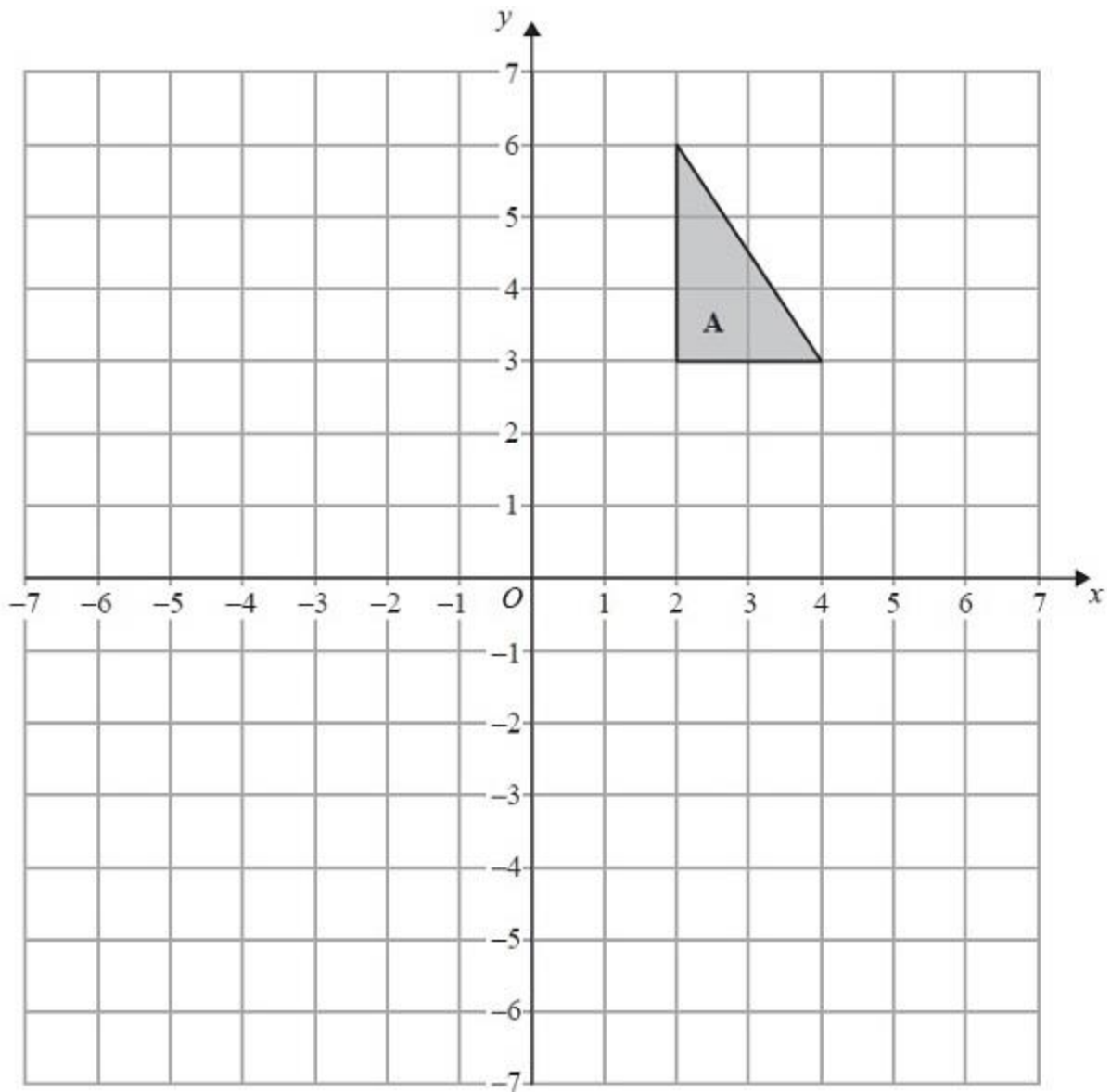
Two shapes are shown on the grid.



(a) Describe fully the single transformation that maps shape **P** onto shape **Q**.

.....
.....
.....

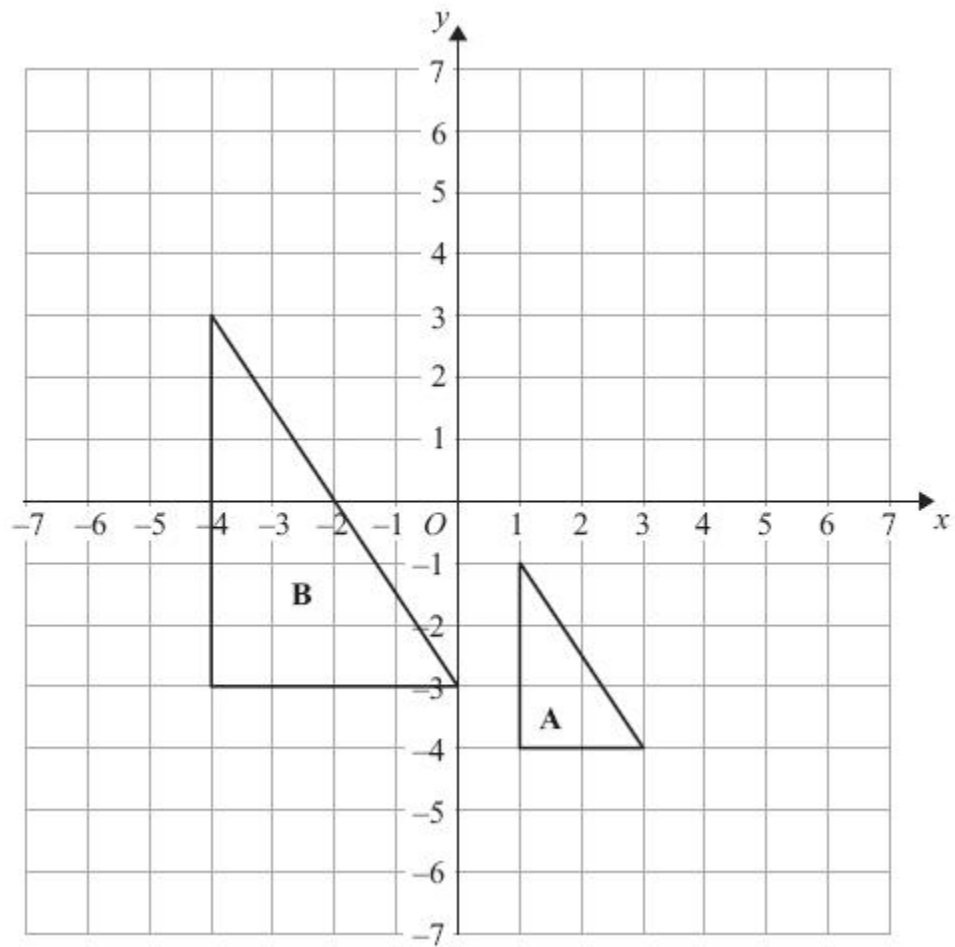
(2)



(b) Rotate triangle **A** 90° clockwise about the point $(0, 2)$.
Label the new triangle **B**.

(2)

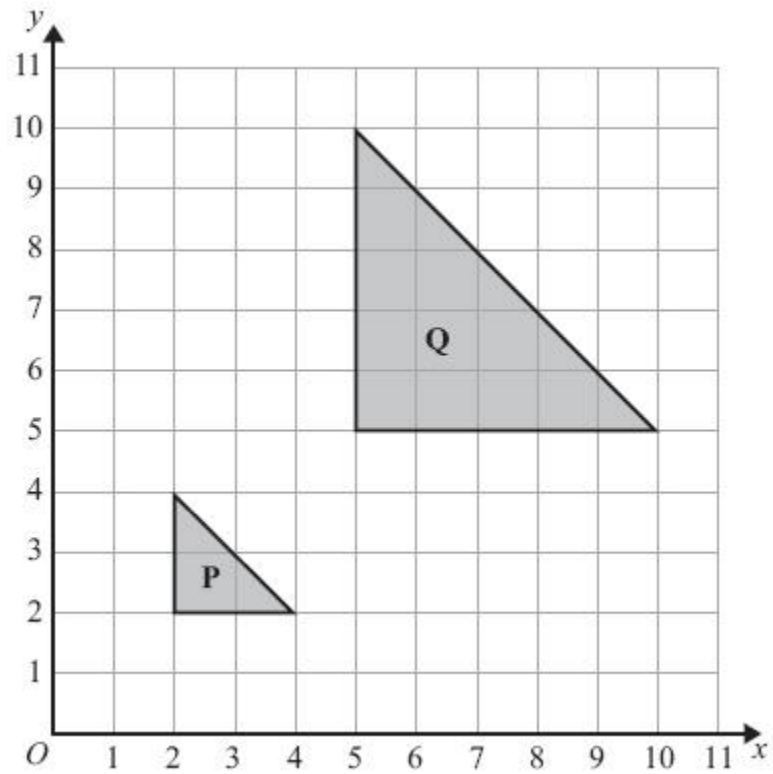
Q10.



Describe fully the single transformation that maps triangle **A** onto triangle **B**.

.....
.....

Q11.

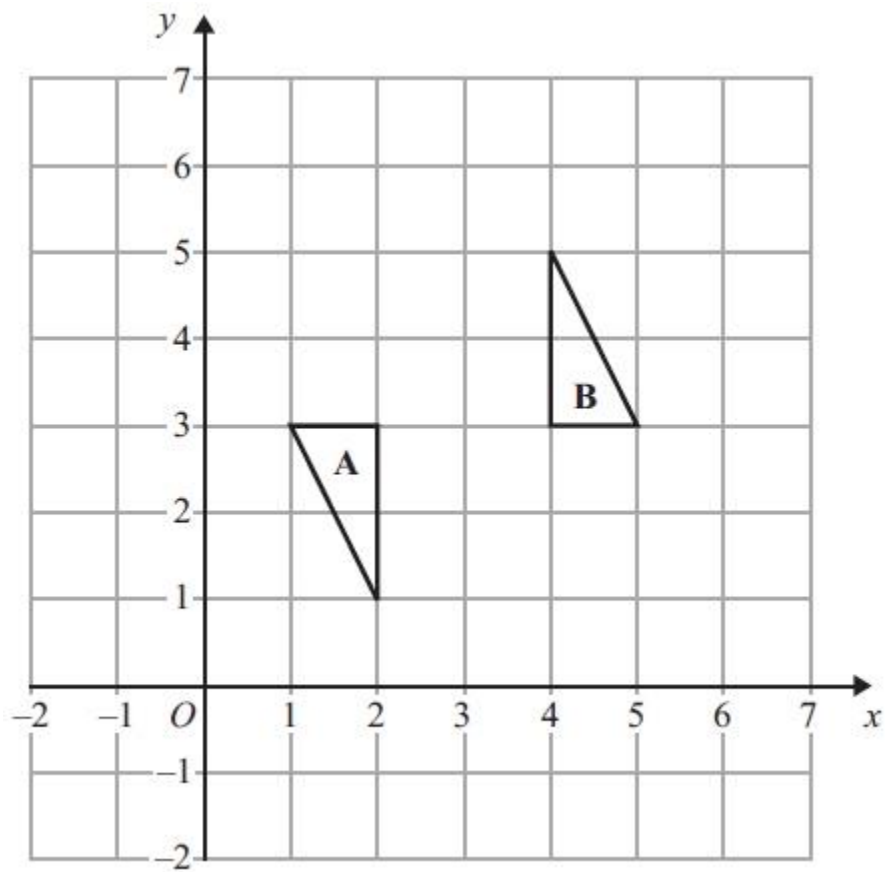


Describe fully the single transformation that maps shape **P** onto shape **Q**.

