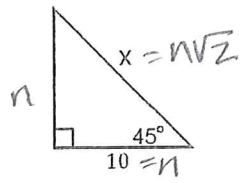
Geometry 3313
10.2 Special Right Triangles Homework Day 1

Name: Key

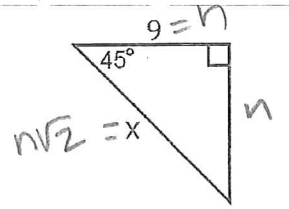
For #1 – 6, find the value of x in the isosceles triangle. Leave answers in simplest radical form.

1.



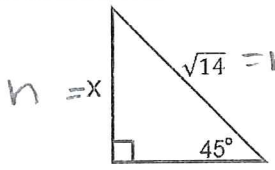
x = $10\sqrt{2}$

2.



x = $9\sqrt{2}$

3.



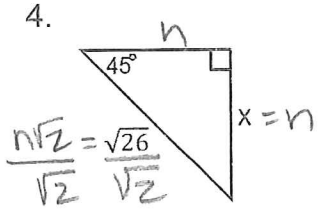
$\frac{\sqrt{14}}{\sqrt{2}} = \frac{n\sqrt{2}}{\sqrt{2}}$

$\sqrt{\frac{14}{2}} = n$

$\sqrt{7} = n$

x = $\sqrt{7}$

4.



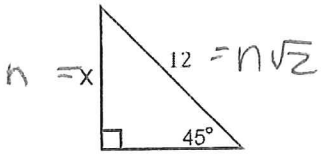
$\frac{n\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{26}}{\sqrt{2}}$

$n = \sqrt{\frac{26}{2}}$

$n = \sqrt{13}$

x = $\sqrt{13}$

5.



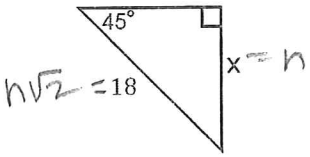
$\frac{12}{\sqrt{2}} = \frac{n\sqrt{2}}{\sqrt{2}}$

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

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

x = $6\sqrt{2}$

6.



$\frac{n\sqrt{2}}{\sqrt{2}} = \frac{18}{\sqrt{2}}$

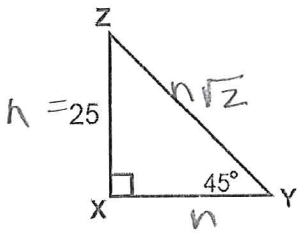
$n = \frac{18}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$n = \frac{18\sqrt{2}}{2}$

x = $9\sqrt{2}$

For #7 – 12, find the missing side lengths. Leave answers in simplest radical form.

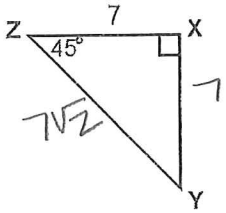
7.



XY = 25

YZ = $25\sqrt{2}$

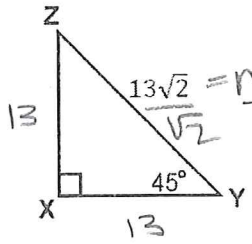
8.



XY = 7

YZ = $7\sqrt{2}$

9.

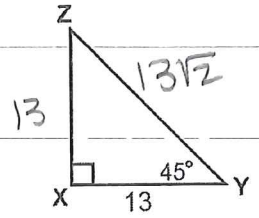


n = 13

XY = 13

XZ = 13

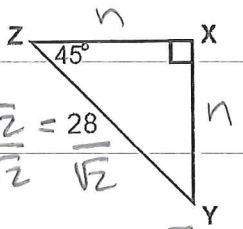
10.



XZ = 13

YZ = 13√2

11.



$\frac{n\sqrt{2}}{\sqrt{2}} = \frac{28}{\sqrt{2}}$

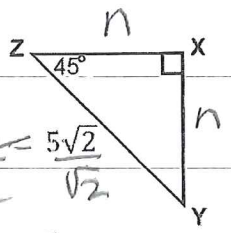
$n = \frac{28}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$n = \frac{28\sqrt{2}}{2}$

XZ = 14√2

YZ = 14√2

12.



$\frac{n\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{\sqrt{2}}$

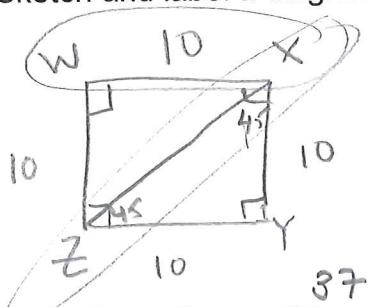
n = 5

XY = 5

XZ = 5

For # 13 – 14, use your Special Right Triangle Relationships to find the missing lengths. Leave your answers in simplest radical form.

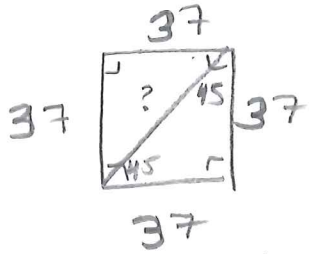
13. WXYZ is a square with a perimeter of 40 inches. Find the length of segments WX and XZ. Sketch and label a diagram.



WX ~~BC~~ = 10

XZ ~~BD~~ = 10√2

14. A square piece of paper ~~17~~ 37 cm on a side is folded along a diagonal. What is the length of the diagonal? Sketch and label a diagram.



$37\sqrt{2}$

15. Could we have used the Pythagorean Theorem to find the side lengths of the missing sides in numbers 1 through 6 of this handout? Explain.

