



# PYTHAGOREAN THEOREM

# TEACHER'S REMINDER

Remember to have the following tools ready before starting your lesson:

1. YoTeach chatroom
2. Realtimeboard
3. Badaboom Quiz

(see lesson plan for details)



# PYTHAGOREAN THEOREM

# LESSON OBJECTIVES

- Know when the Pythagorean Theorem can be used
- Apply Pythagorean Theorem to solve problems
- Prove the Pythagorean Theorem

# CLASS ACTIVITY: YOTEACH!

- Q1: Which triangles are right-angled?

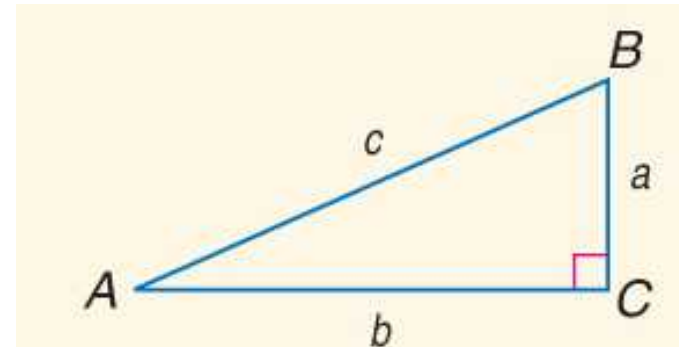


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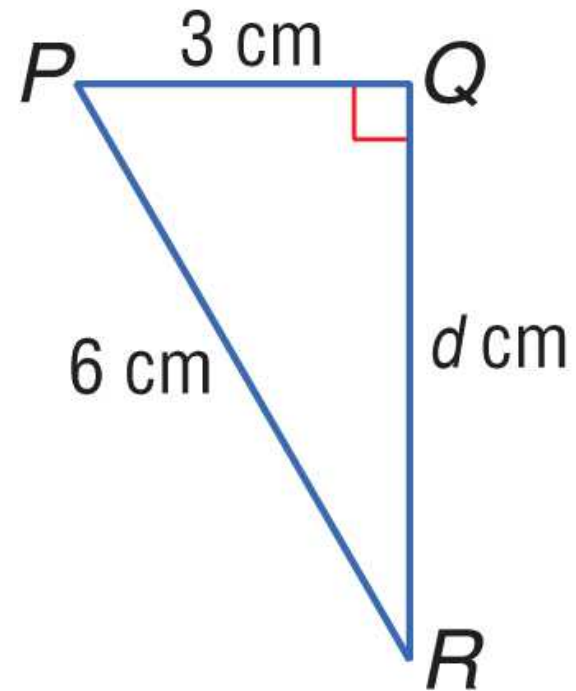
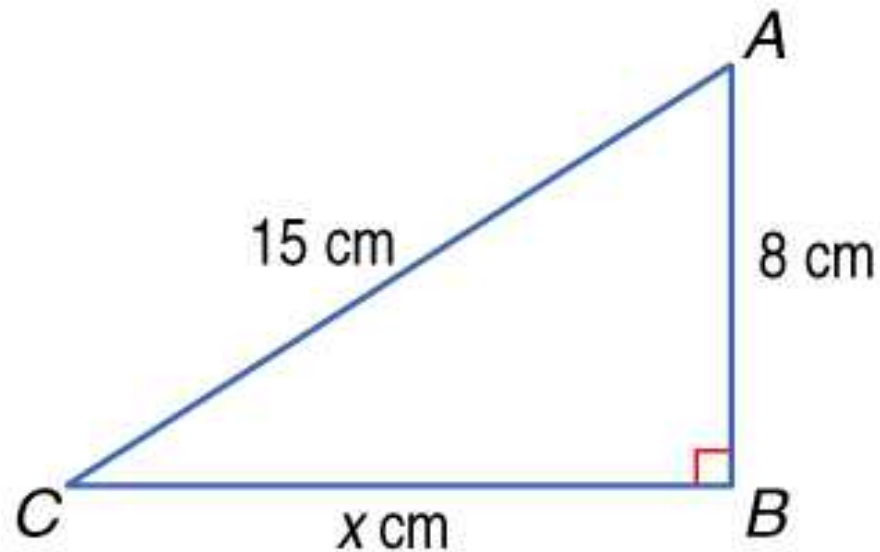
In a right triangle, the sum of the squares of the measures of the legs equals the square of the measure of the hypotenuse.