.....

.....

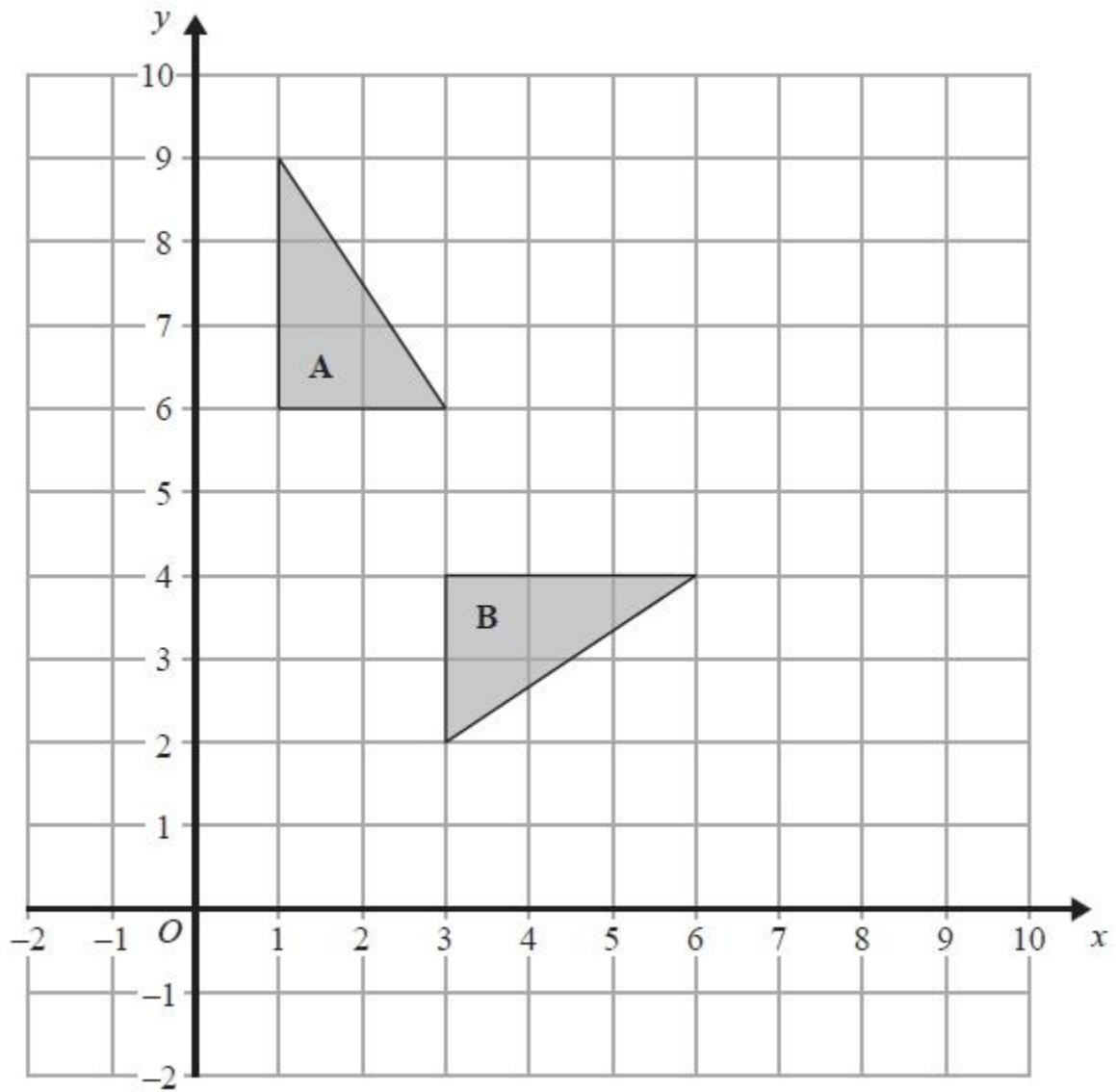
Q12.



Describe fully the single transformation that maps triangle **A** onto triangle **B**.

.....
.....

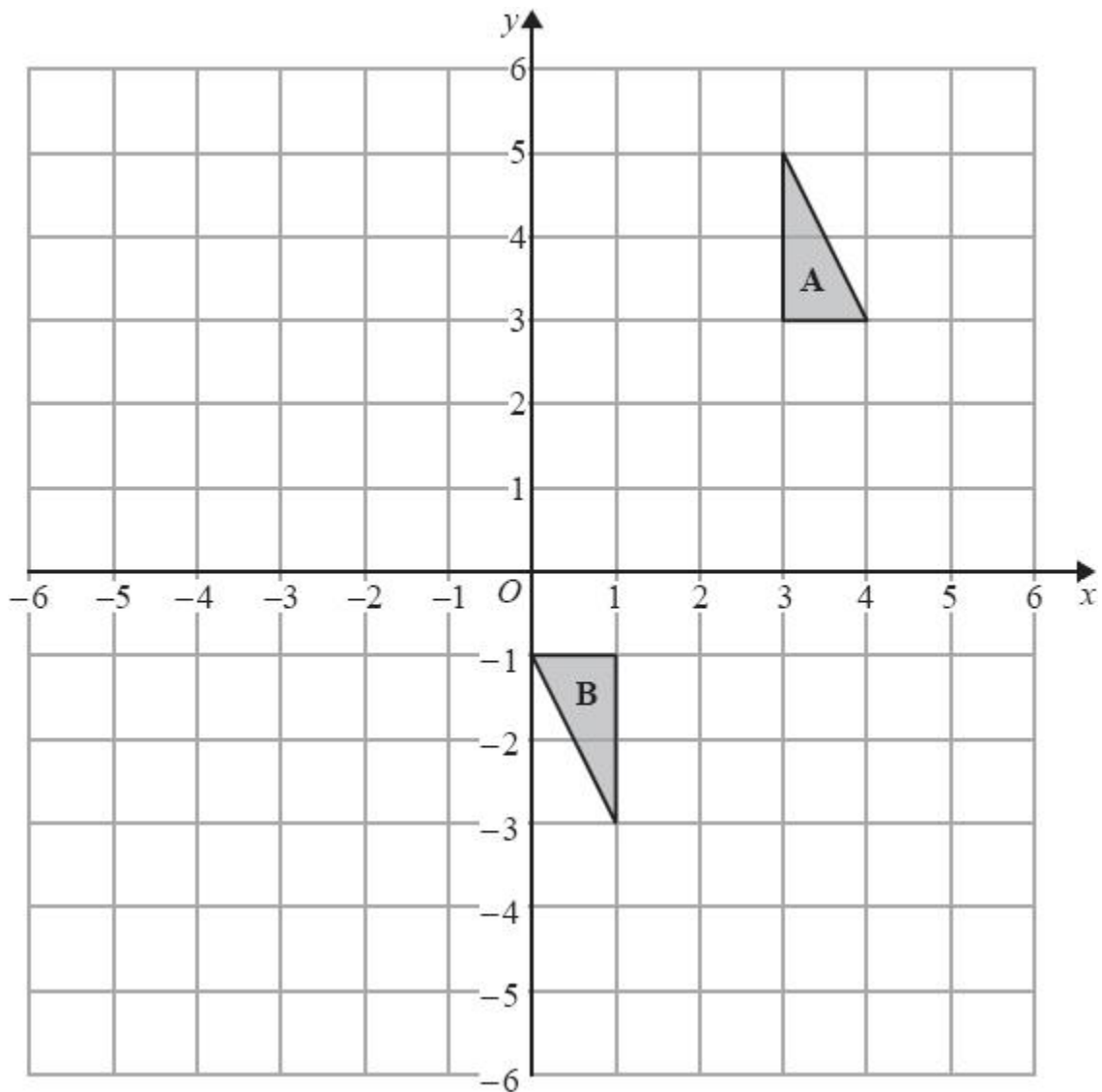
Q13.



Describe fully the single transformation that maps triangle **A** onto triangle **B**.

.....
.....
.....

