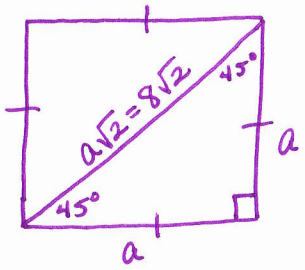
NOTES 9.2: $45° - 45° - 90°$ & $30° - 60° - 90°$ **TRIANGLES**

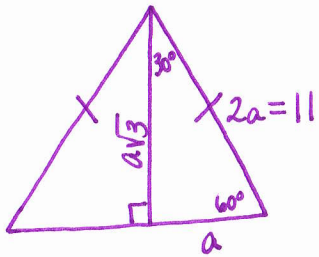
EXAMPLE 1: The length of the diagonal of a square is $8\sqrt{2}$. Find the length of one side of the square.



$a\sqrt{2} = 8\sqrt{2}$

$a = 8$

EXAMPLE 2: The length of one side of an equilateral triangle is 11. Find the length of the altitude.

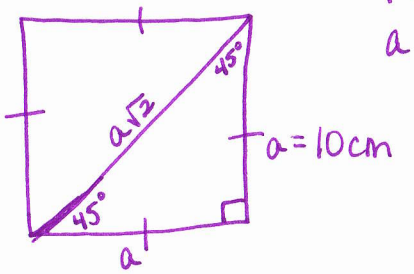


$2a = 11$

$a = \frac{11}{2}$

$a\sqrt{3} = \frac{11}{2}\sqrt{3}$ OR $\frac{11\sqrt{3}}{2}$

EXAMPLE 3: The perimeter of a square is 40 cm. Find the length of the diagonal.

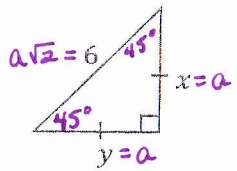


$P = 40\text{cm}$

$a = \frac{40}{4} = 10$

$a\sqrt{2} = 10\sqrt{2}\,\text{cm}$

EXAMPLE 4: Find 'x' and 'y'.



$(\sqrt{2})\,a\sqrt{2} = 6(\sqrt{2})$

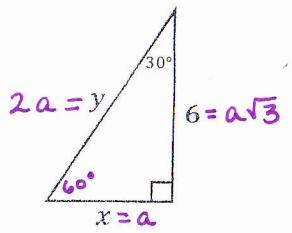
$\frac{2a}{2} = \frac{6\sqrt{2}}{2}$

$a = 3\sqrt{2}$

$x = 3\sqrt{2}$

$y = 3\sqrt{2}$

EXAMPLE 5: Find 'x' and 'y'.



$(\sqrt{3})\,a\sqrt{3} = 6(\sqrt{3})$

$\frac{3a}{3} = \frac{6\sqrt{3}}{3}$

$a = 2\sqrt{3}$

$2a$

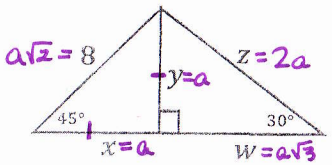
$2(2\sqrt{3})$

$4\sqrt{3}$

$x = 2\sqrt{3}$

$y = 4\sqrt{3}$

EXAMPLE 6: Find the values of 'w', 'x', 'y', and 'z'.



$(\sqrt{2})\,a\sqrt{2} = 8(\sqrt{2})$

$\frac{2a}{2} = \frac{8\sqrt{2}}{2}$

$a = 4\sqrt{2}$

$a\sqrt{3}$

$4\sqrt{2}(\sqrt{3})$

$4\sqrt{6}$

$2a$

$2(4\sqrt{2})$

$8\sqrt{2}$

$x = 4\sqrt{2}$

$y = 4\sqrt{2}$

$w = 4\sqrt{6}$

$z = 8\sqrt{2}$