Geometry

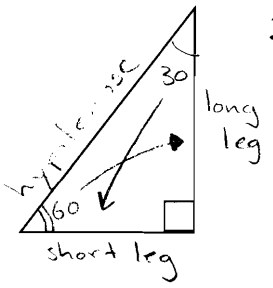
Unit 7 Lesson 3: **30-60-90 Δ's**

Name: Mr Sirimanne

Date: Per: 1 2 3 4 5 6

Steps and Hints:

1. Set up Proportions to find the short Leg first
2. Multiple by 2 for Hypotenuse
3. Multiply by √3 for long leg

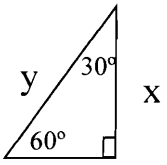


30-60-90 Δ's

$1 : \sqrt{3} : 2$

short leg : long leg : hypotenuse

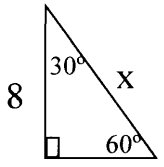
Ex 1) Solve for x and y



$y = 12$

$x = 6\sqrt{3}$

Ex 2) Solve for x and y



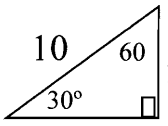
$\frac{1}{\sqrt{3}} = \frac{y}{8}$

$\sqrt{3}y = 8 \cdot \frac{\sqrt{3}}{\sqrt{3}} \cdot \sqrt{3}$

$y = \frac{8\sqrt{3}}{3}$

$x = \frac{16\sqrt{3}}{3}$

Ex 3) Solve for x and y



$\frac{1}{2} = \frac{x}{10}$

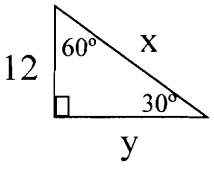
$10 = 2x$

$x = 5$

$x = 5$

$y = 5\sqrt{3}$

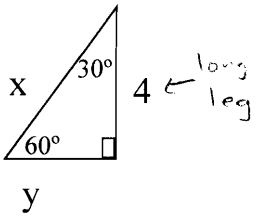
Ex 4) Solve for x and y



$x = 24$

$y = 12\sqrt{3}$

Ex 5) Solve for x and y



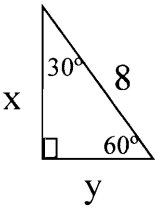
$\frac{1}{\sqrt{3}} = \frac{y}{4}$

$4 = \frac{\sqrt{3} \cdot y}{\sqrt{3}}$

$y = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$y = \frac{4\sqrt{3}}{3} \rightarrow x = \frac{8\sqrt{3}}{3}$

Ex 6) Solve for x and y



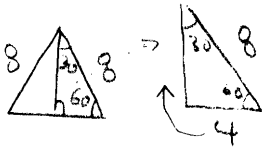
Short leg is half of the hypotenuse

$y = 4$

$x = 4\sqrt{3}$

Word Problems:

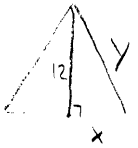
Ex 7) What is the length of the altitude of an equilateral triangle whose perimeter is 24?



the long leg is the altitude.

$4\sqrt{3}$

Ex 8) Find the length f the side of an equilateral triangle whose side length is 12.



$\frac{1}{\sqrt{3}} = \frac{x}{12}$

$\frac{12}{\sqrt{3}} = \frac{x\sqrt{3}}{\sqrt{3}}$

$x = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3} = 4\sqrt{3}$

We need the short leg first. Well we could do the hypotenuse first, but it's easier this way.

$8\sqrt{3}$