

Grade: High School		Subject: Geometry	
Materials: Notes, Green notes, worksheet, calculators		Technology Needed: None	
Instructional Strategies: <ul style="list-style-type: none"> <input type="checkbox"/> Direct instruction <input type="checkbox"/> Guided practice <input type="checkbox"/> Socratic Seminar <input type="checkbox"/> Learning Centers <input type="checkbox"/> Lecture <input type="checkbox"/> Technology integration <input type="checkbox"/> Other (list) 		Guided Practices and Concrete Application: <ul style="list-style-type: none"> <input type="checkbox"/> Large group activity <input type="checkbox"/> Independent activity <input type="checkbox"/> Pairing/collaboration <input type="checkbox"/> Simulations/Scenarios <input type="checkbox"/> Other (list) <p>Explain: Students will complete the notes in class and work on the worksheet provided.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hands-on <input type="checkbox"/> Technology integration <input type="checkbox"/> Imitation/Repeat/Mimic 	
Standard(s) HS.GSRT.8* Use special right triangles (30°-60°-90° and 45°-45°-90°), trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.		Differentiation Below Proficiency: Students can work through problems with myself or aid. Above Proficiency: Students can do more problems/applications of the content. Approaching/Emerging Proficiency: Students will complete lesson as is. Modalities/Learning Preferences: Visual, intrapersonal	
Objective(s) <ul style="list-style-type: none"> • I can identify the Pythagorean theorem and apply it to triangles. 			
Bloom's Taxonomy Cognitive Level: <ul style="list-style-type: none"> • Knowledge, comprehension, application 			
Classroom Management- (grouping(s), movement/transitions, etc.) Students will not be grouped for the lesson. They will work independently on the worksheet. During the three practice problems, they make ask each other for help.		Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.) Students will be expected to participate in classroom discussion and work independently on the worksheets.	
Minutes	Procedures		
5	Set-up/Prep: -introduce myself -hand out the notes I have (teaching on Pythagorean Theorem) -tell them to keep green worksheet off to the side		
5	Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.) (Use your own notes to look at to guide through the lesson) Look at the ladder problem on the worksheet, but do not solve.		
15	Explain: (concepts, procedures, vocabulary, etc.) Go over the notes I handed out. Copy is provided with this template. -Review and new material -Example 1,2. Have students do checkpoint problems -Do beginning problem together -Fill in the green worksheet (provided in the classroom)		
20	Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions) Hand out worksheet for students to work on. They will keep this as extra notes.		
5	Review (wrap up and transition to next activity): The summary is contained in finishing the “get thinking” ladder question. Let students know there are 5 minutes of class left.		
Formative Assessment: (linked to objectives)		Summative Assessment (linked back to objectives)	

Progress monitoring throughout lesson- clarifying questions, check-in strategies, etc.

I should be able to tell if the students are understanding based on the classroom discussion and if they are able to do the checkpoint problems.

Consideration for Back-up Plan:

If the students seem to not be understanding, we will go over some of the worksheet problems and I will ask for specific questions.

End of lesson: If applicable- overall unit, chapter, concept, etc.:

There will be a quiz with other material on Friday of this week on the material.

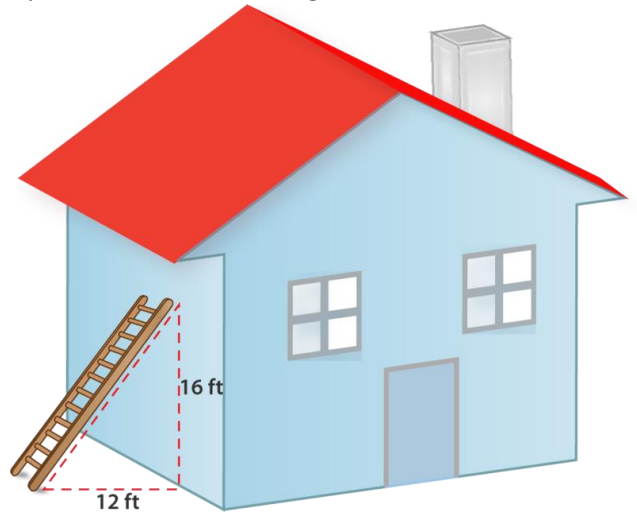
Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

