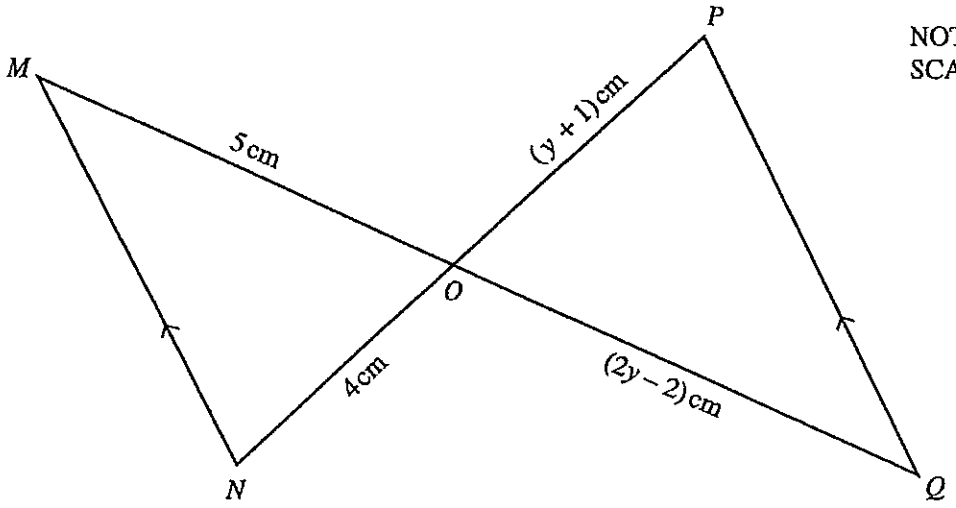
IGCSE – Similar length/area and volume - 3

Oct 01 Paper 4

3 **(a)**



NOT TO SCALE

In the diagram, MN and PQ are parallel and MQ and NP meet at O.

(i) Show that triangles MNO and QPO are similar. [2]

(ii) $OM = 5$ cm and $ON = 4$ cm. $OP = (y + 1)$ cm and $OQ = (2y - 2)$ cm.

Explain why $\frac{2y-2}{5} = \frac{y+1}{4}$. [1]

(iii) Solve the equation in **part (a)(ii)**. [3]

(iv) Find the length of NP. [1]

Oct 02 Paper 4

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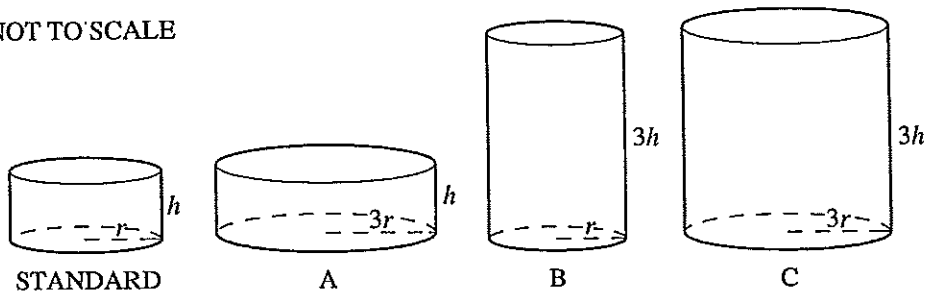
NOT TO SCALE



Sarah investigates cylindrical plant pots.
The standard pot has base radius r cm and height h cm.
Pot A has radius $3r$ and height h. Pot B has radius r and height $3h$. Pot C has radius $3r$ and height $3h$.

(a) **(i)** Write down the volumes of pots A, B and C in terms of π, r and h. [3]

(ii) Find in its lowest terms the ratio of the volumes of $A : B : C$. [2]

(iii) Which one of the pots A, B or C is mathematically similar to the standard pot?
Explain your answer. [2]

(iv) The surface area of the standard pot is $S\,\text{cm}^2$. Write down in terms of S the surface area of the similar pot. [2]

(b) Sarah buys a cylindrical plant pot with radius 15 cm and height 20 cm. She wants to paint its outside surface (base and curved surface area).

(i) Calculate the area she wants to paint. [2]

(ii) Sarah buys a tin of paint which will cover $30\,\text{m}^2$.
How many plant pots of this size could be painted on their outside surfaces **completely** using this tin of paint? [4]