

**Station 1: Measuring Triangles**

This is an outside activity with triangles drawn using pavement chalk or similar.

Draw the two shorter sides as below, then connect them up to make the hypotenuse. If you have a reliable group of students, they could be in charge of setting up this station. Their task would be to draw the triangles prior to measuring them. Each other group is only expected to measure the sides of the triangles.

Right Angle Triangle	Shorter side 1	Shorter side 2	Longest side
A	4	3	
B	1	0.5	
C	1.5	0.68	
D	0.82	0.31	
E	1.2	0.98	

Later as a follow up students could check if the sum of the squares of the shortest side is equal to the square of the longest side for each triangle with a basic idea that the closer they are the better they measured.

**Station 2: Mathematicians: Pythagoras**

Students research some facts about Pythagoras.

Most students seem to come up with basic facts such as his date of birth, death, where he lived etc. This station requires that students have access to research material, most likely online.

**Station 3: Pythagoras Puzzle**

Students complete page 1 of the Pythagoras Power Figure it Out activity, available online at <https://nzmaths.co.nz/resource/pythagoras-power>

**Station 4: Trigonometry**

Students find a definition for trigonometry.

**Station 5: Who uses trigonometry and Pythagoras' Theorem?**

Students research this.

**Station 6: Hypotenuse**

Research and define the word hypotenuse

This is an important but quick station, students may need to be directed to complete an earlier station or go on to another station early.

Copy the table below into your book, then complete it by measuring the side length of each triangle marked on the ground.

Triangle	Shorter side	Shorter side	Longest side
A			
B			
C			
D			
E			

Remember to use units!

Find 5 facts about the mathematician Pythagoras.

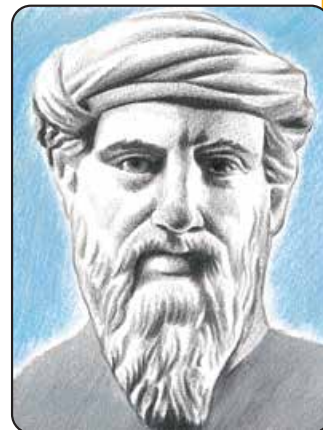

What is the contribution that Pythagoras' field of expertise made to mathematics?  
Use complete sentences.

# Pythagoras Power

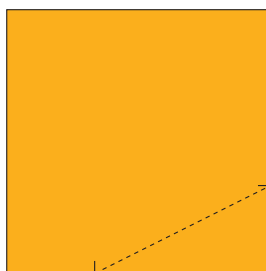
ACTIVITY ONE

You need: a calculator, coloured card, square grid paper, scissors, a ruler, a classmate

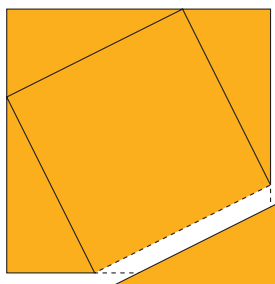
Pythagoras was a Greek mathematician born around 569 BC, nearly 2 600 years ago. He is best remembered for the rule known as Pythagoras' theorem. Here is one way of demonstrating this rule:



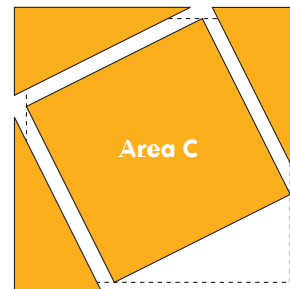
- a. i. Take a square of card and mark a point about a third of the way up from the bottom right corner. Mark another point exactly the same distance along from the bottom left corner. Join these 2 points to give a right-angled triangle.



- ii. Cut the triangle off, then rotate it and trace its position in the other 3 corners of the square.



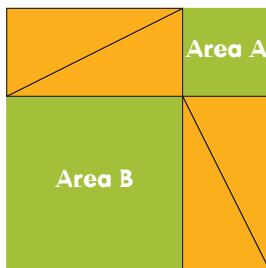
- iii. Cut off the 3 triangles you have just marked.



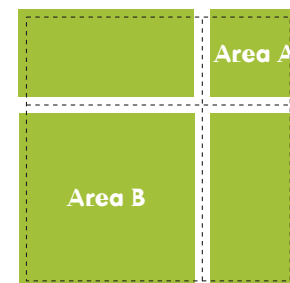
- iv. Take a second square of card, the same size as the first.



- v. Arrange your 4 triangles on it in the pattern shown.



