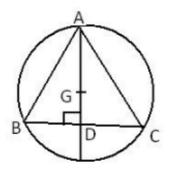Exercise 11A

Question 19:

Let △ABC be an equilateral triangle of side 9 cm.

Let AD be one of its medians.

Then, $\quad\quad\quad AD \perp BC$

and $\quad\quad\quad BD = \dfrac{1}{2} \times BC$

$\quad\quad\quad\quad\quad = \left(\dfrac{1}{2} \times 9\right) cm = 4.5\ cm.$

∴ In right angled △ADB,

$\quad\quad\quad AB^2 = AD^2 + BD^2$

⇒ $\quad\quad\quad AD^2 = AB^2 - BD^2$

⇒ $\quad\quad\quad AD = \sqrt{AB^2 - BD^2}$

$\quad\quad\quad\quad = \sqrt{(9)^2 - \left(\dfrac{9}{2}\right)^2}\ cm = \dfrac{9\sqrt{3}}{2}\ cm$

In an equilateral triangle, the centroid and circumcentre coincide and AG : GD = 2 : 1

∴ $\quad\quad\quad$ radius $AG = \dfrac{2}{3} AD$

$\quad\quad\quad\quad = \left(\dfrac{2}{3} \times \dfrac{9\sqrt{3}}{2}\right) cm = 3\sqrt{3}\ cm$

∴ The radius of the circle is $3\sqrt{3}$ cm.

********** END *********