# Areas and Pythagoras (*Pythagore*)

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The *area* of a square that sides of length $1cm$ is $1cm^2$ (which we read as "centimeter-squared" or "square centimeter"; *en français, "un centimètre carré"*). The area of two squares, each of area $1cm^2$, is $2cm^2$, *if they don't overlap; etc.*
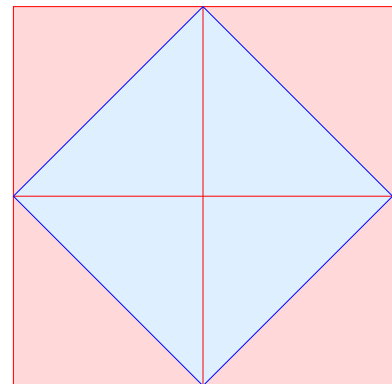
1. What is the area of a square that has sides of length $2cm$? What is the area of a square that has sides of length $3cm$?
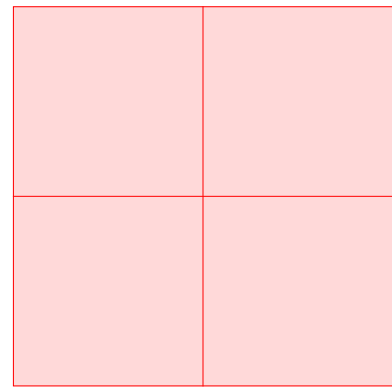
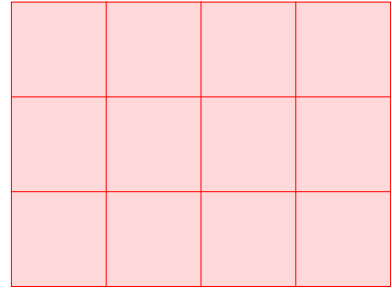2. What is the area of a square that sides of length a?

3. What is the area of the blue square in this picture? (The small red squares have sides of length 1.)
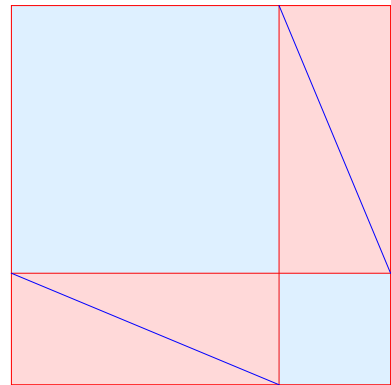
4. What is the length of each side of the blue square?

5. What is the area of a rectangle with sides of length 3 and 4?

6. What is the area of a rectangle with sides of length a and b?

7. The two blue squares in the picture have sides of lengths a and b, respectively. What are their areas? What is the length of the sides of the largest square? What is its area? What are the areas of the two rectangles with blue diagonals?

8. This picture shows the same large square as above, but with the triangles rearranged. What is the area of the blue square?
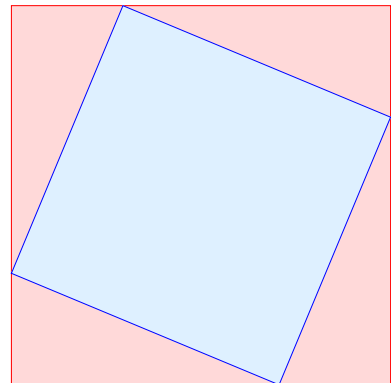
9. If the blue side of this right triangle (the *hypotenuse*, *en français, l'hypoténuse*) has length c, write the equation that says the area of the blue square in problem 8 is the same as the sum of the areas of the two blue squares in problem 7.
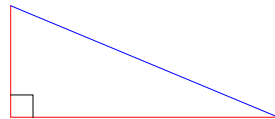
This is the Pythagorean Theorem!