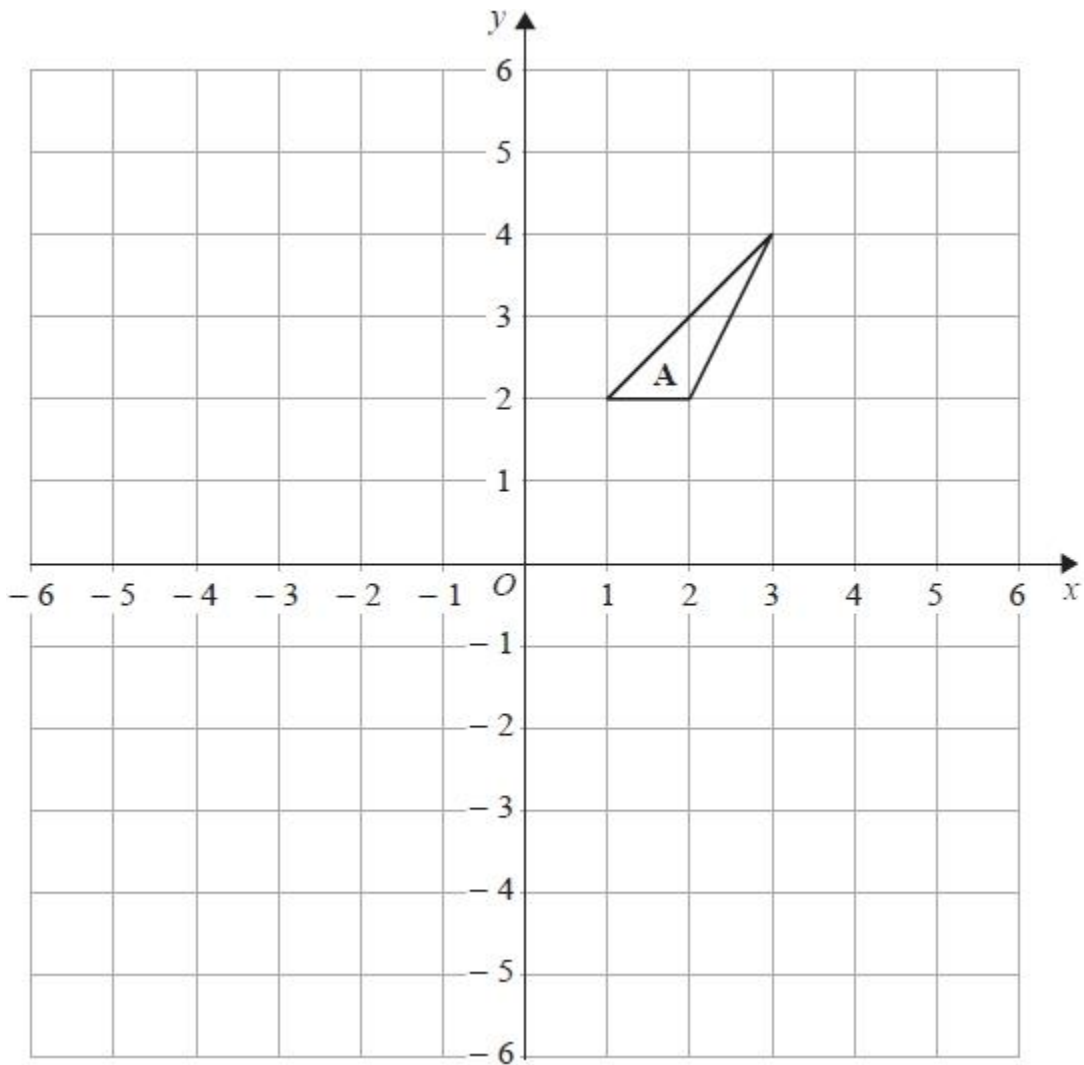
Q14.



Describe fully the single transformation that maps triangle **A** onto triangle **B**.

.....
.....
.....

Q15.



Triangle **A** is rotated 90° clockwise about the point $(0, 1)$ to give triangle **B**.

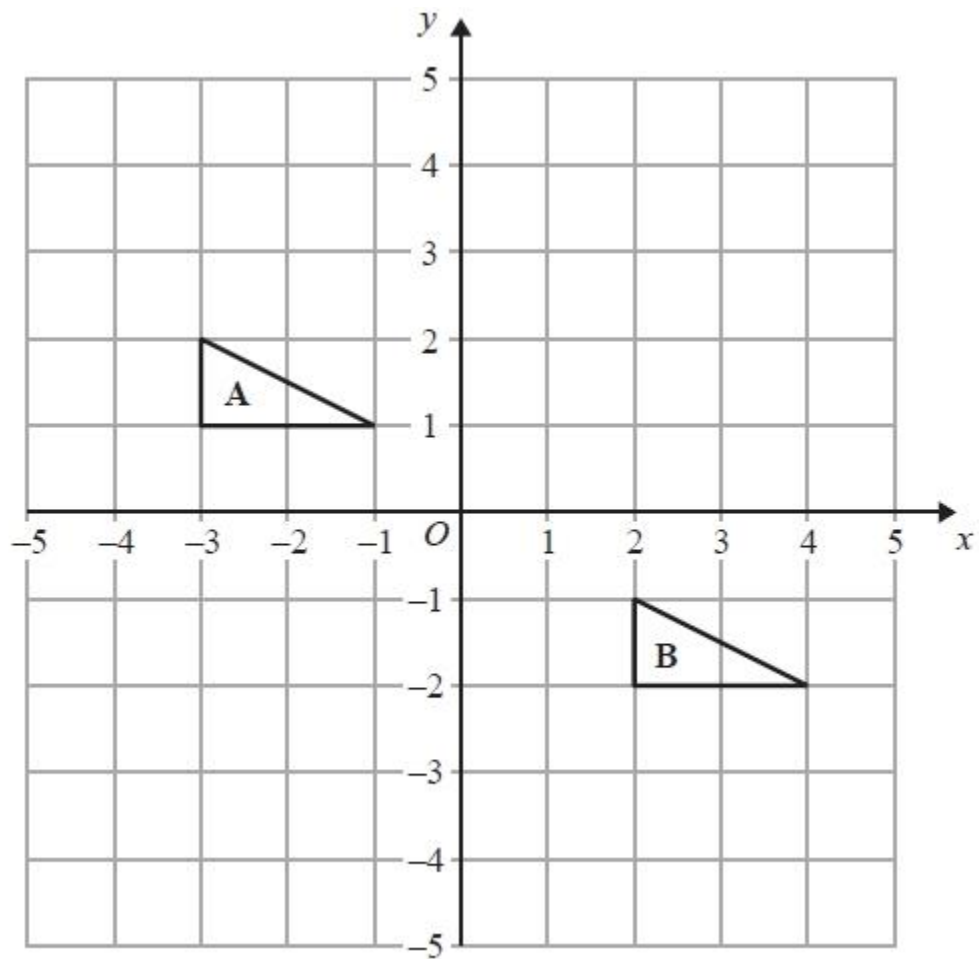
Triangle **B** is translated by the vector $\begin{pmatrix} -3 \\ -1 \end{pmatrix}$ to give triangle **C**.

Describe fully the single transformation that maps triangle **A** onto triangle **C**.

.....
.....

(3)

Q16.

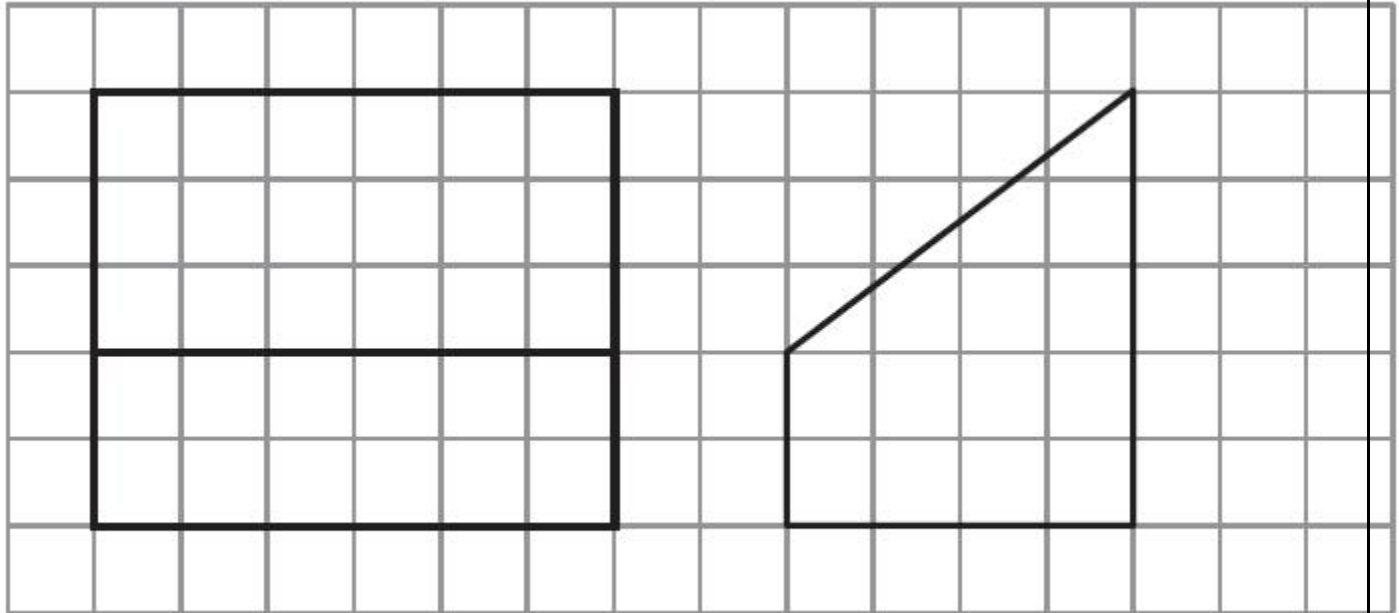


Describe the single transformation that maps triangle **A** onto triangle **B**.

.....
.....

Q17.

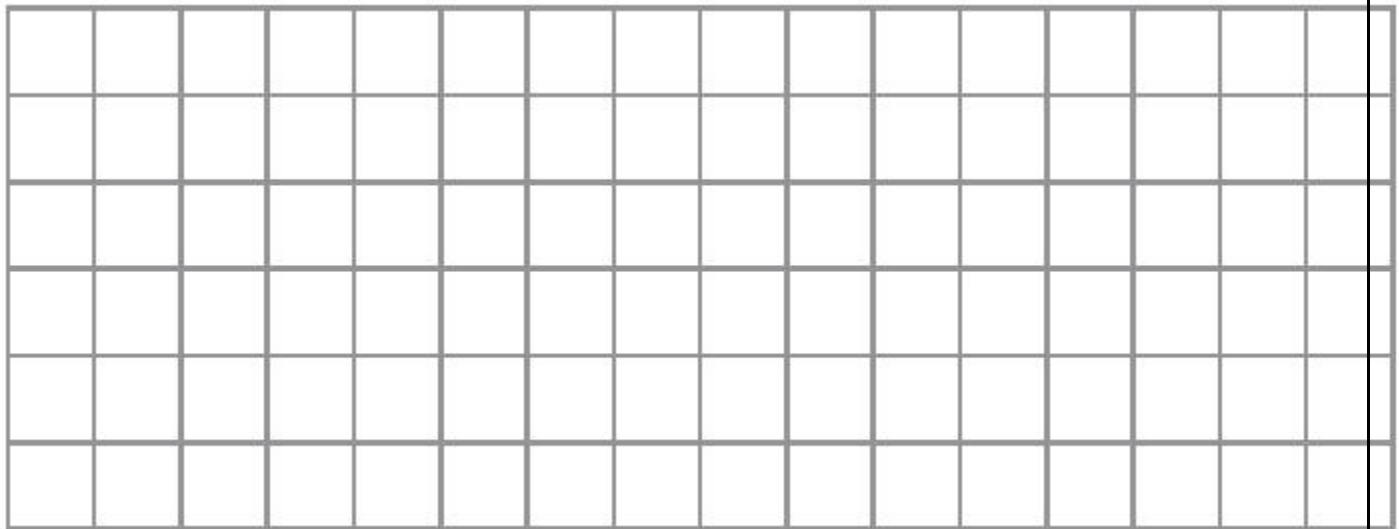
The diagram shows the front elevation and the side elevation of a prism.



