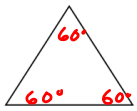
Learning Targets

10.2 Special Right Triangles

I can use the relationships among the side lengths of a 45-45-90 and 30-60-90 triangle to solve for unknown side lengths.

Homework - 10.2 Special Right Triangles Day 1 HW

Suppose the triangle below is an **equilateral triangle**. Answer each of the following questions.



a. What is true about the sides of the triangle?

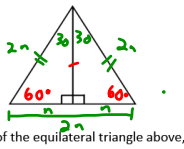
They are all congruent

b. What are the angle measurements of the triangle? Label them on the triangle.

60°

c. If we divide the equilateral triangle above into two triangles as shown below, which congruence theorem or postulate would prove that the two triangles are congruent?

SAA



d. If we consider only half of the equilateral triangle above, what would be the angle measurements be in this triangle? Label them on the triangle.

If we call the hypotenuse of the triangle "2n", solve for the other two sides of the triangle.

$n^2 + b^2 = (2n)^2$

$n^2 + b^2 = 4n^2$

$-n^2 \quad -n^2$

$b^2 = 3n^2$

$b = \sqrt{3n^2}$

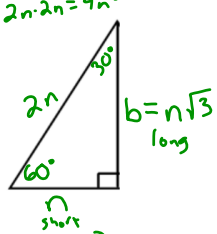
$b = n\sqrt{3}$

$\sqrt{3n^2}$

$3 \quad n^2$

$n \cdot n$

$2n \cdot 2n = 4n^2$



Hyp. = 2 · short leg

Long = short · √3

Section 10.2
Special Right Triangles

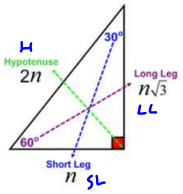
30° – 60° – 90° Triangle Theorem

H = 2·SL

Hypotenuse = 2 · Short Leg

Long Leg = Short Leg · $\sqrt{3}$

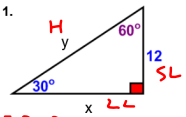
LL = SL·√3



Examples

Find the value of each variable. If necessary, leave your answer in simplest radical form.

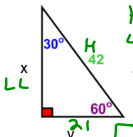
1.



H = 2·SL
y = 2·12
y = 24

LL = SL·√3
x = 12·√3
x = 12√3

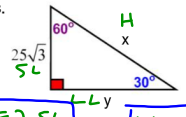
2.



H = 2·SL
42 = 2·y
21 = y

LL = SL·√3
x = 21√3

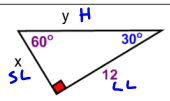
3.



H = 2·SL
x = 2·25√3
x = 50√3

LL = SL·√3
y = 25√3·√3
y = 25·3
y = 75

* 4.

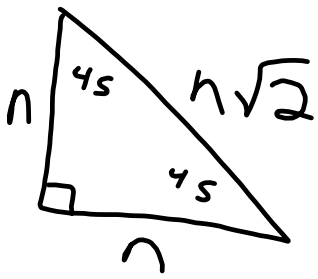


H = 2·SL
y = 2·4√3
y = 8√3

LL = SL·√3
$\frac{12}{\sqrt{3}} = \frac{x\sqrt{3}}{\sqrt{3}}$

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

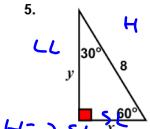
$\frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3} = 4\sqrt{3} = x$



Hyp = Leg·√2

Solve for the variables using Special Right Triangle Relationships. Leave your answers in simplest radical form.

5.



LL H

H = 2 · SL

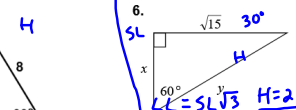
8 = 2x

4 = x

LL = SL · √3

y = 4√3

6.



LL

SL

LL = SL√3

√15 = x√3

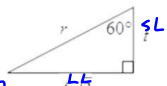
√15/√3 = x

√5 = x

H = 2 · SL

y = 2 · √5

7. H



LL

H = 2 · SL

r = 2 · 5

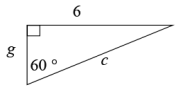
r = 10

LL = SL · √3

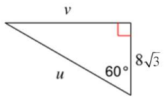
5√3/√3 = t√3/√3

5 = t

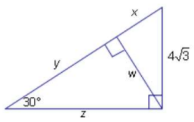
8.



9.



10. Solve for the variables:



11. The perimeter of an equilateral triangle is 36 centimeters. Find the length of the altitude of the triangle.

Learning Targets

10.2 Special Right Triangles

I can use the relationships among the side lengths of a 45-45-90 and 30-60-90 triangle to solve for unknown side lengths.

Homework - 10.2 Special Right Triangles Day 2 HW

Warm-Up (Day 3 of Special Right Triangles)

1. Explain the relationships of the sides in a 45-45-90 right triangle. Use equations and words in your explanation.

2. Explain the relationships of the sides in a 30-60-90 right triangle. Use equations and words in your explanation.

Get out your notes for 45-45-90 and 30-60-90.

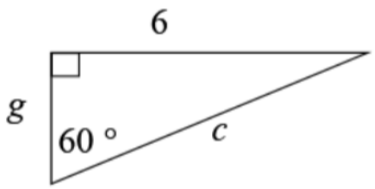
Get out your 45-45-90 Special Right Triangles notes. Complete #11.

For # 10 – 11, use your Special Right Triangle Relationships to find the missing lengths. Leave your answers in simplest radical form.

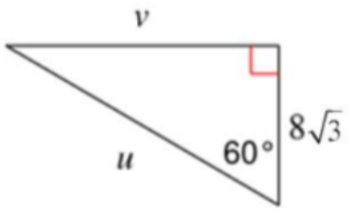
11. A square piece of paper 17 cm on a side is folded along a diagonal. What is the length of the diagonal? Sketch and label a diagram.

Get out your 30-60-90 Special Right Triangles notes. Complete #'s 8 and 9.

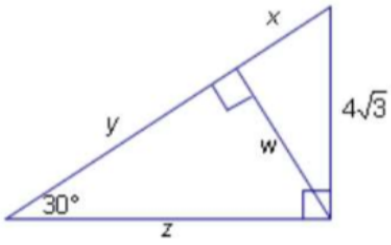
8.



9.



10. Solve for the variables:



11. The perimeter of an equilateral triangle is 36 centimeters. Find the length of the altitude of the triangle.

HW Check on Monday

10.3 Word Problems

10.2 { 45-45-90 (Day 1) / 30-60-90 (Day 2) } Do the rest of the unassigned problems for Tuesday

10.2 Day 3