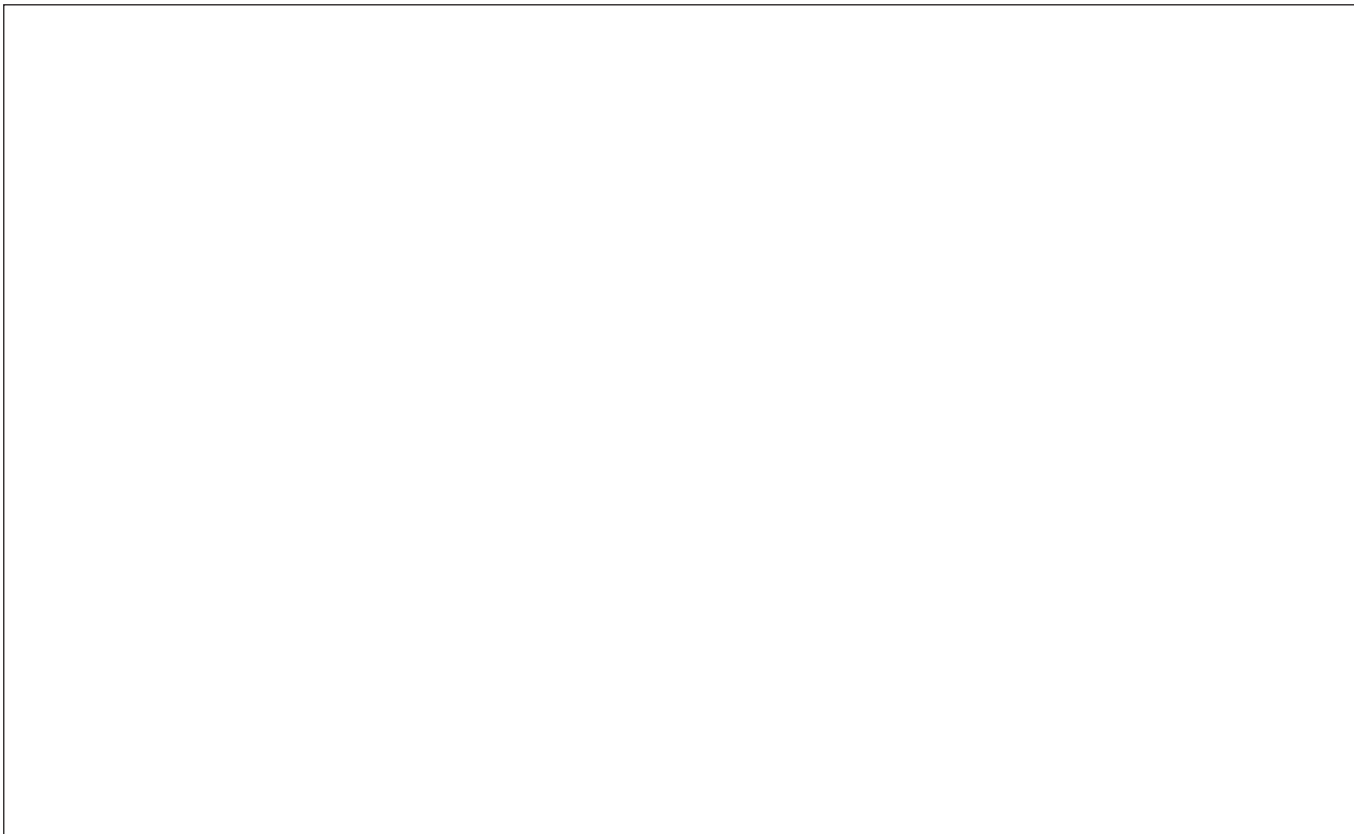
- vi. Mark the lines that divide the squares and the rectangles and cut along them.



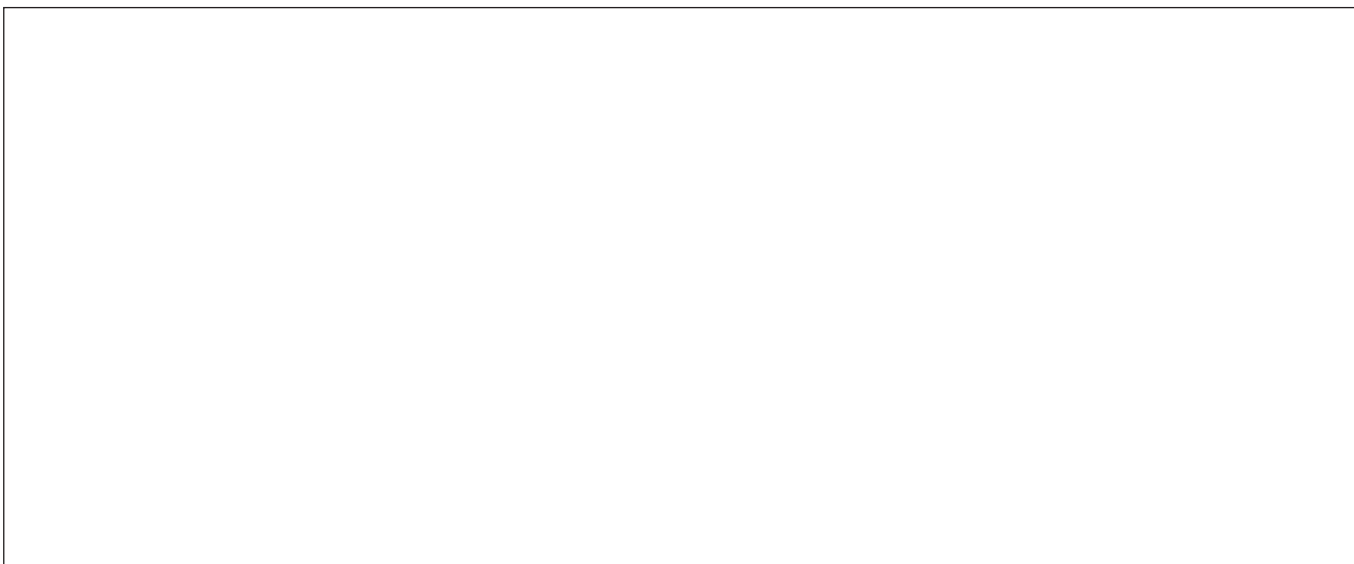
- b. Compare the total area of A and B with the area of C. What do you notice?
- c. Take the triangle you started with in a i and arrange the 3 squares (A, B, and C) around its edges so that the sides match. Draw a diagram showing this arrangement.
- d. Write in words what your arrangement seems to prove.

Find out what the word “trigonometry” means.  
What type of mathematics is trigonometry?

Use complete sentences to explain your answer.  
If you can, draw diagrams (triangles) to help explain your answer.



What is the etymology (the origin) of the word?



What are some real-world contexts (situations) where trigonometry and Pythagoras are used?

Draw a diagram to help explain your answer.