Front elevation

Side elevation

(a) On the grid, draw a plan of this prism.



(2)

(b) In the space below, draw a sketch of this prism.

(2)

Q18.

The diagram shows a solid prism.

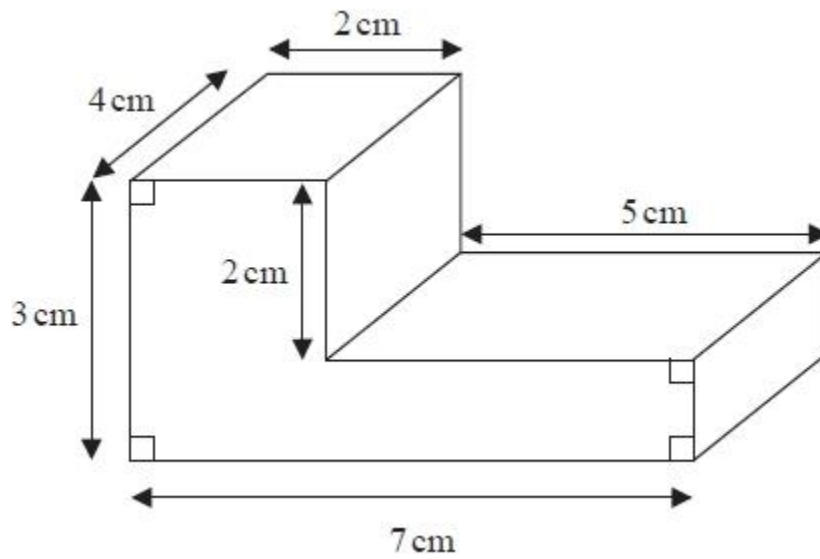
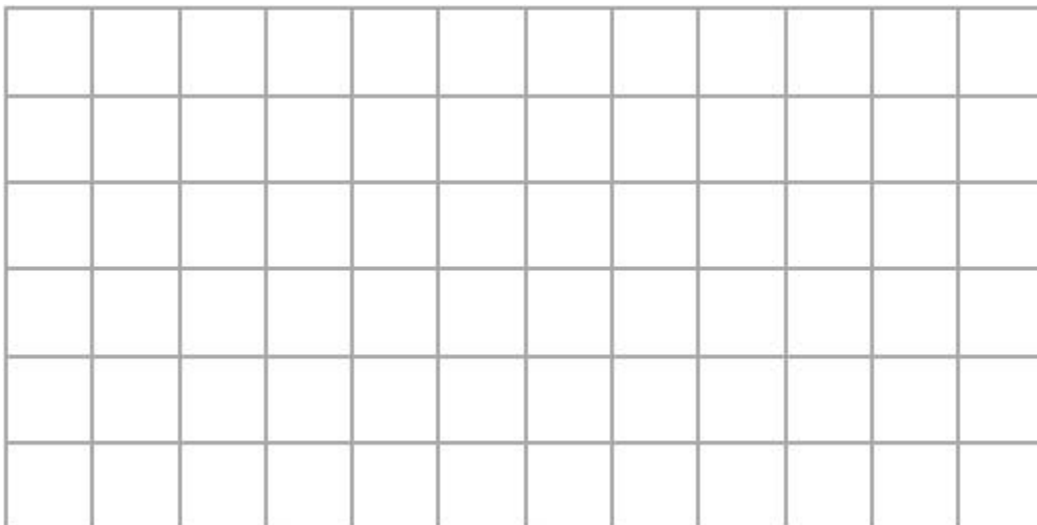


Diagram **NOT** accurately drawn

On the grid, draw an accurate plan of the solid prism.



Q19.

The diagram shows a circle inside a square.

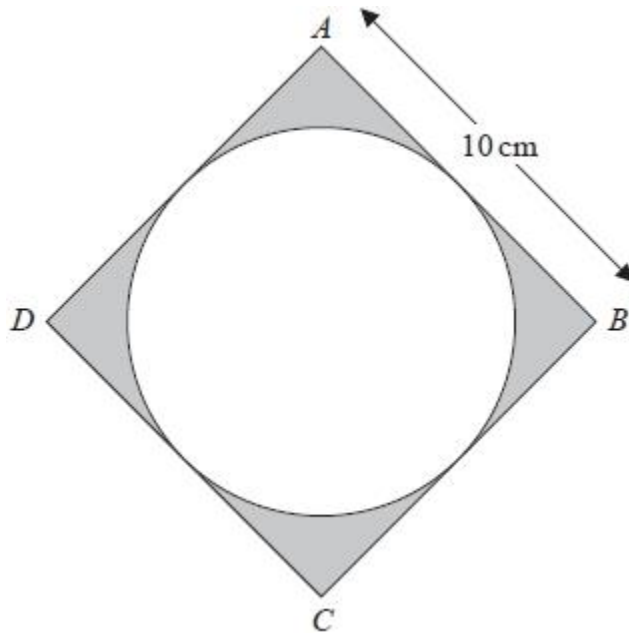


Diagram **NOT**
accurately drawn

$ABCD$ is a square of side 10 cm.

Each side of the square is a tangent to the circle.

Work out the total area of the shaded regions in terms of π .

Give your answer in its simplest form.

..... cm^2

Q20.

The diagram shows a circle drawn inside a square.

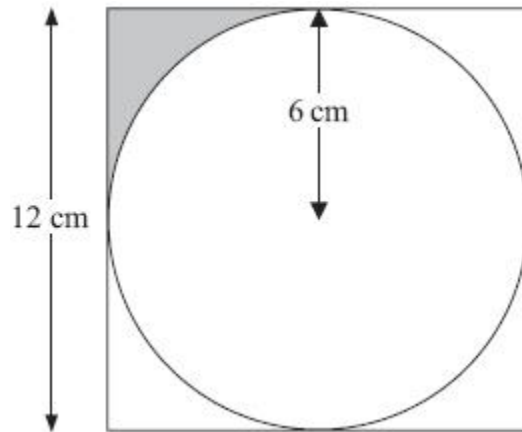


Diagram **NOT**
accurately drawn

The circle has a radius of 6 cm.
The square has a side of length 12 cm.
Work out the shaded area.
Give your answer in terms of π .

.....cm²

Q21.

The diagram shows a regular pentagon $ABCDE$.

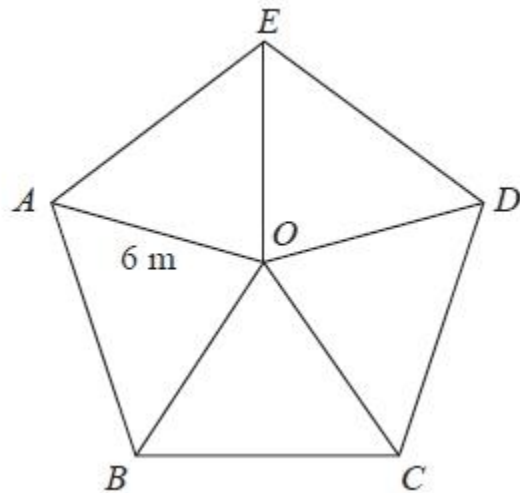


Diagram **NOT**
accurately drawn

The pentagon is divided into 5 isosceles triangles.

$$OA = OB = OC = OD = OE = 6 \text{ m}$$

Work out the area of the pentagon.

Give your answer correct to 1 decimal place.

..... m²

Q22.

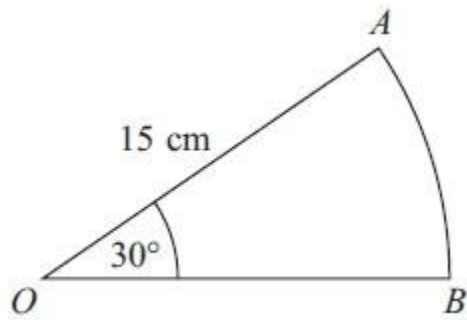


Diagram **NOT**
accurately drawn

OAB is a sector of a circle, centre O .

The radius of the circle is 15 cm.

The angle of the sector is 30° .

Calculate the area of sector OAB .

Give your answer correct to 3 significant figures.

..... cm^2

Q23.

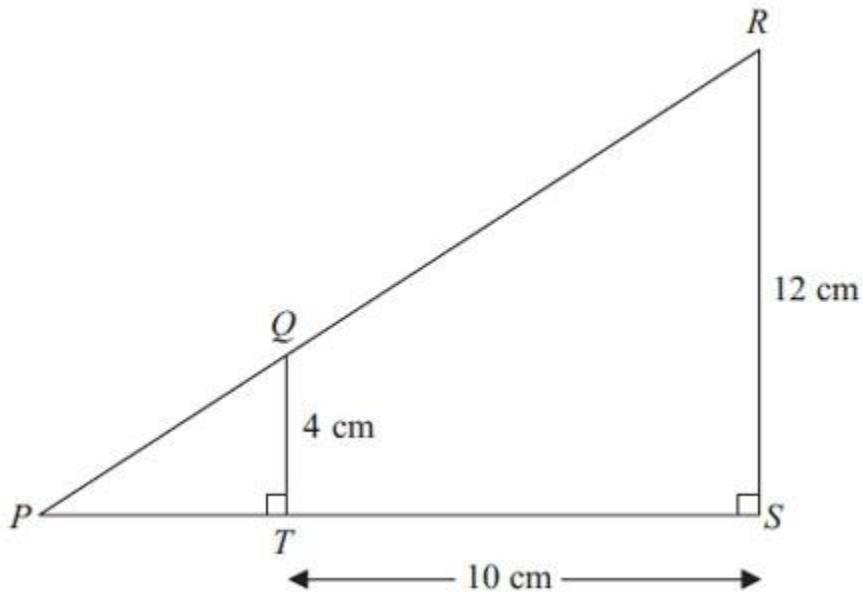


Diagram NOT accurately drawn

PQR and PTS are straight lines.
Angle $PTQ = \text{Angle } PSR = 90^\circ$
 $QT = 4 \text{ cm}$
 $RS = 12 \text{ cm}$
 $TS = 10 \text{ cm}$

(a) Work out the area of the trapezium $QRST$.

..... cm^2
(2)

(b) Work out the length of PT .

..... cm
(3)

Q24.

