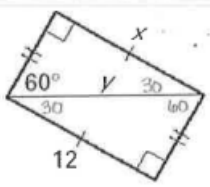
Honors Geometry Name Key

Practice Worksheet (Special Right Triangles)

Determine value of each variable as a simplified radical:

1.

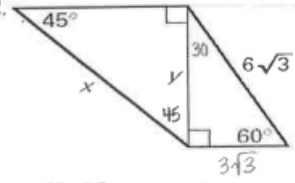


$y = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3}$

$= 4\sqrt{3} \cdot 2 = 8\sqrt{3}$

x = 12 y = $8\sqrt{3}$

2.



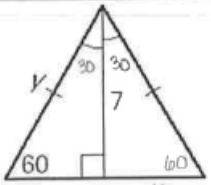
$y = 3\sqrt{3} \cdot \sqrt{3}$

$= 3 \cdot 3 = 9$

$x = 9\sqrt{2}$

x = $9\sqrt{2}$ y = 9

3.

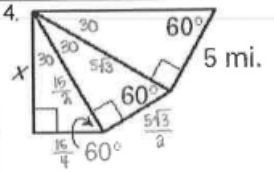


$x = \frac{7}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{7\sqrt{3}}{3}$

$y = 2 \cdot \frac{7\sqrt{3}}{3} = \frac{14\sqrt{3}}{3}$

x = $\frac{7\sqrt{3}}{3}$ y = $\frac{14\sqrt{3}}{3}$

4.



$\frac{5\sqrt{3}}{2} \cdot \frac{\sqrt{3}}{1} = \frac{5 \cdot 3}{2} = \frac{15}{2}$

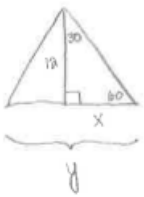
$\frac{15}{2} \cdot \frac{1}{2} = \frac{15}{4}$

$x = \frac{15}{4} \cdot \frac{\sqrt{3}}{1} = \frac{15\sqrt{3}}{4}$

x=

Draw a picture to represent and solve each of the following:

5. The altitude of an equilateral triangle is 12 centimeters. Find the perimeter of the triangle.



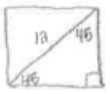
$x = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

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

$y = 4\sqrt{3} \cdot 2 = 8\sqrt{3} \cdot 3$

$= 24\sqrt{3}$ cm

6. The diagonal of a square is 12 inches. Find the area.

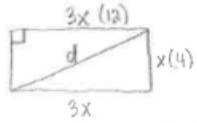


$x = \frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$

Area $= (6\sqrt{2})^2$

$= 36 \cdot 2 = 72\ in^2$

7. The perimeter of a rectangle is 32 feet. The length is three times as long as the width. Find the length of the diagonal.



$3x + 3x + x + x = 32$

$6x + 2x = 32$

$8x = 32$ $x = 4$

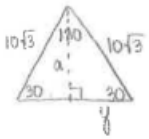
$12^2 + 4^2 = d^2$

$144 + 16 = d^2$

$d^2 = 160$

$d = \sqrt{160}$ $\sqrt{16}\sqrt{10}$ $d = 4\sqrt{10}$

8. The legs of an isosceles triangle are $10\sqrt{3}$ cm long. The vertex angle has a measure of 120. Find the length of the base of the triangle and the length of the altitude from the vertex.



$a = \frac{10\sqrt{3}}{2} = 5\sqrt{3}$

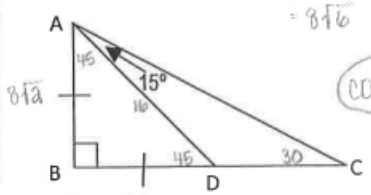
$y = 5\sqrt{3} \cdot \sqrt{3}$

$= 5 \cdot 3 = 15$

Base $= 15 \cdot 2$

$= 30$

9. Find CD if AD = 16.



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

$= 8\sqrt{4}$

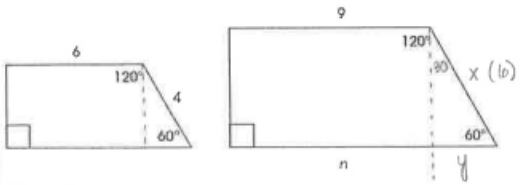
$CD = 8\sqrt{4} - 8\sqrt{2}$

$BD = \frac{16}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$= \frac{16\sqrt{2}}{2} = 8\sqrt{2}$

10. Show work.

Similar trapezoids are shown.



What is the value of n?

A. 10

B. 12

C. 15

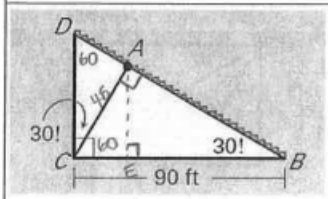
D. 19

$\frac{6}{9} = \frac{4}{x}$ $6x = 36$ $x = 6$

$y = \frac{6}{2} = 3$

$n = 9 + 3 = 12$

11. A fan at a sporting event is sitting at point *A* in the bleachers. The bleacher seating has an angle of elevation of 30° and a base length of 90 feet.



a. Find the height *CD* of the bleachers.

$CD = \frac{90}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$= \frac{90\sqrt{3}}{3}$

$= 30\sqrt{3}$

b. Find the distance *AB* that the fan is sitting from the base, point *B*.

$AC = \frac{90}{2} = 45$

$AB = 45\sqrt{3}$

c. Find the height of the fan sitting at point *A* from the ground, $\overline{BC}$

$CE = \frac{45}{2}$

$AE = \frac{45\sqrt{3}}{2}$