12

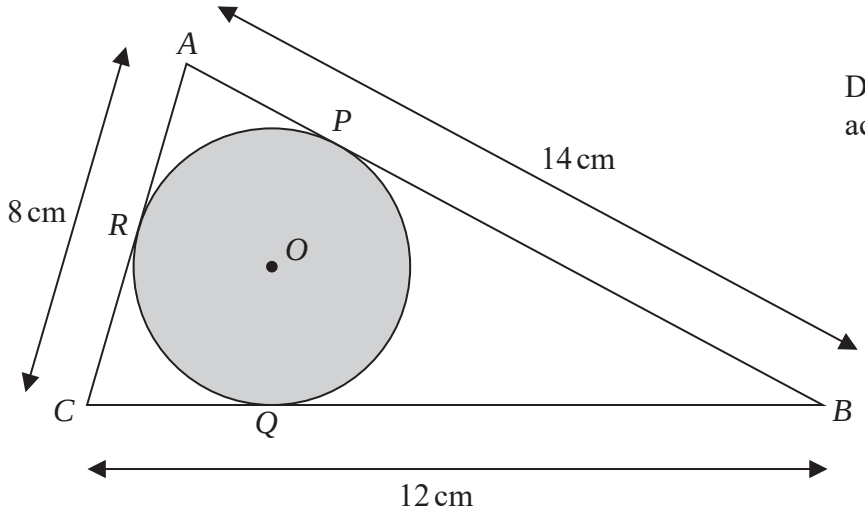

Diagram **NOT** accurately drawn

Figure 6

Figure 6 shows a triangle ABC and a circle PQR, centre O. The triangle is such that side AB is the tangent to the circle at P, side BC is the tangent to the circle at Q and side AC is the tangent to the circle at R. The region inside the circle is shaded, as shown in Figure 6.

$AB = 14$ cm, $BC = 12$ cm and $AC = 8$ cm.

Let $BP = x$ cm and by considering the lengths of the tangents to the circle,

(a) obtain an equation in x only and solve it to find the length, in cm, of BP.

(4)

(b) Find, to 3 significant figures, the area of the circle as a percentage of the total area of triangle ABC.

(7)

$$\left(\text{Cosine rule: } a^2 = b^2 + c^2 - 2bc\cos A \right)$$

$$\left(\text{Area of triangle} = \frac{1}{2}ab\sin C \right)$$

Question 12 continued

Question 12 continued

(Total for Question 12 is 11 marks)

TOTAL FOR PAPER IS 100 MARKS