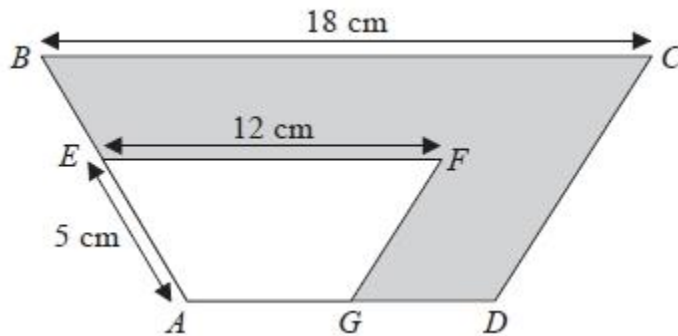


Diagram NOT accurately drawn

$ABCD$ and $AEFG$ are mathematically similar trapeziums.

$$AE = 5\text{ cm}$$

$$EF = 12\text{ cm}$$

$$BC = 18\text{ cm}$$

(a) Work out the length of AB .

..... cm

(2)

Trapezium $AEFG$ has an area of 36 cm^2 .

(b) Work out the area of the shaded region.

..... cm^2

(3)

Q25.

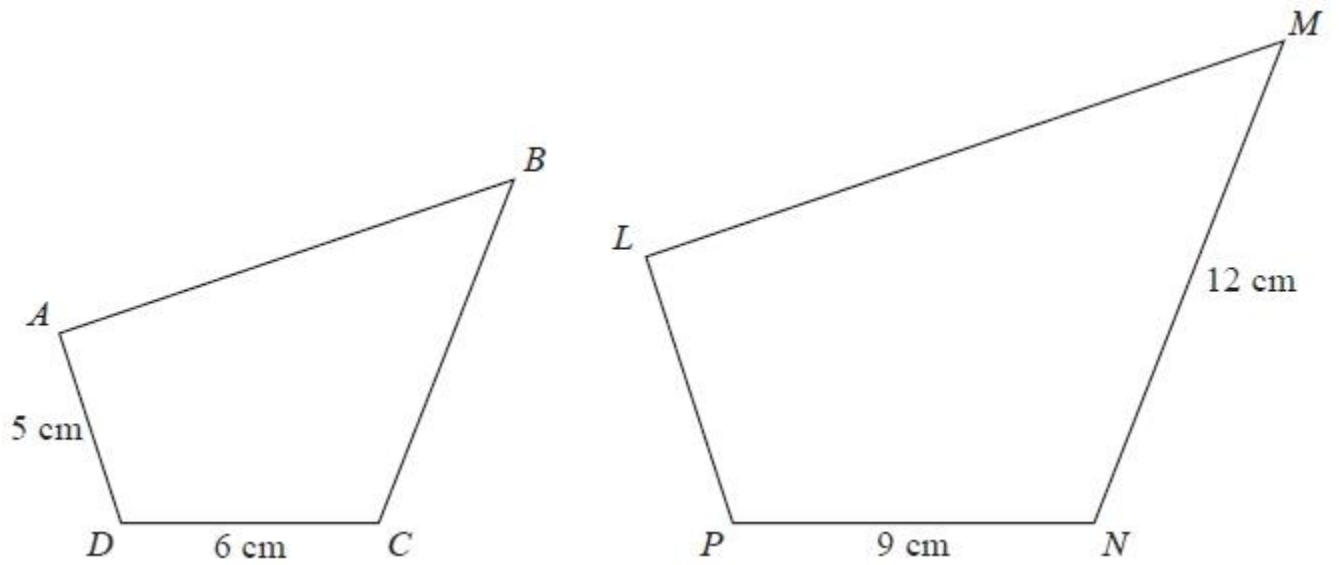


Diagram **NOT** accurately drawn

Quadrilaterals $ABCD$ and $LMNP$ are mathematically similar.

Angle A = angle L

Angle B = angle M

Angle C = angle N

Angle D = angle P

(a) Work out the length of LP .

.....cm
(2)

(b) Work out the length of BC .

.....cm
(2)

Q26.

The diagram shows a solid shape.

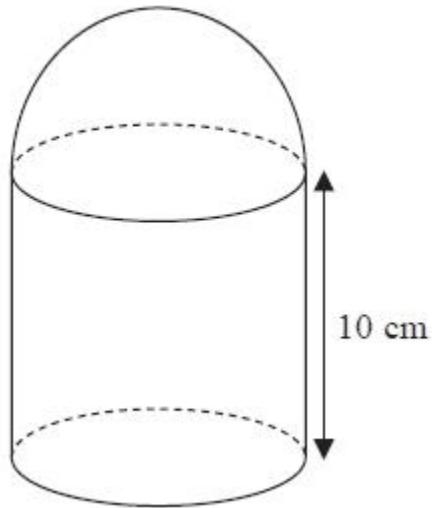


Diagram **NOT**
accurately drawn

The solid shape is made from a cylinder and a hemisphere.
The radius of the cylinder is equal to the radius of the hemisphere.

The cylinder has a height of 10 cm.
The curved surface area of the hemisphere is $32\pi \text{ cm}^2$.

Work out the total surface area of the solid shape.
Give your answer in terms of π .

..... cm^2

Q27.

The diagram shows a solid hemisphere of radius 5 cm.

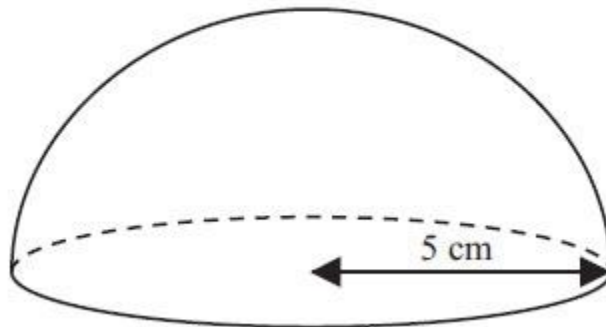


Diagram **NOT**
accurately drawn

Find the **total** surface area of the solid hemisphere.
Give your answer in terms of π .

..... cm²

Q28.

The diagram shows a solid made from a hemisphere and a cone.

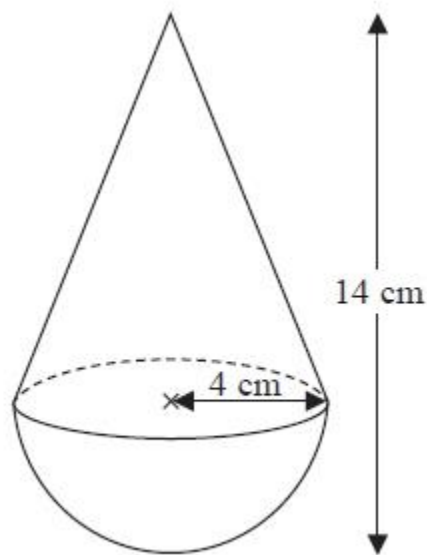


Diagram **NOT** accurately drawn

The radius of the hemisphere is 4 cm.

The radius of the base of the cone is 4 cm.

Calculate the volume of the solid.

Give your answer correct to 3 significant figures.

.....cm³

Q29.

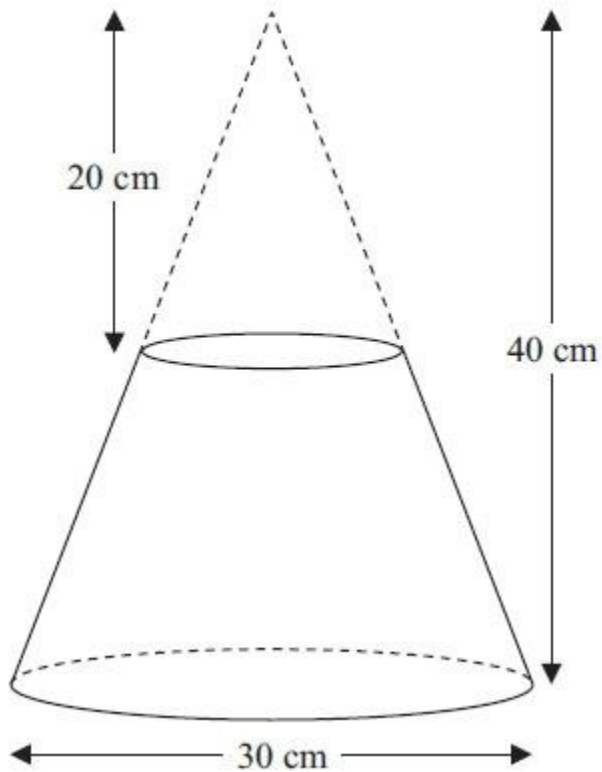


Diagram **NOT** accurately drawn

A frustum is made by removing a small cone from a similar large cone.

The height of the small cone is 20 cm.

The height of the large cone is 40 cm.

The diameter of the base of the large cone is 30 cm.

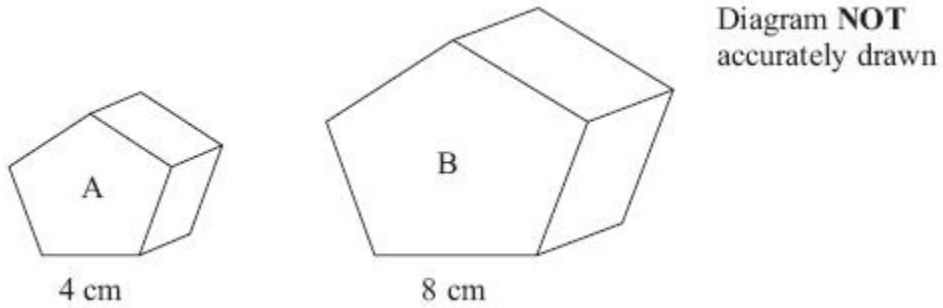
Work out the volume of the frustum.

Give your answer correct to 3 significant figures.

.....cm³

Q30.

The diagram shows two similar solids, A and B.



Solid A has a volume of 80 cm^3 .

(a) Work out the volume of solid B.

