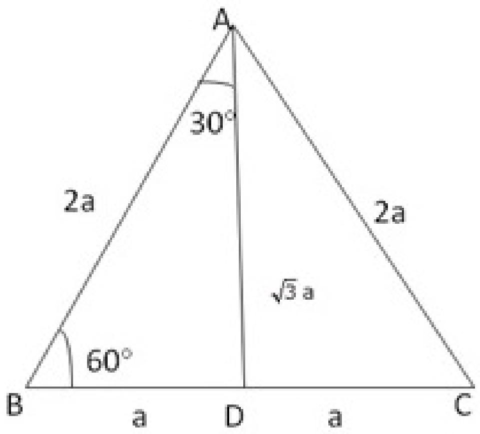
Question 26:



$\therefore \angle A = \angle B = \angle C = 60^\circ$

Draw $AD \perp BC$

In ΔABD and ΔACD,

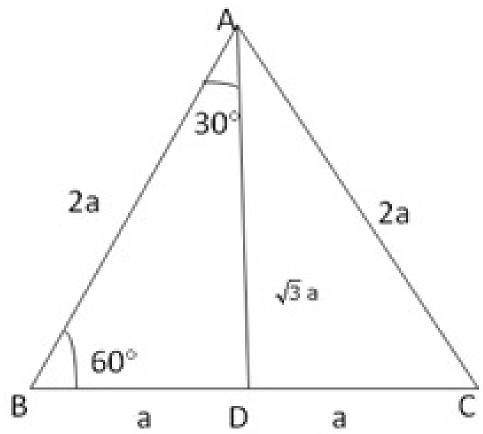
$AD = AD$	(common)
$\angle ADB = \angle ADC$	(90°)
$AB = AC$	(ΔABC is an equilateral triangle)
$\therefore \Delta ABD \cong \Delta ACD$	(RHS congurence criterion)
$BD = DC$	(cpct)
$\angle BAD = \angle CAD$	(cpct)

$\therefore BD = \frac{2a}{2} = a$ and $\angle BAD = \frac{60^\circ}{2} = 30^\circ$

In ΔABD,

$\sin 30^\circ = \frac{BD}{AB} = \frac{a}{2a} = \frac{1}{2}$

Question 27:



$\therefore \angle A = \angle B = \angle C = 60°$

Draw $AD \perp BC$

In ΔABD and ΔACD,

$AD = AD$ (common)

$\angle ADB = \angle ADC$ $(90°)$

$AB = AC$ (ΔABC is an equilateral triangle)

$\therefore \Delta ABD \cong \Delta ACD$ (RHS congurence criterion)

$BD = DC$ (cpct)

$\angle BAD = \angle CAD$ (cpct)

$\therefore BD = \frac{2a}{2} = a$ and $\angle BAD = \frac{60°}{2} = 30°$

In ΔABD, $\angle D = 90°$

By Pythagoras theorem,

$AB^2 = BD^2 + DA^2$

$\therefore DA^2 = AB^2 - BD^2$

$DA^2 = (2a)^2 - a^2$

$= 4a^2 - a^2 = 3a^2$

$\therefore DA = AD = \sqrt{3}\,a$

In ΔABD,

$\sin 60° = \frac{AD}{DB} = \frac{\sqrt{3}\,a}{2a} = \frac{\sqrt{3}}{2}$

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