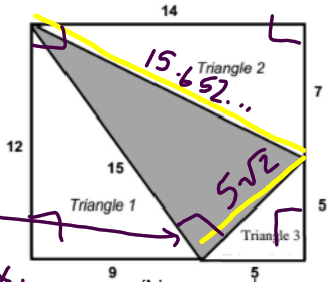


Name: _____
 Period: _____

Date: _____
 Mr. Valentino

Do Now: The image below shows a rectangle divided into 4 triangles. Is the shaded triangle a right triangle?
 How do you know?



hypotenuse right &

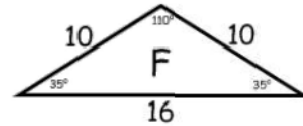
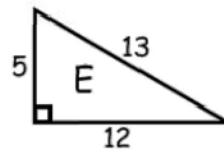
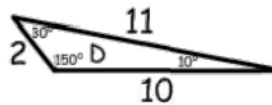
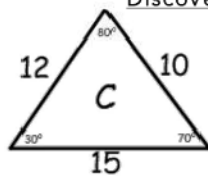
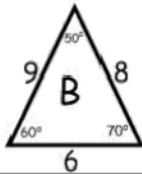
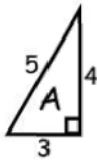
Triangle 2
 $a^2 + b^2 = c^2$
 $7^2 + 14^2 = c^2$
 $49 + 196 = c^2$
 $\sqrt{245} = \sqrt{c^2}$
 $\sqrt{49} \sqrt{5} = c$
 $7\sqrt{5} = c$

Triangle 3
 $a^2 + b^2 = c^2$
 $5^2 + 5^2 = c^2$
 $\sqrt{50} = \sqrt{c^2}$
 $c = \sqrt{50}$
 $c = \sqrt{25} \sqrt{2}$
 $c = 5\sqrt{2}$

$a^2 + b^2 = c^2$
 $15^2 + (5\sqrt{2})^2 = (7\sqrt{5})^2$

(Not sure where to start? try finding the hypotenuses of triangle 2 and 3)

Discovery Activity



Triangle	a^2 (smallest side)	b^2 (middle side)	c^2 (longest side)		$a^2 + b^2$	Type of Triangle (acute, obtuse, right)
A	$3^2 = 9$	$4^2 = 16$	$5^2 = 25$	=	25	right
B	$6^2 = 36$	$8^2 = 64$	$9^2 = 81$	<	100	acute
C	$10^2 = 100$	$12^2 = 144$	$15^2 = 225$	<	244	acute
D	$2^2 = 4$	$10^2 = 100$	$11^2 = 121$	>	104	obtuse
E	$5^2 = 25$	$12^2 = 144$	$13^2 = 169$	=	169	right
F	$10^2 = 100$	$10^2 = 100$	$16^2 = 256$	>	200	obtuse

Observation Questions

1. Take a look at the triangles you classified as acute. What is the relationship between c^2 and $a^2 + b^2$?

c^2 is less than $a^2 + b^2$

2. Take a look at the triangles you classified as obtuse. What is the relationship between c^2 and $a^2 + b^2$?

c^2 is greater than $a^2 + b^2$

3. Take a look at the triangles you classified as right. What is the relationship between c^2 and $a^2 + b^2$?

c^2 is equal to $a^2 + b^2$

4. Fill in the blank column in the table with the correct symbol (greater than $>$, less than $<$, or equal to $=$) that relates c^2 to $a^2 + b^2$

Memorize!



General Rules:



If $c^2 < a^2 + b^2$, then the triangle is acute.

If $c^2 > a^2 + b^2$, then the triangle is obtuse.



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



Practice Problems:

1. Given the following sets of sides lengths of a triangle, determine the type of triangle (acute, obtuse, right).

a. 2, 3, 4

b. 6, 8, 10

c. 10, 12, 14

$$2^2 + 3^2 \bigcirc 4^2$$

$$4 + 9 \bigcirc 16$$

$$13 \bigcirc 16$$

OBTUSE

$$6^2 + 8^2 \bigcirc 10^2$$

$$36 + 64 \bigcirc 100$$

$$100 \overset{=}{=} 100$$

Summary **RIGHT**

What are two different ways to determine if a triangle is acute, obtuse, or right?

1.

2.