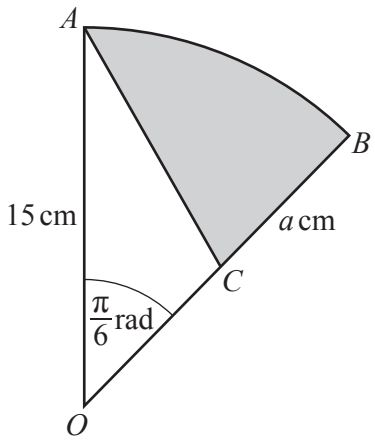
8



The diagram shows the sector AOB of a circle, centre O and radius 15 cm. Angle AOB is $\frac{\pi}{6}$ radians. Point C lies on OB such that CB is a cm. AC is a straight line.

(a) Find the exact value of a such that the area of triangle AOC is equal to the area of the shaded region ACB. [4]

(b) For the value of a found in **part (a)**, find the perimeter of the shaded region. Give your answer correct to 1 decimal place. [3]