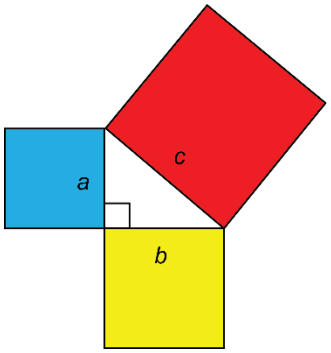
Shape and Space

Lesson 3 Assessment

Exploring the Pythagorean Theorem

Content: Exploring the Pythagorean Theorem			
Identifies hypotenuse of a right triangle The hypotenuse is the longest side of a right triangle and is opposite the 90° angle.	Describes the Pythagorean theorem  $a^2 + b^2 = c^2$ In a right triangle, the sum of the areas of the two smaller squares equals the area of the larger square.	Uses the Pythagorean theorem to identify a right triangle Do the lengths 3 cm, 4 cm, and 5 cm form a right triangle? The numbers 3, 4, 5 are a Pythagorean triple. Since Pythagorean triples satisfy the Pythagorean theorem, these lengths form a right triangle. $3^2 + 4^2 = 9 + 16 = 25$, which is 5^2	Applies the Pythagorean theorem to determine the length of the hypotenuse A top of a slide is 6 m above the ground and the base of the slide is 4.5 m along the ground. How long is the slide? The length of the slide represents the hypotenuse of a right triangle. I can use the Pythagorean theorem. $a^2 + b^2 = c^2$ $6^2 + 4.5^2 = c^2$ $36 + 20.25 = c^2$ $c^2 = 56.25$ $c = \sqrt{56.25}$ $c = 7.5$ The slide is 7.5 m long.
Observations/Documentation			

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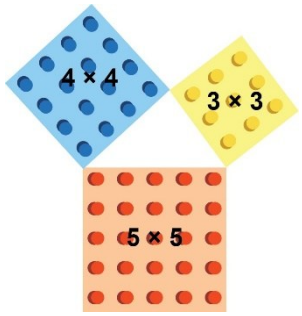
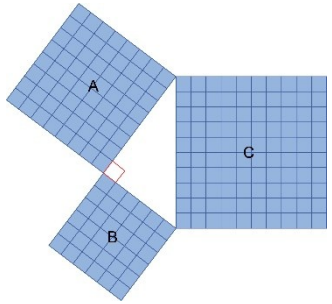
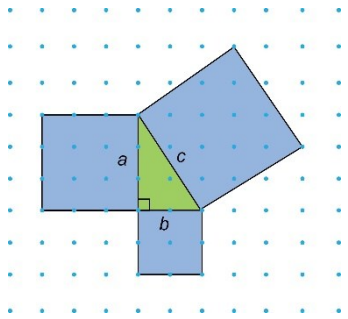
Competency: Representing and Connecting			
Represents with concrete materials; connects areas of squares to triangle sides  "I see that when I multiply the length of a side by itself, I get the area of the square. I also see a relationship among the areas of the squares: 9 units^2 + 16 units^2 = 25 units^2."	Represents pictorially; connects patterns in areas across right triangles  "I see that the size and orientation of the right triangle don't matter. This relationship is always true: Area of C = Area of A + Area of B."	Represents in multiple ways, including algebra; connects visual, numerical, and algebraic representations  "I labelled the legs of the triangle *a* and *b*, and the hypotenuse *c*. I can write the relationship as $a^2 + b^2 = c^2$."	Represents flexibly; connects triples and generalises patterns "I know that the set of numbers 5, 12, 13 represents a Pythagorean triple because I can visualize a right triangle with those side lengths. I also know that $5^2 + 12^2 = 13^2$ because both sides of the equation have a value of 169. To generate other triples, I can multiply each number by the same factor to get another triple. 5 × 2 = 10 12 × 2 = 24 13 × 2 = 26 10, 24, 26 is also a Pythagorean triple."
Observations/Documentation			