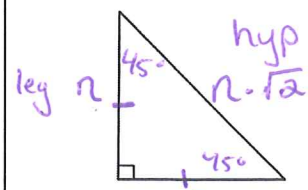
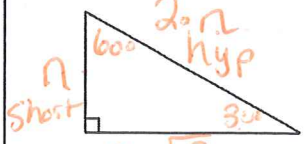
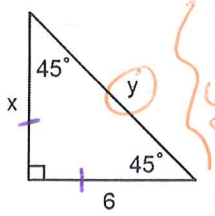
Geometry - 7.3 - Special Right Triangles

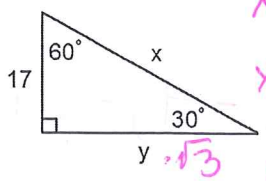
45° - 45° - 90° Triangles	30° - 60° - 90° Triangle
 Ratio 1 : 1 : √2 (leg, leg, hyp)	 Ratio 1 : √3 : 2 (short, long, hyp)

Ex 1 - Find x and y.

a) 

$x = 6$

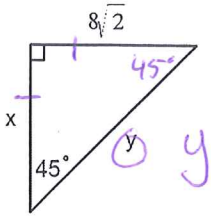
$y = 6 \cdot \sqrt{2}$

b) 

$x = 2 \cdot 17$

$x = 34$

$y = 17 \cdot \sqrt{3}$

c) 

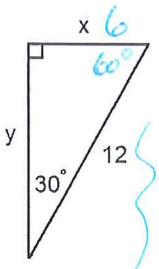
$x = 8\sqrt{2}$

$y = 8\sqrt{2} \cdot \sqrt{2}$

$= 8 \cdot \sqrt{4}$

$= 8 \cdot 2$

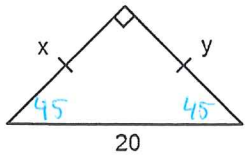
$= 16$

d) 

$x = \frac{12}{2}$

$x = 6$

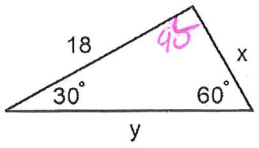
$y = 6 \cdot \sqrt{3}$

e) 

$x = \frac{20}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{20\sqrt{2}}{\sqrt{4}} = \frac{20\sqrt{2}}{2}$

$x = 10\sqrt{2}$

$y = 10\sqrt{2}$

f) 

$x = \frac{18}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{18\sqrt{3}}{\sqrt{9}}$

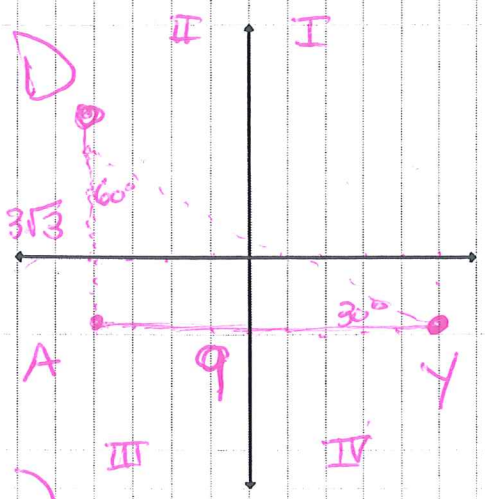
$\frac{18\sqrt{3}}{3} = 6\sqrt{3}$

$x = 6\sqrt{3}$

$y = 6\sqrt{3} \cdot 2$

$= 12\sqrt{3}$

Ex 2 - Triangle DAY is a 30°-60°-90° triangle with right angle A. $\overline{AY}$ is the longer leg with endpoints A(-4, -2) and Y(5, -2). Locate point D in Quadrant II.



$$\text{long leg} = \frac{9}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{9\sqrt{3}}{\sqrt{9}}$$

$$\frac{9\sqrt{3}}{3} = 3\sqrt{3}$$

$D(-4, -2 + 3\sqrt{3})$

$\approx (-4, 3.20)$