$$a^2 + b^2 = c^2$$



# PYTHAGOREAN THEOREM

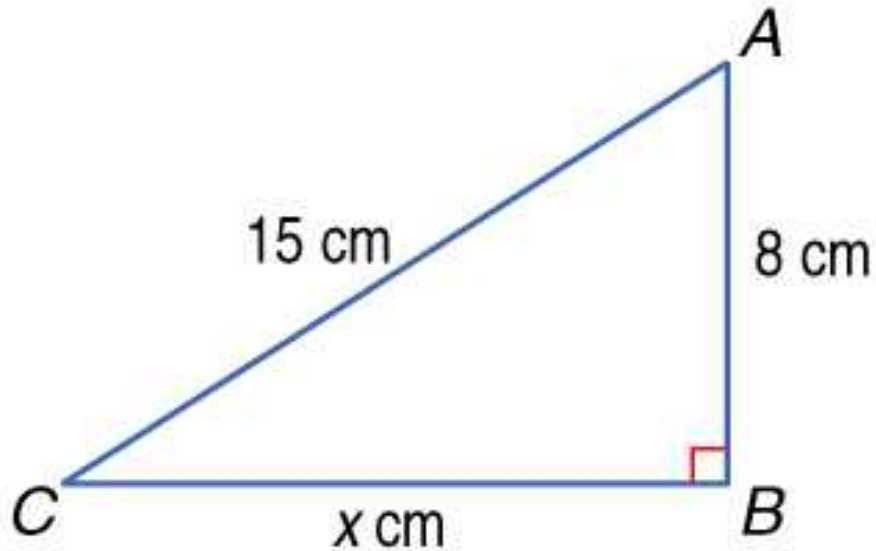
Find the missing measures.



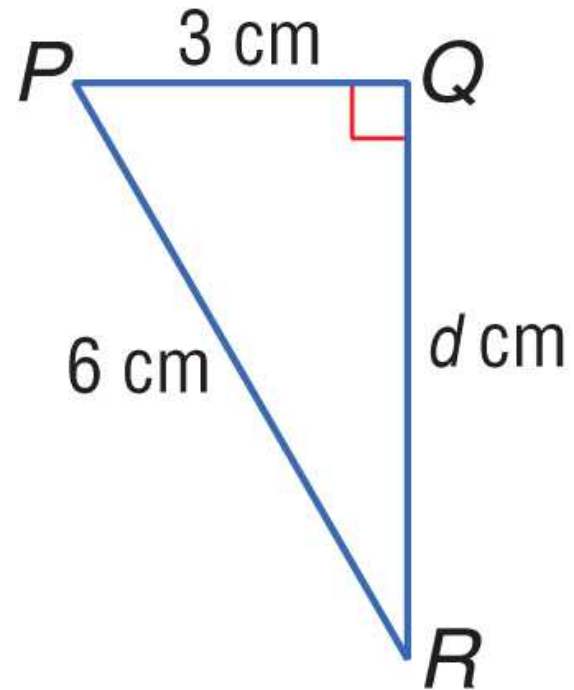


# PYTHAGOREAN THEOREM

Find the missing measures.



