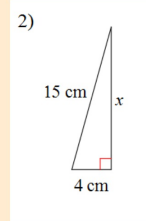


Warm-up: Use the Pythagorean Theorem to find the length of the missing side.

1. Label each side.
2. Plug into Pythagorean Theorem.
3. Solve for unknown.

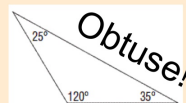
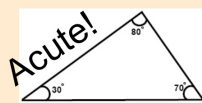


$$\begin{aligned}x^2 + 4^2 &= 15^2 \\x^2 + 16 &= 225 \\x^2 &= 109 \\x &= \sqrt{109}\end{aligned}$$

Class Plan:

1. Warm-up
2. Investigation: Converse of the Pythagorean Theorem

Classify Triangles



3. Practice

We've learned...

Pythagorean Theorem

If there is a right triangle, then $a^2 + b^2 = c^2$

Today we will learn...

Converse of the Pythagorean Theorem

If $a^2 + b^2 = c^2$, then it is a right triangle.

Pythagorean Theorem Rap

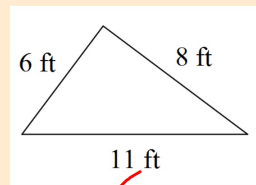
<https://www.youtube.com/watch?v=nbopLhP4kpo>

Converse of Pythagorean Theorem

1. Label each sides $a^2 + b^2 = c^2$
(remember...longest side length is "C")
2. Plug into Pythagorean Theorem...

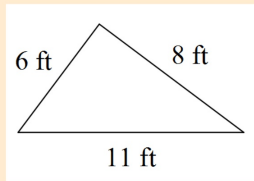
What do we notice?

$$\begin{array}{l} 6^2 + 8^2 \not= 11^2 \\ 36 + 64 \not= 121 \\ 100 < 121 \\ 100 < 121 \end{array}$$



Not right

Objective: Classify Triangles using Pythagorean Theorem



If this isn't a right triangle...

What kind of triangle is it????

Classifying Triangles by Angles

Right Triangle:

A triangle with a right angle (90°). *Draw Δ 's*

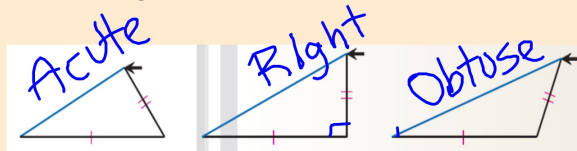
Acute Triangle:

A triangle with all three angles less than 90° .

Obtuse Triangle:

A triangle with one obtuse angle (greater than 90°) and two acute angles.

Label Triangles Below: (2 sides remain congruent)



Investigation:

Converse of the Pythagorean Theorem

Do: Investigation Classifying Triangles

- Draw the triangle given the side lengths
- Classify the triangle
- Apply the Pythagorean Theorem

Done? In Notebook, fill in the blanks!

If $c^2 < (a^2 + b^2)$ then it is an acute triangle.

If $c^2 = (a^2 + b^2)$ then it is a right triangle.

If $c^2 > (a^2 + b^2)$ then it is an obtuse triangle.

Then, show work to teacher

Investigation:

Converse of the Pythagorean Theorem

Objective: Discover how to use the Pythagorean Theorem to classify triangles.

Right: A triangle with one 90 degree angle.

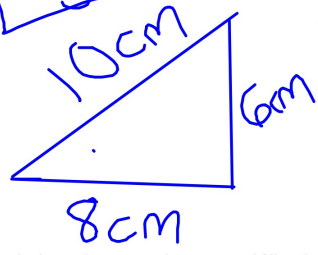
Acute: A triangle with three angles less than 90 degrees (acute).

Obtuse: A triangle with one obtuse angle (greater than 90 degrees) and two acute angles.

Investigation:
Converse of the Pythagorean Theorem

1. ~~6-8-10~~ triangle - Classify triangle (acute, obtuse, right)

Right



$$6^2 + 8^2 = 10^2$$
$$36 + 64 = 100$$
$$100 = 100$$

Apply the Pythagorean Theorem, and fill in the blank (is equal to, is less than, is greater than)

$$a^2 + b^2 \underline{=} c^2$$