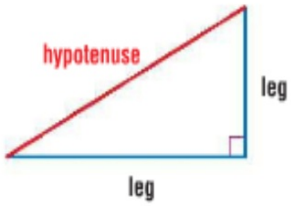
Geometry 8.2
Use the pythagorean theorem*
Use the converse of the pythagorean theorem

*8th grade standard

leg
hypotenuse
converse
integer
pythagorean triple

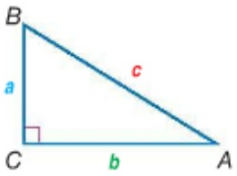


activ: Pythagorean theorem game

Theorem 8.4 Pythagorean Theorem

Words In a right triangle, the sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse.

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

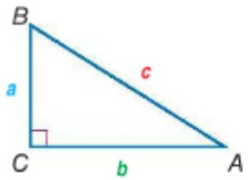


2 Converse of the Pythagorean Theorem The converse of the Pythagorean Theorem also holds. You can use this theorem to help you determine whether a triangle is a right triangle given the measures of all three sides.

Theorem 8.5 Converse of the Pythagorean Theorem

Words If the sum of the squares of the lengths of the shortest sides of a triangle is equal to the square of the length of the longest side, then the triangle is a right triangle.

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



You will prove Theorem 8.5 in Exercise 35.

$a^2+b^2 = c^2$ what is needed

the perfect amount: It's just RIGHT (get it?)

longest → too short acute

too long obtuse

StudyTip

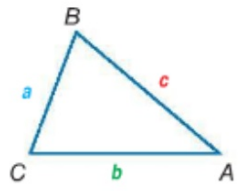
Determining the Longest Side If the measures of any of the sides of a triangle are expressed as radicals, you may wish to use a calculator to determine which length is the longest.

You can also use side lengths to classify a triangle as acute or obtuse.

Theorems Pythagorean Inequality Theorems

8.6 If the square of the length of the longest side of a triangle is less than the sum of the squares of the lengths of the other two sides, then the triangle is an acute triangle.

Symbols If $c^2 < a^2 + b^2$, then $\triangle ABC$ is acute.

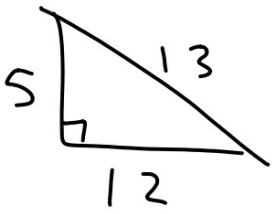


8.7 If the square of the length of the longest side of a triangle is greater than the sum of the squares of

Classify:

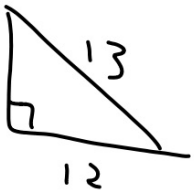
→ 5,12,13 yes rt $5^2+12^2 \stackrel{?}{=} 13^2$

→ 5,12,12 yes acute



→ 5,12,16 yes obtuse

5,12,18 no



1. Can it make a triangle?
2. What is the perfect amount?
3. Answer the question.

GuidedPractice

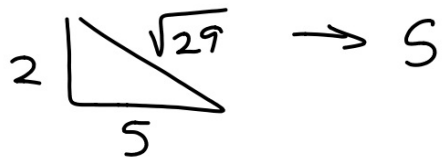
4A. 11, 60, 61

4B. $2\sqrt{3}, 4\sqrt{2}, 3\sqrt{5}$

4C. 6.2, 13.8, 20

Pythagorean Theorem Game

Roll 2 dice. These are the lengths of the LEGS of a right triangle.
Calculate the HYPOTENUSE (round off as necessary) and move that many spaces.



Follow directions on the game board.
If you land on a "??" space:

- Draw a ?? card.
- Somebody else reads you the question.
- If correct, take a bonus roll (Use only 1 die)
- Your turn is now over (even if you land on another ?? space).

Go around twice to win. (Must answer a question correctly to win.)

For Fri.

→ Paragraph + 2 questions
Reflection: Your comments, rules, game play, how to improve, etc.

→ 2 Questions: Could be used on a ?? space
About right triangles and/or pythagorean theorem
Provide correct answers for your questions

WB 8.2 prac.