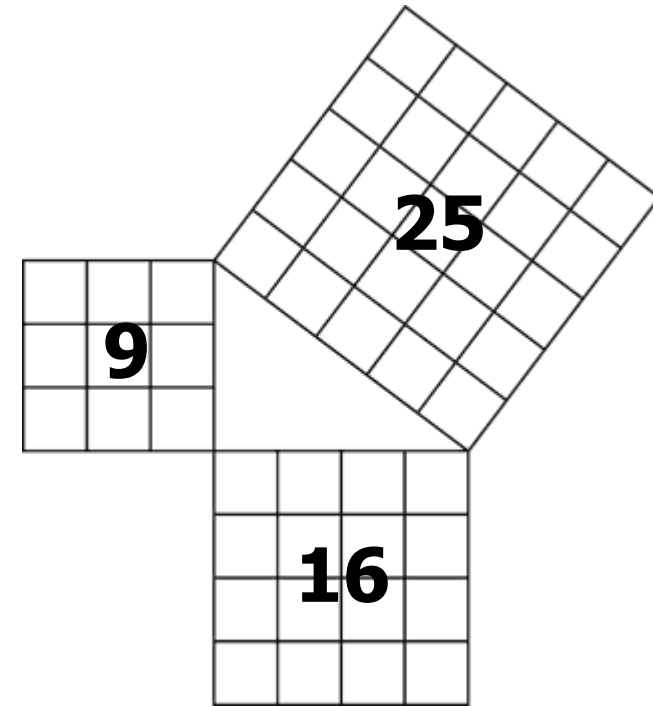
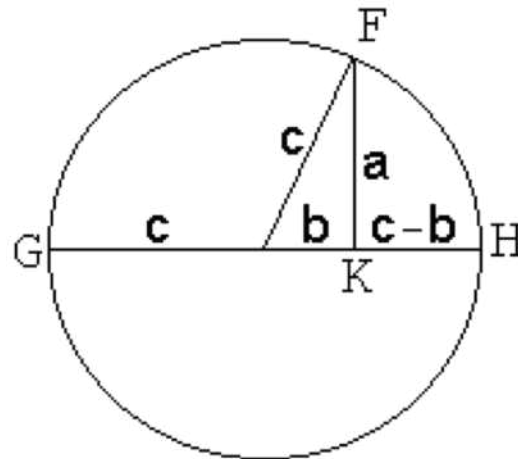
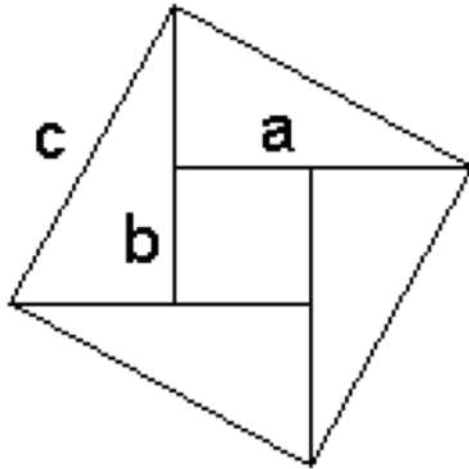
12.7



$\sqrt{27}$

# PYTHAGOREAN THEOREM

- There are at least 80 different ways to prove the Pythagorean Theorem!



- We'll explore 1 now.

# CLASS ACTIVITY: REALTIMEBOARD

- In your groups, complete the instructions to prove the Pythagorean Theorem.

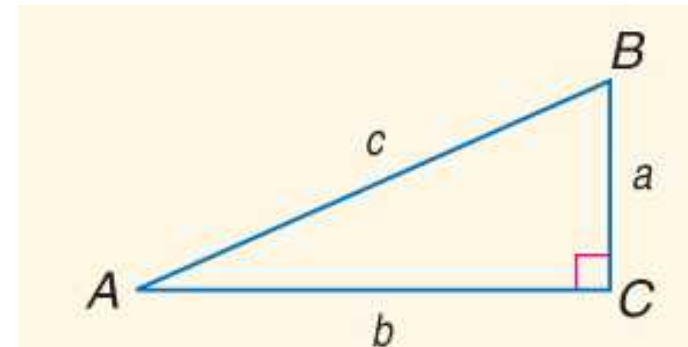


# CONVERSE OF THE PYTHAGOREAN THEOREM

# CONVERSE OF THE PYTHAGOREAN THEOREM

If the sum of the squares of the measure of two sides of a triangle equals the square of the measure of the longest side, then the triangle is a right triangle.

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



# CONVERSE OF THE PYTHAGOREAN THEOREM

Determine whether the sides of these triangles form a right triangle.

1.  $9, 12, 15$

2.  $4\sqrt{3}, 4, 8$

3.  $5, 8, 9$

# CONVERSE OF THE PYTHAGOREAN THEOREM

Determine whether the sides of these triangles form a right triangle.