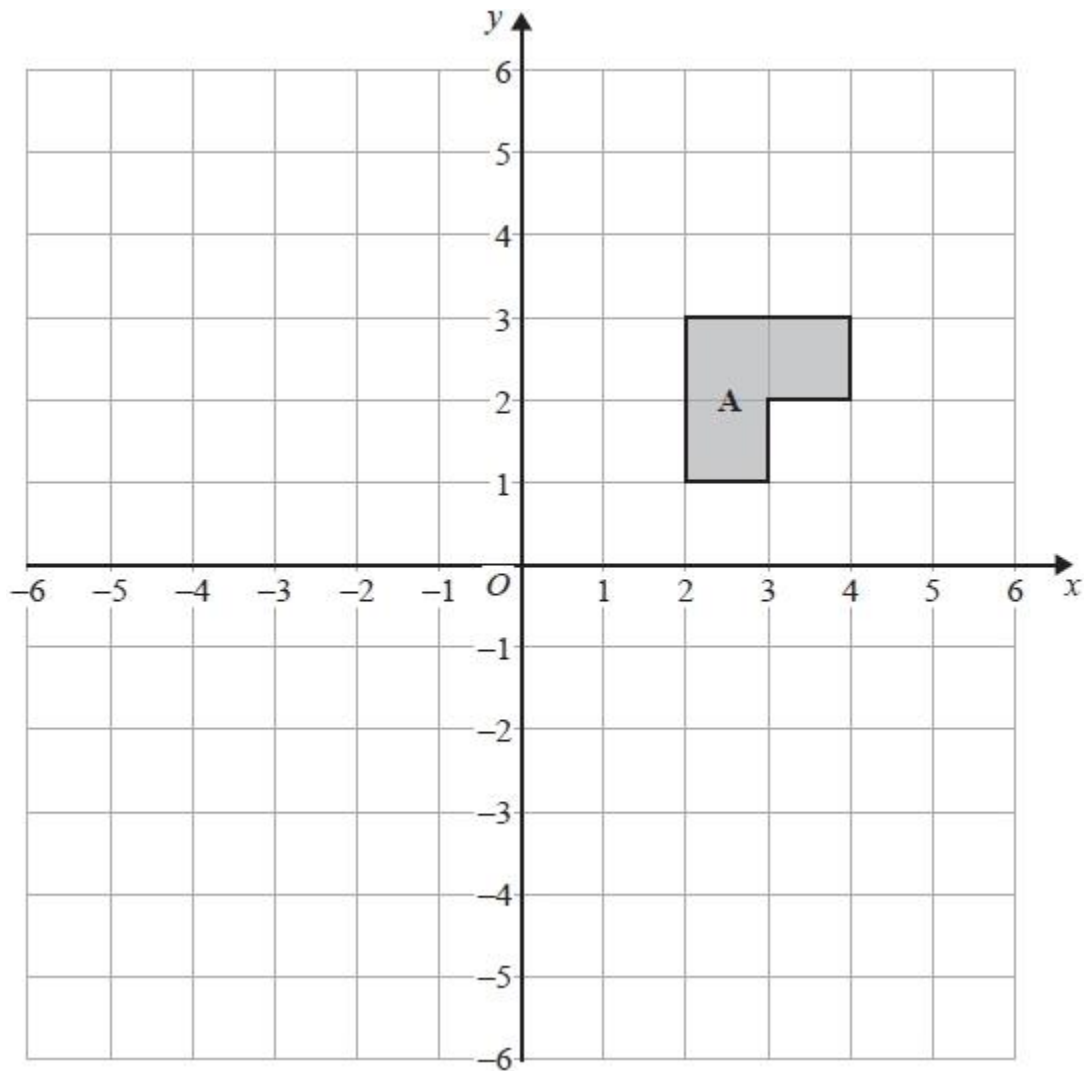
..... cm^3
(2)

Solid B has a total surface area of 160 cm^2 .

(b) Work out the total surface area of solid A.

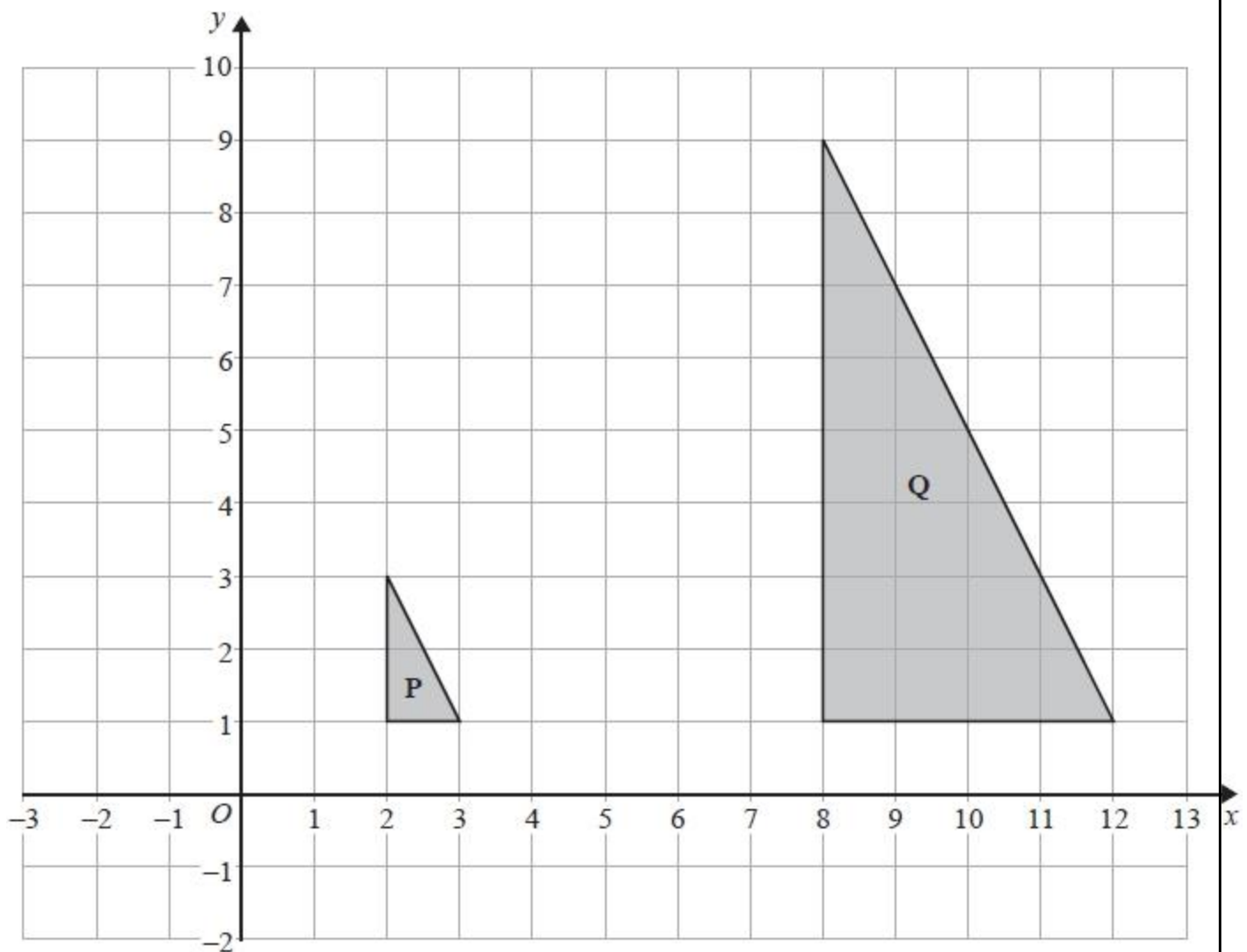
..... cm^2
(2)

Q31.



(a) Rotate shape A 180° about the point (0, 0).

(2)

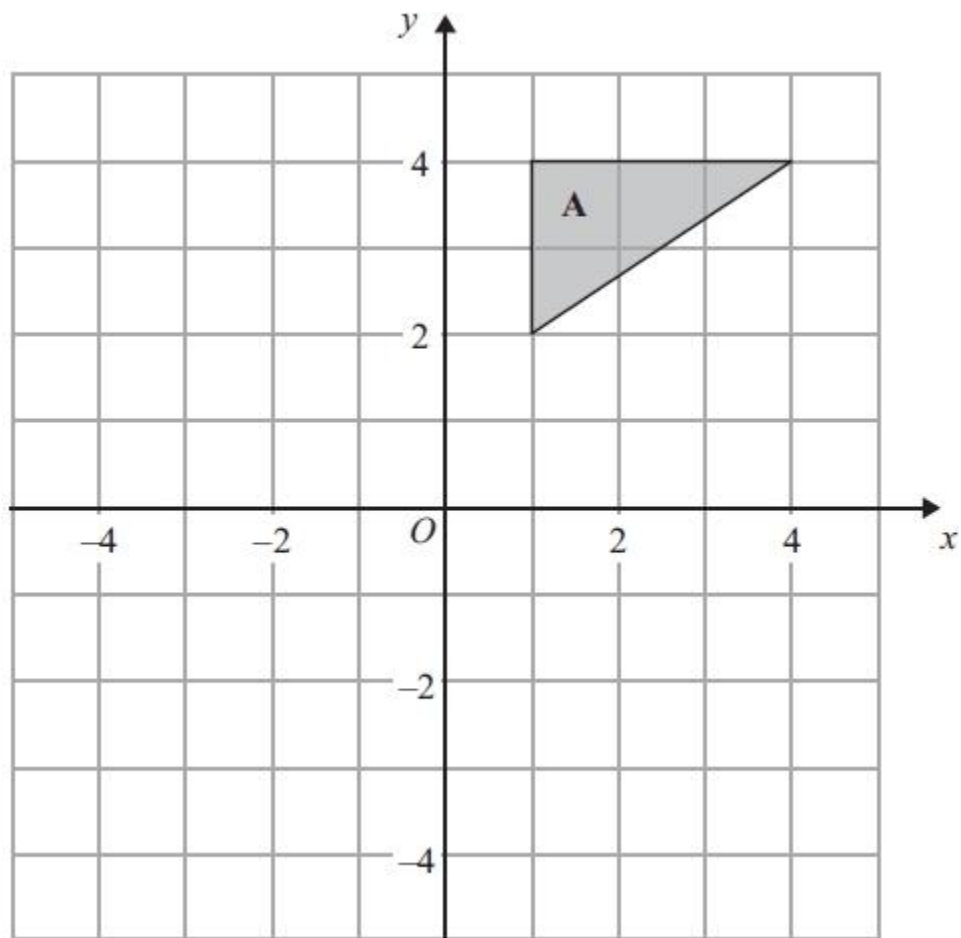


(b) Describe fully the single transformation which maps triangle **P** onto triangle **Q**.

.....