The start up activity was a great introduction to the material. The students picked up on the topic almost right away. They learned new vocabulary and were able to put it into context. I know they picked up on the content because we were able to work through the practice problems in the notes together, and it was evident on their worksheet as well. I taught this lesson back-to-back at BHS. Both times it went over very well. The second time, I made adjustments allowing for more student input. I also took the struggles from the first class and was proactive to prevent those same struggles. If I were to do this lesson again, I would allow for more differentiation. This lesson was pretty cut and dry-there were not many places which presented harder or easier problems. I would create extra worksheets for students who understand the content very well. For those students who struggle with the topic, I would like to do more problems together to talk through the material.

Pythagorean Theorem Handout (My notes)

Start with “Think about it” question: There is a ladder that is x feet tall. It hits the building at 16 feet and is 12 feet from the bottom edge of the building, as seen in the picture. What is the length of the ladder?

This is a real-life application of the Pythagorean theorem. After we do some notes, we will be able to solve this problem.



Review:

What is a right triangle? **Contains angle with 90 degrees**

What are the three sides of a triangle referred to? **Base(leg), height(leg), hypotenuse**

Base: **bottom leg of triangle**

Height: **leg of triangle**

Hypotenuse: **Side opposite the right angle**

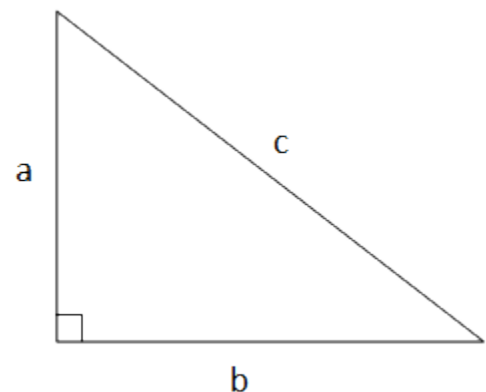
The Pythagorean theorem is a formula for **right triangles**. When I know **two** side lengths, I can determine the third using the formula $a^2+b^2=c^2$.

Let's see this on a triangle: **(label a, b, c, and the right angle)**

Base: **leg b**

Height: **leg a**

Hypotenuse: **Side c**



Instruct class to take out green sheet to follow along for the next problems.

- Do example 1: Slowly-talk out process of deciding which side is which
- Do example 2: Again, talk about how I decided which sides to use
- Tell students to do problems 1-3 at the checkpoint. After they complete, go over answers.
- Do the beginning ladder problem together.

Complete the worksheet green worksheet

Answer to essential question: Substitute known sides into $a^2+b^2=c^2$.

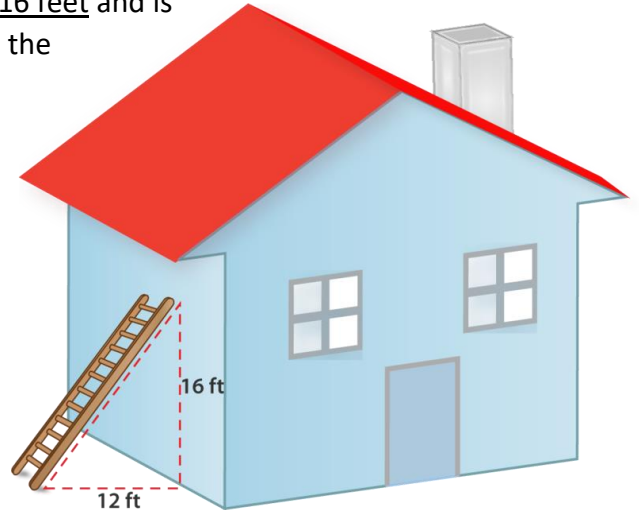
Leg of a right triangle: base, height, side a or b.

