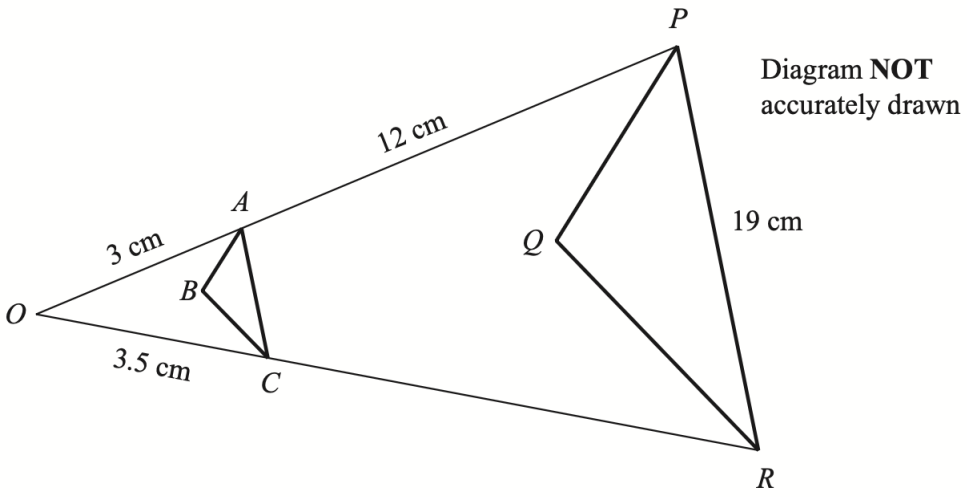
Dr Oliver Mathematics
Worked Examples
Mensuration 3

From: IGCSE 2012 June Paper 3H Q11: Calculator

1. Triangle PQR is an enlargement, centre O, of triangle ABC.



- OAP and OCR are straight lines.
- $OA = 3$ cm.
- $AP = 12$ cm.
- $OC = 3.5$ cm.
- $PR = 19$ cm.

(a) Work out the length of CR. (2)

Solution

Similar figures:

$$\frac{OP}{OA} = \frac{OR}{OC} \Rightarrow \frac{3+12}{3} = \frac{OR}{3.5}$$
$$\Rightarrow \frac{15}{3} = \frac{OR}{3.5}$$
$$\Rightarrow 5 = \frac{OR}{3.5}$$
$$\Rightarrow OR = 17.5$$
$$\Rightarrow \underline{\underline{CR = 14 \text{ cm}}}.$$

(b) Work out the length of AC. (3)

Solution

Similar figures:

$$\frac{AC}{OA} = \frac{PR}{OP} \Rightarrow \frac{AC}{3} = \frac{19}{15}$$
$$\Rightarrow AC = 3 \times \frac{19}{15}$$
$$\Rightarrow \underline{\underline{AC = 3.8 \text{ cm}}}.$$

The area of triangle ABC is 2 cm^2.

(c) Work out the area of triangle PQR. (2)

Solution

As we go from $\triangle\, OAB$ to $\triangle\, PQR$, we use a length scale ratio (LSR) of

$$\frac{15}{3} = 5.$$

Now, the area scale ratio (ASR) is

$$5^2 = 25.$$

Finally,

$$\text{area } PQR = 2 \times 25$$
$$= \underline{\underline{50 \text{ cm}^2}}.$$