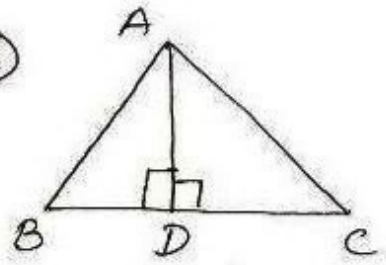
(16)



given - In $\triangle ABC$
$AB = BC = CA$,
$AD \perp BC$

to prove $3AB^2 = 4AD^2$

proof - In $\triangle ABC$, $AD \perp BC$

$\therefore BD = CD$ ---(1) [In an equi. $\triangle$ al. is also median]

In rt $\triangle ADB$

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

$= AD^2 + \left(\frac{BC}{2}\right)^2$ [using (i)]

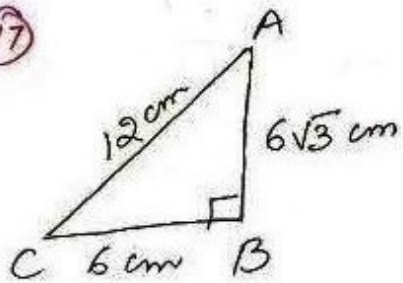
$AB^2 = AD^2 + \frac{BC^2}{4}$

$AB^2 = AD^2 + \frac{AB^2}{4}$ [$\because AB = BC$]

$(\times 4)$ $4AB^2 = 4AD^2 + AB^2$

$\Rightarrow 3AB^2 = 4AD^2$

(17)



$AC^2 = 12^2$

$= 144$

$AB^2 + BC^2 = (6\sqrt{3})^2 + 6^2$

$= 108 + 36$

$= 144$

$\because AC^2 = AB^2 + BC^2$

$\therefore$ ABC is a right $\triangle$ by converse of pythagoras theorem.

$\angle B = 90^\circ$ (C)