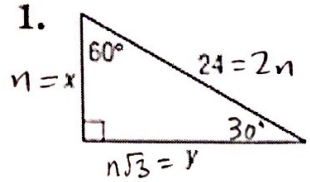
Geometry 3313 **Name:** Key

10.2 Special Right Triangles HW – Day 2

Find the exact (reduced radical form) value of x and y.

1.



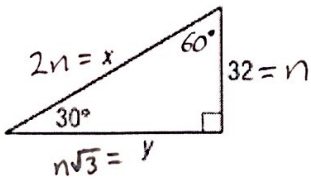
$2n = 24$

$n = 12$

$x = 12$

$y = 12\sqrt{3}$

2.



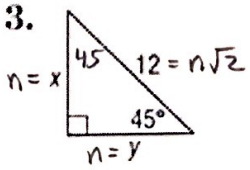
$n = 32$ $x = 2(32)$

$x = 64$

$y = n\sqrt{3}$

$y = 32\sqrt{3}$

3.



$\frac{n\sqrt{2}}{\sqrt{2}} = \frac{12}{\sqrt{2}}$

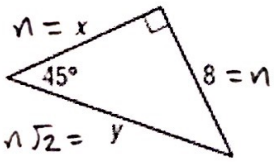
$n = \frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$n = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$

$x = 6\sqrt{2}$

$y = 6\sqrt{2}$

4.

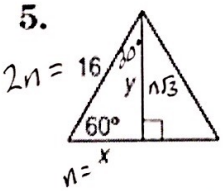


$n = 8$

$x = 8$

$y = 8\sqrt{2}$

5.



$2n = 16$

$n = 8$

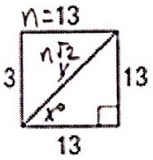
$x = 8$

$y = n\sqrt{3}$

$y = 8\sqrt{3}$

6.

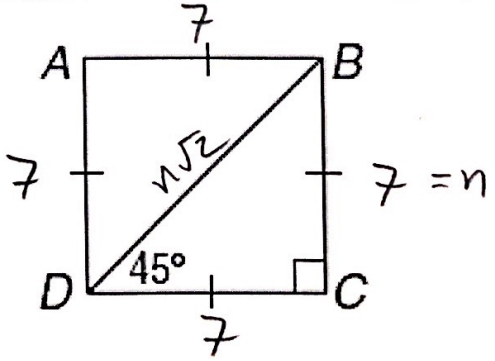
$x = 45°$



$n = 13$ $y = n\sqrt{2}$

$y = 13\sqrt{2}$

Solve each problem using the square to the right.



7. The perimeter of ABCD is 28 inches. Find BC.

$\frac{28}{4} =$ 7 in

8. The perimeter of ABCD is 28 inches. Find BD.

$n = 7$ $BD = n\sqrt{2}$

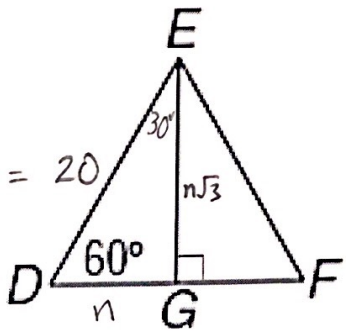
$BD = 7\sqrt{2}$ in

Solve each problem using the equilateral to the right.

9. The perimeter of EFD is 60 meters. Find EG.

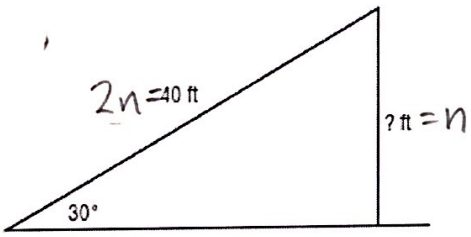
$\frac{60}{3} = 20$ $\quad 2n = 20$ $\quad n = 10$ $\quad EG = n\sqrt{3}$

$EG = 10\sqrt{3}$ meters



Solve each problem.

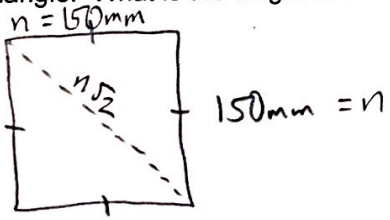
10. A 40-foot-long escalator rises from the first floor to the second floor of a shopping mall. The escalator makes a 30° angle with the horizontal. How high above the first floor is the second floor?



$2n = 40$ ft

$n = 20$ ft

11. A square piece of paper 150 mm on a side is folded along a diagonal. The result is a 45-45-90 triangle. What is the length of the hypotenuse of this triangle?

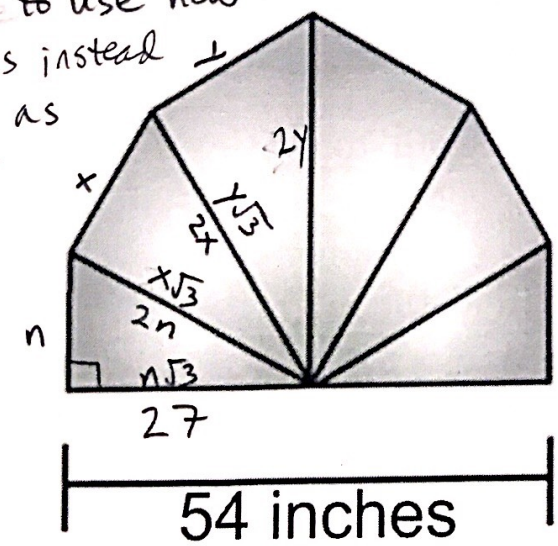


$n = 150$

$n\sqrt{2} = 150\sqrt{2}$ mm

12. A large stained glass window is constructed from six 30°-60°-90° triangles as shown in the figure below. What is the height of the window?

I had to use new variables instead of n as I went around



54/2 = 27

$n\sqrt{3} = 27$

$\frac{n\sqrt{3}}{\sqrt{3}} = \frac{27}{\sqrt{3}}$

$n = \frac{27}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$n = \frac{27\sqrt{3}}{3}$

$n = 9\sqrt{3}$

$2n = 2(9\sqrt{3})$

$2n = 18\sqrt{3}$

$x\sqrt{3} = 2n$

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

$x = 18$

$2x = 36$

$y\sqrt{3} = 2x$

$2y = 24\sqrt{3}$

$\frac{y\sqrt{3}}{\sqrt{3}} = \frac{36}{\sqrt{3}}$

$y = \frac{36}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$y = \frac{36\sqrt{3}}{3} = 12\sqrt{3}$