

Problem 1 – Proof of the Pythagorean Theorem

We will begin this activity by looking at a right triangle and the square formed by each of the three sides of the right triangle. On page 1.3, you are given right triangle ABC . The spreadsheet on page 1.4 contains 3 columns: *asquared*, *bsquared*, *csquared*, and *asquared + bsquared*.

1. On page 1.3, grab and drag point B , and then press $(\text{ctrl}) + (\cdot)$. Repeat this move three times. This process will collect data on page 1.4. Record the data you collected below.

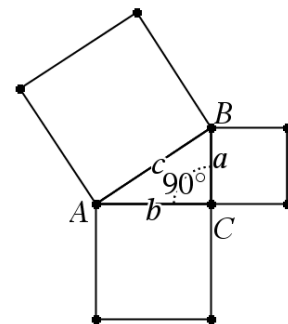
Position	a^2	b^2	c^2	$a^2 + b^2$
1				
2				
3				
4				

2. What do the squares on each side of right triangle ABC represent?

3. How does the area of the two smaller squares compare to the larger square?

4. How are a^2 and the square on side a (side BC) related?

5. How are $a^2 + b^2$ and c^2 related?



Problem 2 – President Garfield’s Proof of the Pythagorean Theorem

On page 2.2, you are given right triangle ABC and a congruent triangle with a segment connecting them to form a trapezoid. You will use the area of a trapezoid and the area of the three triangles to prove the Pythagorean Theorem.

6. Using the formulas for area, set the area of the trapezoid equal to the sum of the area of all three triangles and simplify. Remember that the area of a triangle is $\frac{1}{2}(\text{base})(\text{height})$.

7. State the Pythagorean Theorem.

Problem 3 – Proof by Dissection of the Pythagorean Theorem

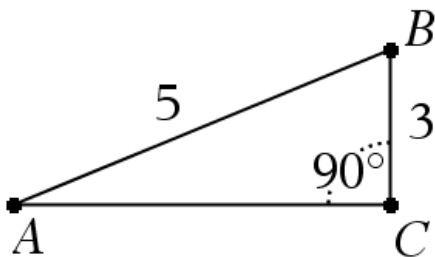
On page 3.2, you are given right triangle ABC and three squares representing a^2 , b^2 , and c^2 . Using page 3.2, answer the following questions.

8. What square represents c^2 ?
9. What square represents b^2 ?
10. What square represents a^2 ?
11. What does this dissection tell you about the area of c^2 and the areas of a^2 and b^2 ?
12. How does the dissection relate to the Pythagorean Theorem?

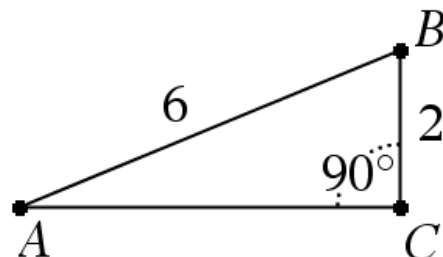
Problem 4 – Application of the Pythagorean Theorem

Find the length of the third side given two sides of the triangle.

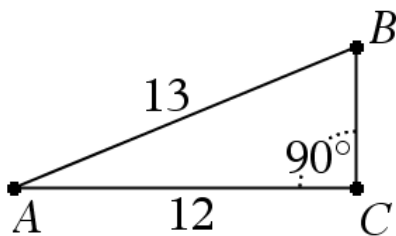
13.



14.



15.



16.

