Mock Grade 7

Maths Booklet 5

Paper 1H
Non-Calculator

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1 In a shop, all normal prices are reduced by 20% to give the sale price.

The sale price of a TV set is then reduced by 30%.
The normal price of a TV set was £350.

Find the price of the TV set after the discounts have
been applied.

(Total for Question 1 is 3 marks)

2 Factorise fully $12x^2 - 27$

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(Total for Question 2 is 2 marks)

3 Make a the subject of $\frac{ar+5}{3r} = \frac{3a-4}{2}$

....
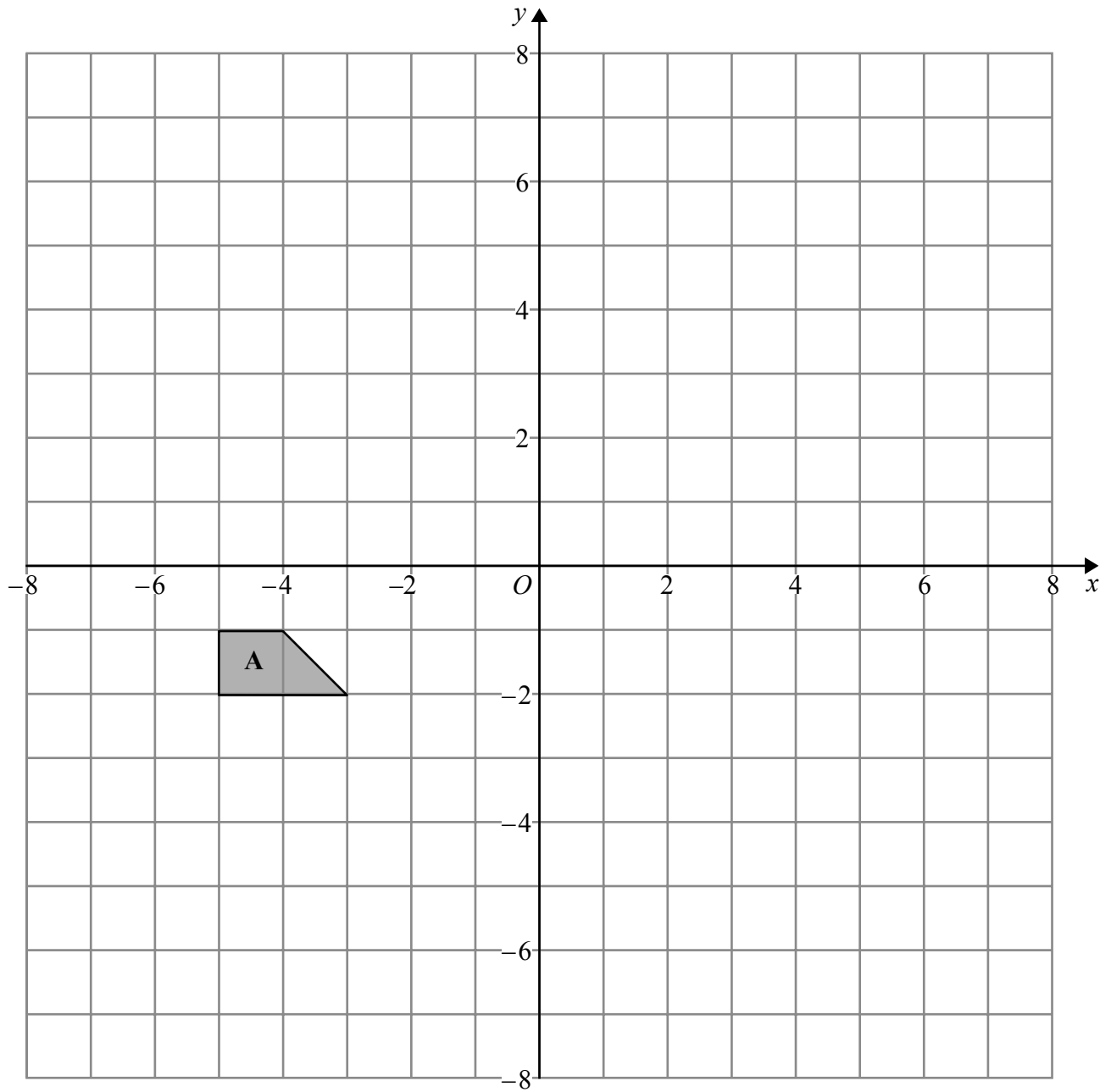
(Total for Question 3 is 3 marks)