Hypotenuse of a right triangle: Leg opposite the right angle; side c.

Summary

Notes for the Pythagorean Theorem Topic 4.4

There is a ladder that is x feet tall. It hits the building at 16 feet and is 12 feet from the bottom edge of the building, as seen in the picture. What is the length of the ladder?



Review:

What is a right triangle? _____

What are the three sides of a triangle called? _____

Base: _____

Height: _____

Hypotenuse: _____

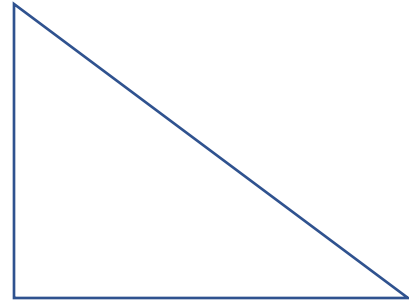
The Pythagorean theorem is a formula for _____. When I know _____ side lengths, I can determine the third using the formula _____.

Let's see this on a triangle: Label sides a , b , c , and the right angle.

Base: _____

Height: _____

Hypotenuse: _____



Pythagorean Theorem Worksheet

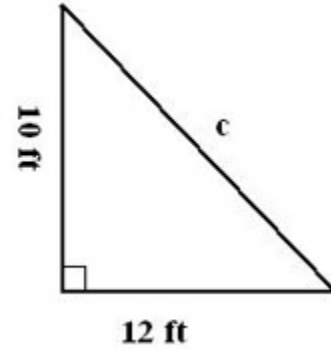
Topic 4.4

Name: _____

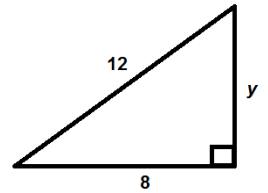
Date: _____

For the following problems, use your knowledge of the Pythagorean Theorem to solve for the unknown sides. Show your work and label the units.

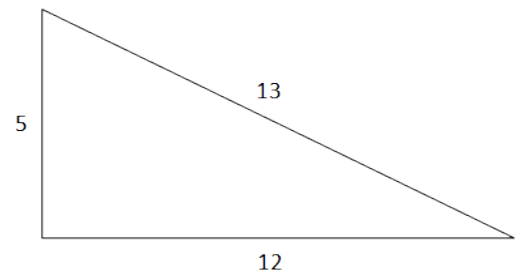
- 1) Find the missing side length c .



- 2) Find the missing leg y .

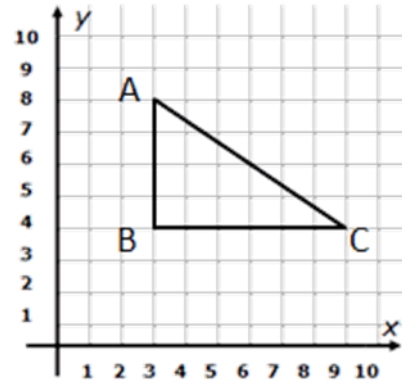


- 3) Are the indicated lengths correct? How do you know? Show your work.

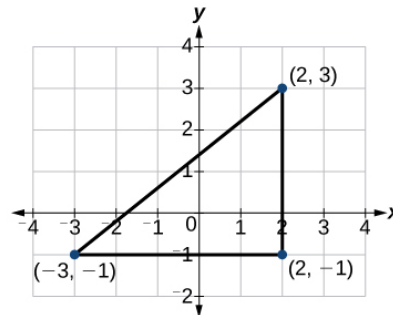


Lesson Plan Template

4) Find the side lengths AB, AC, and BC.



5) Label the sides. Find the length of the hypotenuse.



6) Bonus: To the right is an isosceles triangle. Find the height of the triangle.