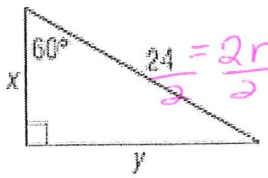
No. In order to have used Pythagorean Theorem, we would have needed to know 2 side lengths.

Geometry 3313
10.2 Special Right Triangles HW – Day 2

Name: Key

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

1.

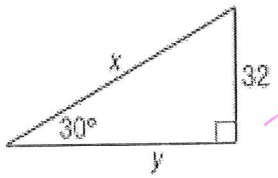


$\frac{24}{2} = \frac{2n}{2}$ $n = 12$

$x = 12$

$y = 12\sqrt{3}$

2.

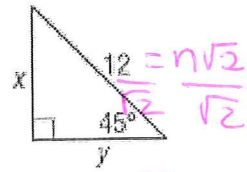


$32 = n$

$y = 32\sqrt{3}$

$x = 64$

3.



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

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

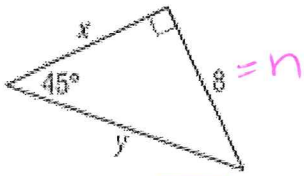
$n = \frac{12\sqrt{2}}{2}$

$n = 6\sqrt{2}$

$x = 6\sqrt{2}$

$y = 6\sqrt{2}$

4.

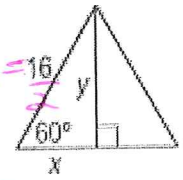


$8 = n$

$x = 8$

$y = 8\sqrt{2}$

5.



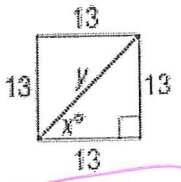
$\frac{2n}{2} = \frac{16}{2}$

$n = 8$

$x = 8$

$y = 8\sqrt{3}$

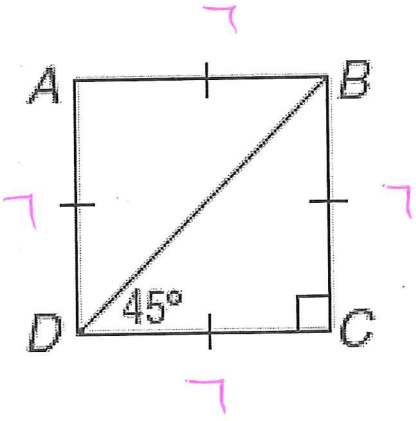
6.



$x = 45°$

$y = 13\sqrt{2}$

Solve each problem using the square to the right.



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

7 inches

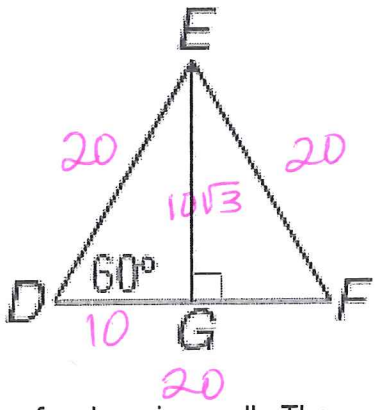
8. The perimeter of ABCD is 28 inches. Find BD.

$7\sqrt{2}$ inches

Solve each problem using the equilateral to the right.

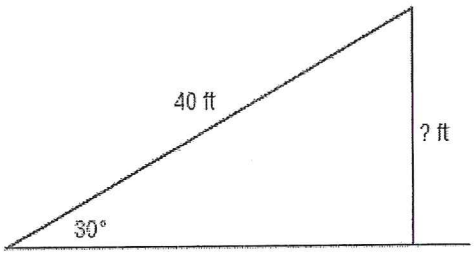
9. The perimeter of EFD is 60 meters. Find EG.

$EG = 10\sqrt{3}$ m



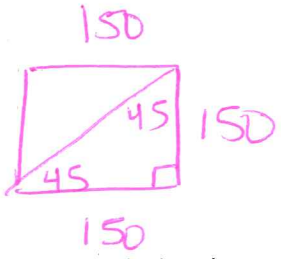
Solve each problem.

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?



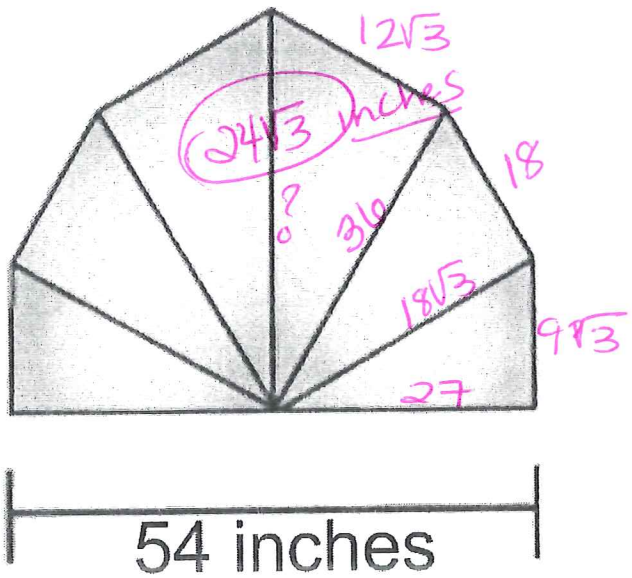
20 ft.

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?



$150\sqrt{2}$ 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?



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

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

$n = \frac{27}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{27\sqrt{3}}{3} = 9\sqrt{3}$

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

$n = \frac{36}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{36\sqrt{3}}{3} = 12\sqrt{3}$