4 Solid **A** and solid **B** are mathematically similar.
The ratio of the volume of solid **A** to the volume of solid **B** is 64:27

The surface area of solid **B** is 405 cm^2.

Show that the volume of solid **A** is 720 cm^2.

5 Solve $x^2 > 4x + 12$

6

(a) Enlarge shape **A** by scale factor −2, centre (0, 0)
Label your image **B**.

(2)

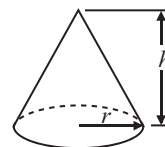(b) Describe fully the single transformation that will map shape **B** onto shape **A**.

....

(1)

(Total for Question 6 is 3 marks)

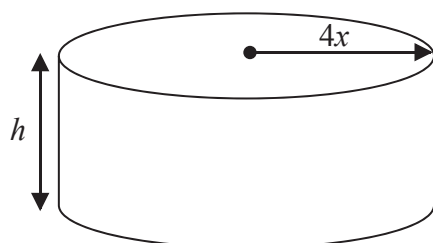**7** A solid is made by putting a hemisphere on top of a cone.
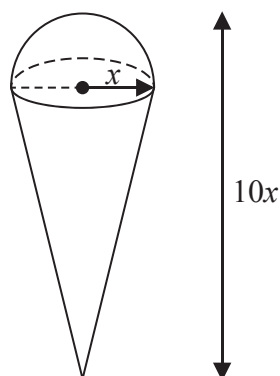
$$\textbf{Volume of cone} = \frac{1}{3}\pi r^2 h$$

$$\textbf{Volume of sphere} = \frac{4}{3}\pi r^3$$
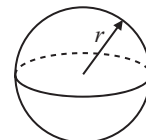
The total height of the solid is $10x$
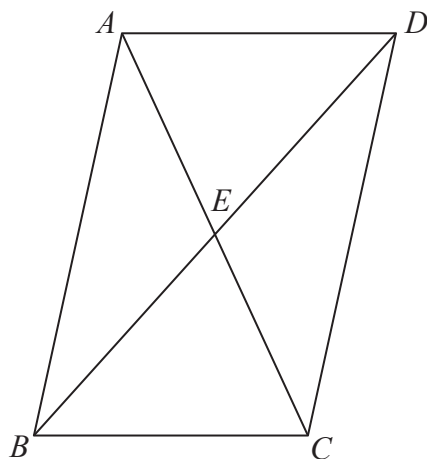The radius of the base of the cone is x
The radius of the hemisphere is x

A cylinder has the same volume as the solid.
The cylinder has radius $4x$ and height h.

All measurements are in centimetres.

Find a formula for h in terms of x
Give your answer in its simplest form.

....

(Total for Question 7 is 5 marks)

8 *ABCD* is a parallelogram.

E is the point where the diagonals *AC* and *BD* meet.

Prove that triangle *ADE* is congruent to triangle *CBE*.

(Total for Question 8 is 3 marks)

9 Mr Brown gives his class a test.
The 15 girls in the class get a mean mark of 70%
The 20 boys in the class get a mean mark of 80%

Find the mean mark for the whole class in the test.

(Total for Question 9 is 4 marks)

10 Show that $\frac{(2+\sqrt{8})(3-\sqrt{8})}{\sqrt{2}}$ simplifies to $2 - \sqrt{2}$

(Total for Question 10 is 2 marks)