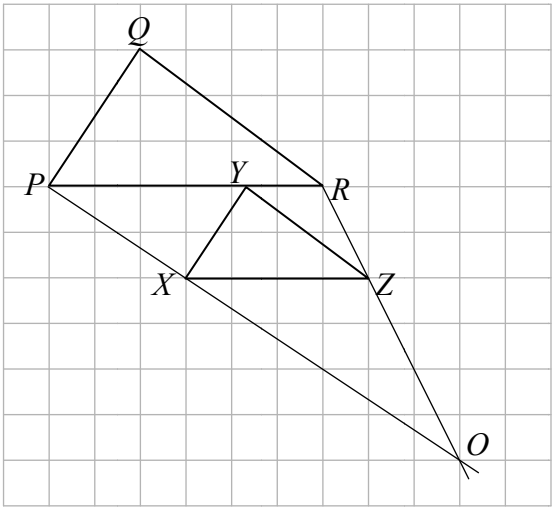
Question 4 **(25 marks)**

Two triangles are drawn on a square grid as shown. The points P, Q, R, X, and Z are on vertices of the grid, and the point Y lies on $[PR]$. The triangle PQR is an enlargement of the triangle XYZ.



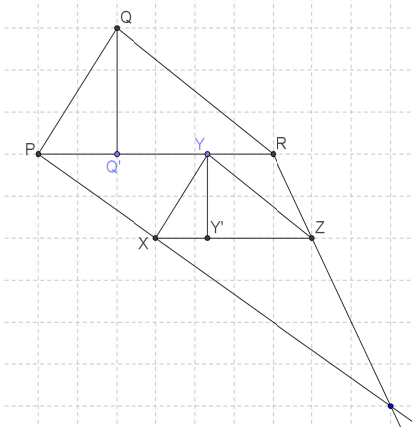
(a) Calculate the scale factor of the enlargement, showing your work.

$$\frac{|PR|}{|XZ|} = \frac{6}{4} = \frac{3}{2}$$

(b) By construction or otherwise, locate the centre of enlargement on the diagram above.

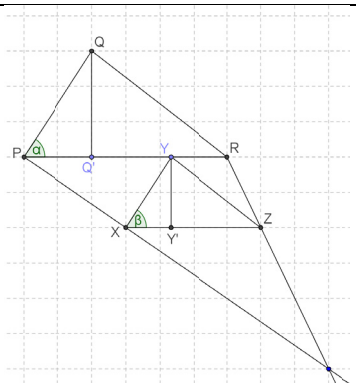
Shown as O above.

(c) Calculate $|YR|$ in grid units.



$$|Y'Z| = \frac{2}{3}|Q'R| = \frac{2}{3}(4) = \frac{8}{3}$$

$$|YR| = \frac{8}{3} - 1 = \frac{5}{3}$$



$$\tan\alpha = \frac{3}{2}$$

$$\alpha = \beta$$

$$\frac{2}{|XY'|} = \frac{3}{2}$$

$$|XY'| = \frac{4}{3}$$

$$|YR| = 3 - \frac{4}{3} = \frac{5}{3}$$