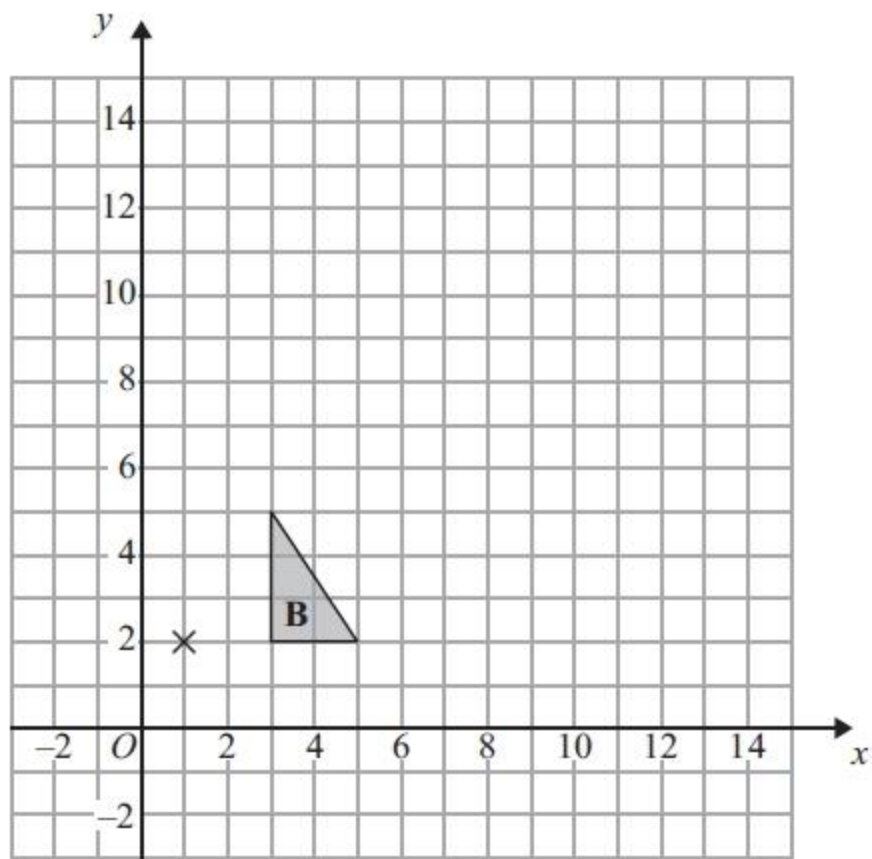
(3)

Q32.



(a) Rotate triangle A 90° clockwise, centre O .

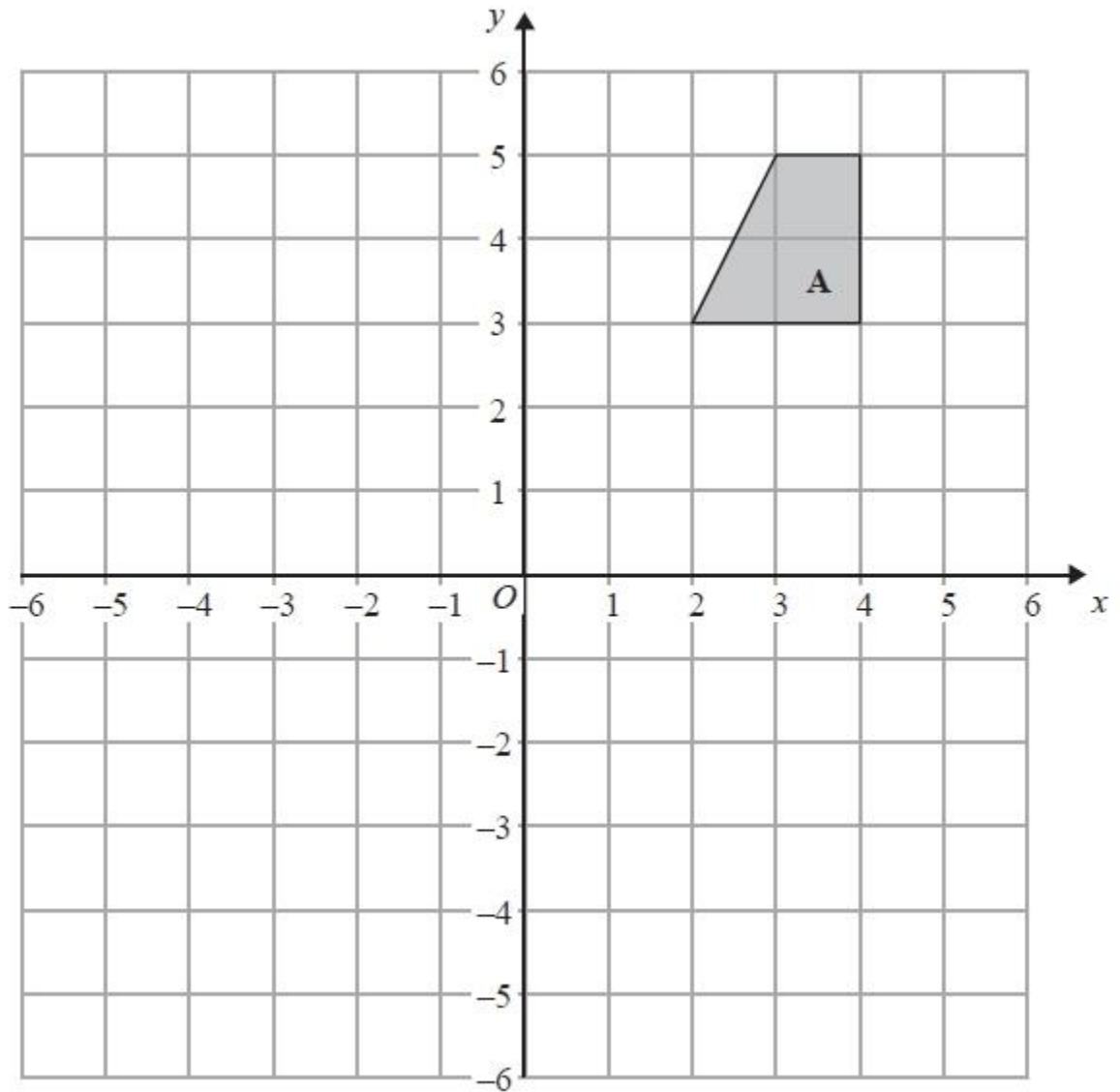
(2)



(b) Enlarge triangle **B** by scale factor 3, centre (1, 2).

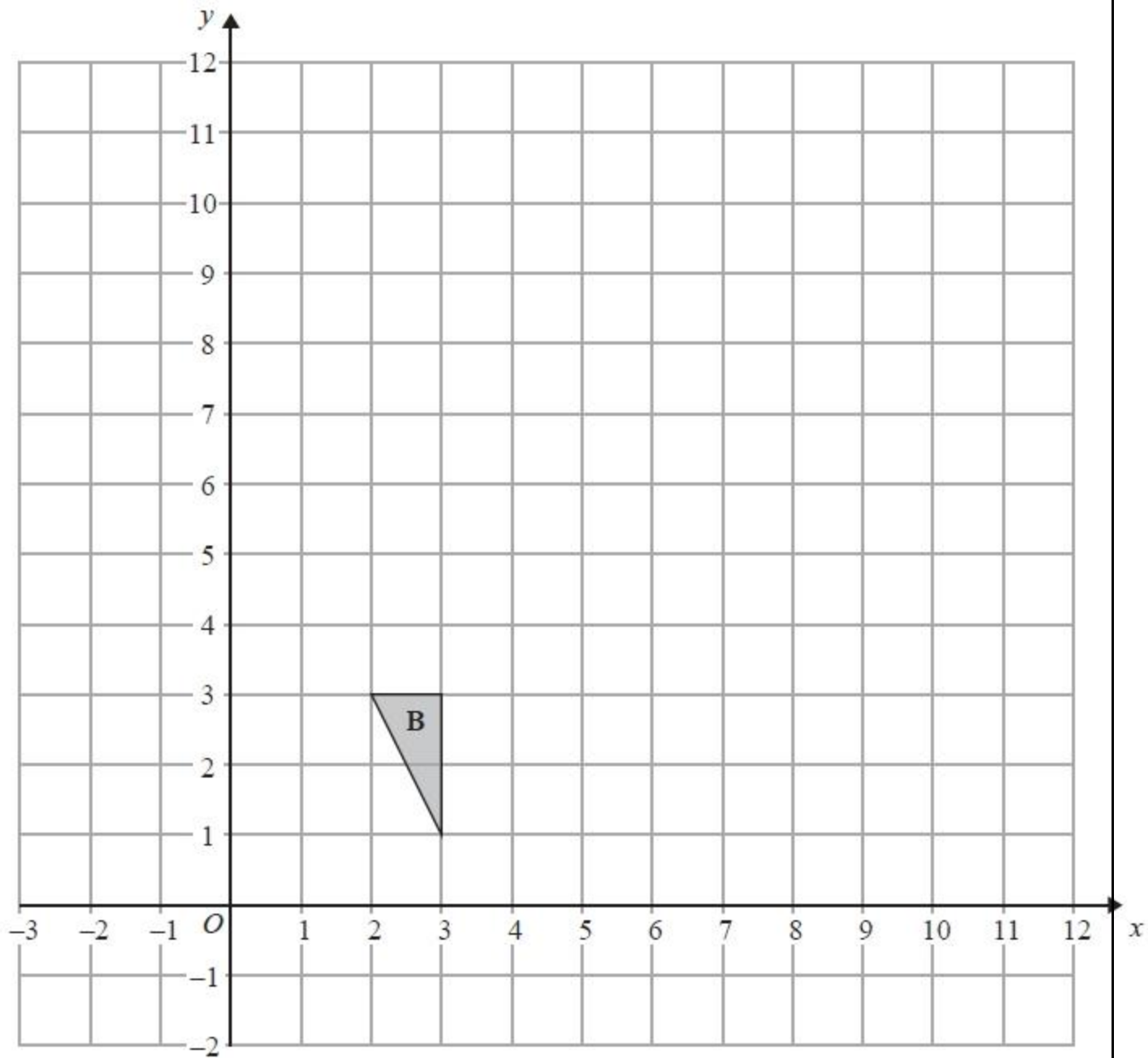
(3)

Q33.



(a) On the grid, rotate shape A 180° about the point (1, 1).

(2)



(b) On the grid, enlarge triangle **B** by scale factor 3, centre (0, 0).

(2)

Q34.

Jade makes an orange drink by mixing orange concentrate with water.

She mixes 15 cm^3 of orange concentrate with 250 cm^3 of water.

The density of orange concentrate is 1.20 g/cm^3 .

The density of water is 1.00 g/cm^3 .

Work out the density of Jade's orange drink.

Give your answer correct to 2 decimal places.

..... g/cm^3

Q35.

The diagram shows a container for grain.

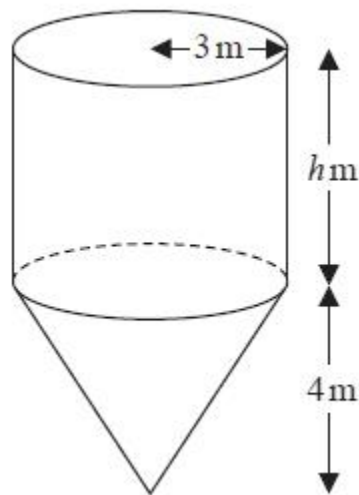


Diagram NOT
accurately drawn

The container is a cylinder on top of a cone.

The cylinder has a radius of 3m and a height of h m.