1.  $9, 12, 15$  ✓

2.  $4\sqrt{3}, 4, 8$  ✓

3.  $5, 8, 9$  ✗

# PYTHAGOREAN TRIPLES



# PYTHAGOREAN TRIPLE

- A Pythagorean Triple is a set of three whole numbers that satisfy the equation:  $a^2 + b^2 = c^2$ .
- The most common Pythagorean Triple is 3-4-5.

# PYTHAGOREAN TRIPLE

Are the below sets a Pythagorean triple?

1.  $9, 12, 15$

2.  $4\sqrt{3}, 4, 8$

3.  $5, 8, 9$

# PYTHAGOREAN TRIPLE

Are the below sets a Pythagorean triple?

1. 9, 12, 15      ✓

2.  $4\sqrt{3}$ , 4, 8      ✗

3. 5, 8, 9      ✗

# PYTHAGOREAN TRIPLE

- Determine whether 30, 40, and 50 are the sides of a right triangle. Then state whether they form a Pythagorean triple.

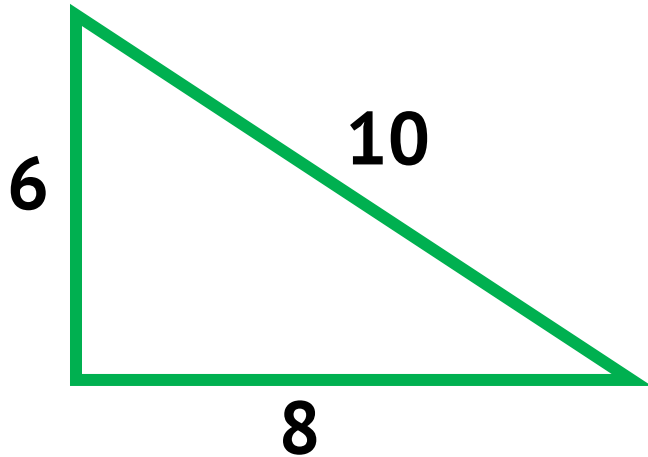
# PYTHAGOREAN TRIPLE

- Determine whether 30, 40, and 50 are the sides of a right triangle. Then state whether they form a Pythagorean triple.
- Yes and Yes

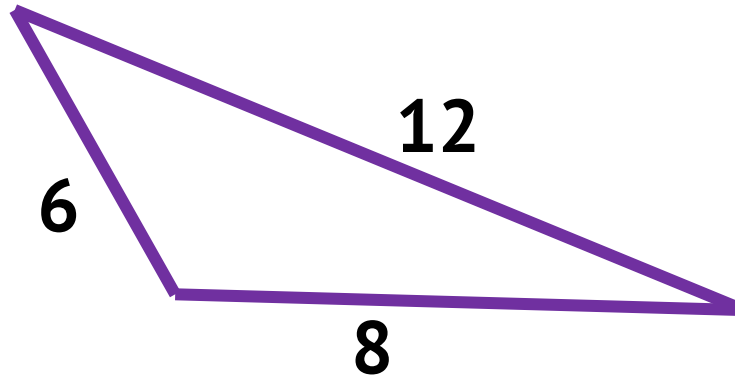
# TYPES OF TRIANGLES

# TYPE OF TRIANGLES

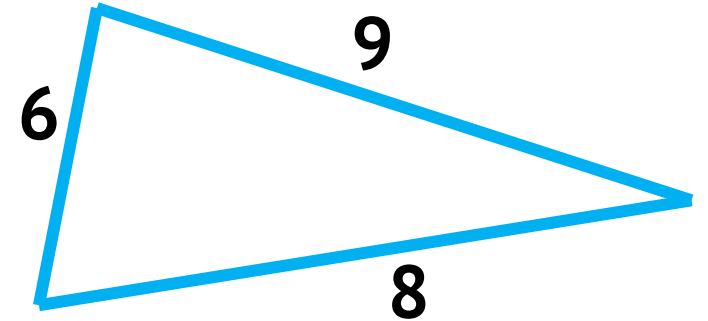
- Let's explore the below triangle:



