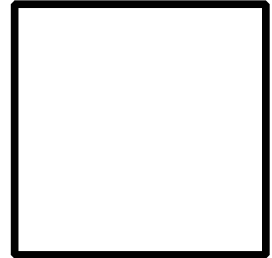


Building a Visual Understanding for $(a + b)^2$ and $(a + b)^3$

To build a visual model for $(a + b)^2$, we'll use a large square.

Begin by drawing a large square. Subdivide the sides into two pieces: a and b , where $a > b$. Draw the vertical and horizontal line to subdivide the square into four parts.



Label the areas of the four parts. The area of the large square can be found two ways:

1. Using the outside dimensions of the square write an expression for the area of the large square.
2. Using the four smaller areas write an expression for the total area of the large square. Write an expression that gives the correct expansion of this binomial.
3. Since these area are equal found either way, complete the following statement.

_____ = _____

Using a cube it is possible to build a visual model for $(a + b)^3$

Use centimeter grid paper to build the following eight solids:

- 1 cube which is 3 centimeters on each side. (Label the edges a .)
- 1 cube which measure 4 centimeters on each side. (Label the edges b .)
- 3 prisms which measure 3x3x4 centimeters made up of four rectangles 3x4 and two squares 3x3 (Label the edges a and b to match the two cubes.)
- 3 prisms which measure 3x4x4 centimeters made up of four rectangles 3x4 and two squares 4x4 (Label the edges a and b to match the two cubes.)

Label the volume of each cubes and rectangular solid. Assemble the cubes and rectangular solids into a cube.

Describe the dimensions of the large cube. Write an expression that could be used to find it's volume.

Use the eight solids to write another expression for the volume of the large cube.

Since the volume can be found either way complete the following statement:

_____ = _____