The cone has a base radius of 3m and a vertical height of 4m.

The container is empty.

The container is then filled with grain at a constant rate.

After 5 hours the depth of the grain is 6 metres above the vertex of the cone.

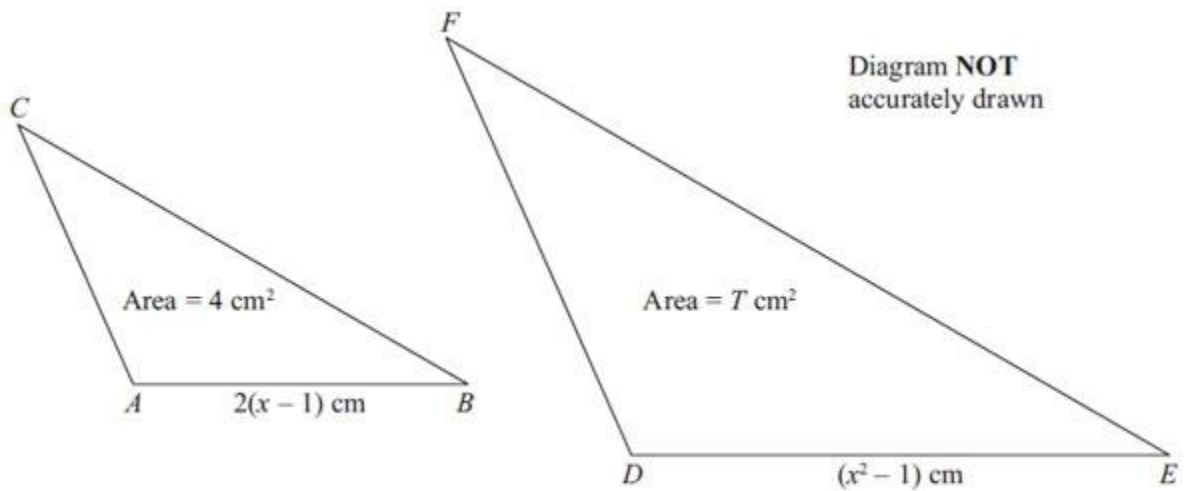
After 9 hours the container is full of grain.

Work out the value of h .

Give your answer as a fraction in its simplest form.

You must show all your working.

Q36.



Triangles ABC and DEF are mathematically similar.

The base, AB , of triangle ABC has length $2(x - 1)$ cm

The base, DE , of triangle DEF has length $(x^2 - 1)$ cm

The area of triangle ABC is 4 cm^2

The area of triangle DEF is $T \text{ cm}^2$

Prove that

$$T = x^2 + 2x + 1$$

Q37.

Ali has two solid cones made from the same type of metal.

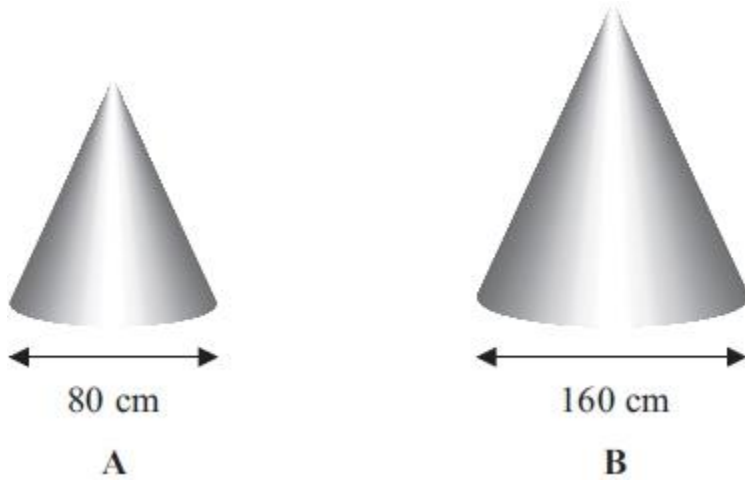


Diagram **NOT** accurately drawn

The two solid cones are mathematically similar.
The base of cone **A** is a circle with diameter 80 cm.
The base of cone **B** is a circle with diameter 160 cm.
Ali uses 80 ml of paint to paint cone **A**.
Ali is going to paint cone **B**.

(a) Work out how much paint, in ml, he will need.

..... ml
(2)

The volume of cone **A** is 171 700 cm³.

(b) Work out the volume of cone **B**.

..... cm³
(3)

Q38.

The diagram shows a solid metal cylinder.

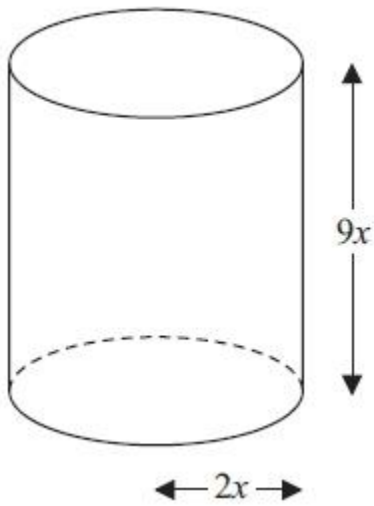


Diagram **NOT** accurately drawn

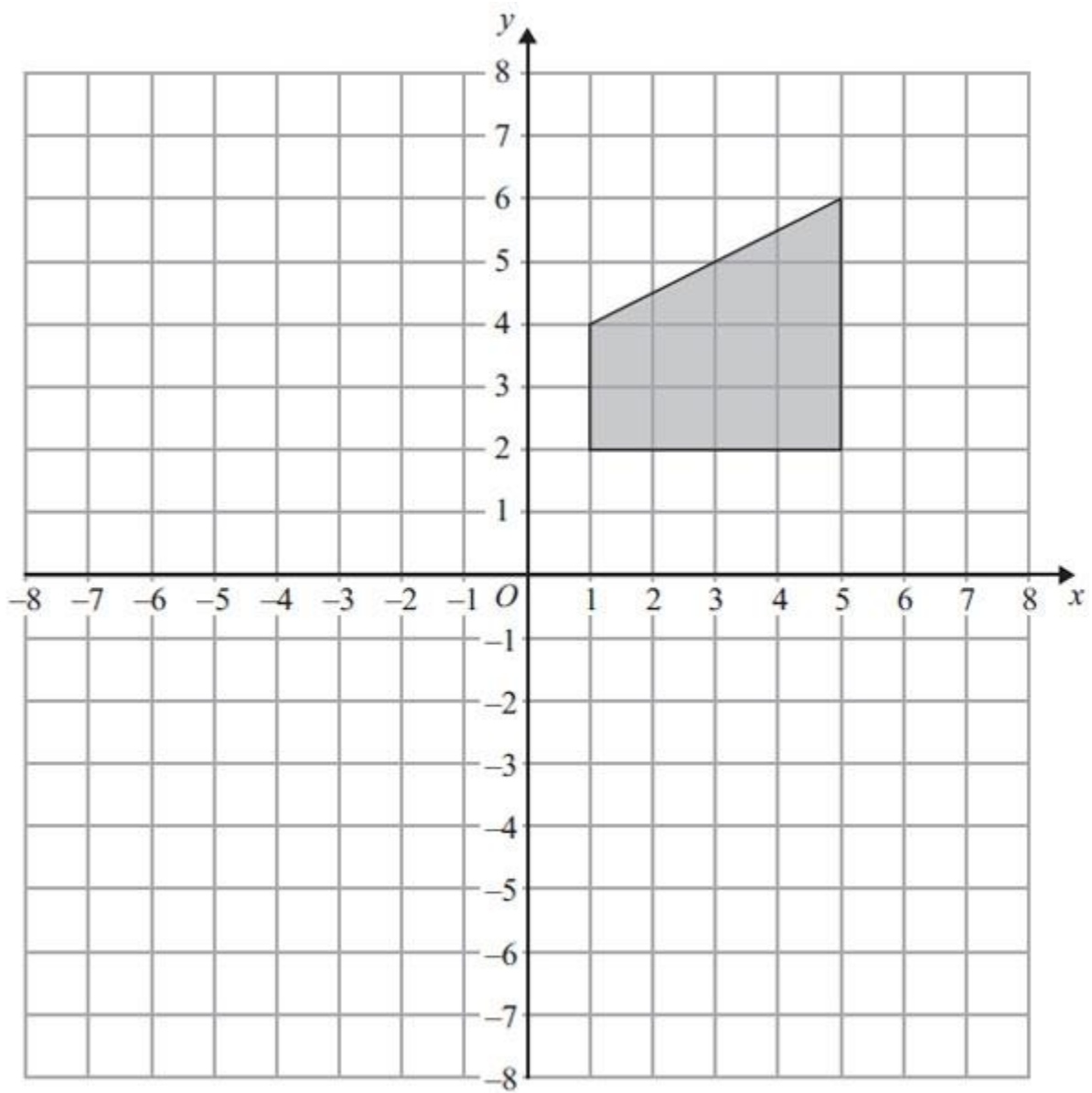
The cylinder has base radius $2x$ and height $9x$.

The cylinder is melted down and made into a sphere of radius r .

Find an expression for r in terms of x .

.....

Q39.



Enlarge the shaded shape by scale factor $-\frac{1}{2}$ with centre $(-1, -2)$.

Q40.

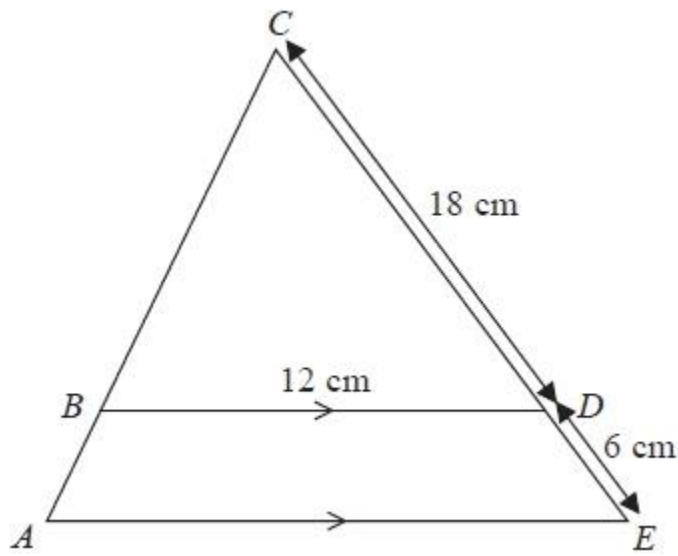


Diagram NOT
accurately drawn

ABC and CDE are straight lines.
 BD and AE are parallel.
 $BD = 12$ cm, $CD = 18$ cm, $DE = 6$ cm.
Work out the length of AE .

..... cm