Right Triangle



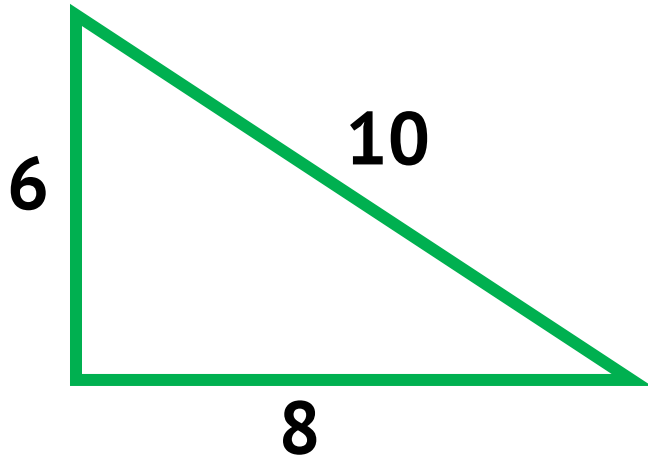
Obtuse Triangle



Acute Triangle

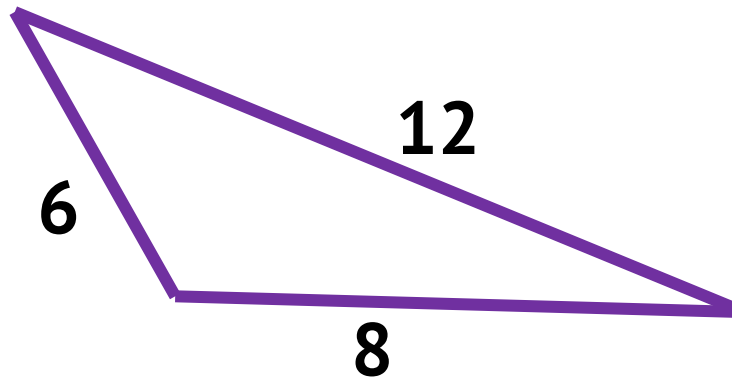
# TYPE OF TRIANGLES

- Let's explore the below triangle:



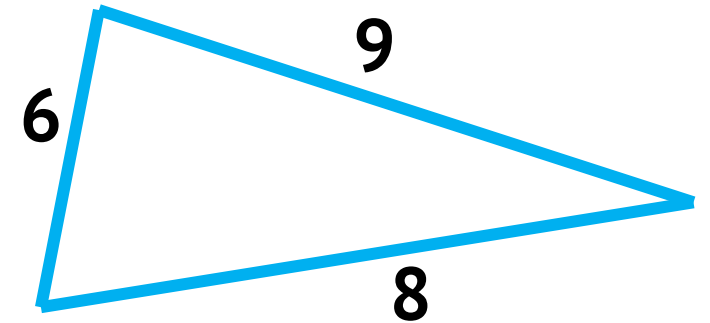
Right Triangle

$$6^2 + 8^2 = 10^2$$



Obtuse Triangle

$$6^2 + 8^2 < 12^2$$



Acute Triangle

$$6^2 + 8^2 > 9^2$$



# TYPES OF TRIANGLES

$c^2 = a^2 + b^2$	Right Triangle
$c^2 > a^2 + b^2$	Obtuse Triangle
$c^2 < a^2 + b^2$	Acute Triangle

- What type of triangles are the below?
  1. 2, 3, 4
  2. 7, 8,  $5\sqrt{3}$ ,

# TYPES OF TRIANGLES

$c^2 = a^2 + b^2$	Right Triangle
$c^2 > a^2 + b^2$	Obtuse Triangle
$c^2 < a^2 + b^2$	Acute Triangle

- What type of triangles are the below?

1. 2, 3, 4

$$4^2 > 2^2 + 3^2$$

Obtuse Triangle

2. 7, 8,  $5\sqrt{3}$ ,

$$(5\sqrt{3})^2 < 7^2 + 8^2$$

Acute Triangle

# CLASS ACTIVITY: BADABOOM

- Pythagorean Theorem and Its Converse Quiz

**BADA  
BOOM**

# CLASS ACTIVITY: YOTEACH!

- Reflection: What have you learnt today?



# LESSON OBJECTIVES

- Know when the Pythagorean Theorem can be used
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