Place one **square tile** under the document camera. Then discuss the properties of a square (all four sides the same length and each corner is at 90 degrees).

?   Is the shape on the document camera a square? *Yes*.

?   Does adding another square tile to the existing one form another square shape? *No. The two squares form a rectangle.*

Divide the class into small groups; pass out some **square tiles** to each group. Have the groups create larger and larger squares using the tiles and then list the number they used in their journals (while you list them in order on the board—i.e. 1, 4, 9, 16, 25…)

At the document camera, display one square tile. Ask volunteers to create a sequence of square numbers at the document camera. Instruct students to use different colored tiles with each new square to more easily see the pattern.

?   How many tiles were added to one square number to create the next square number? *3*

?   How many tiles were added to create the next square number? *5*

?   What do you notice about these numbers? *They are consecutive odd numbers.*

Now on a different pattern in the square numbers. Have students look at the number of tiles making up the sides each square number. For example, the number of tiles on each side of the 1st, 2nd, 3rd and 4th square numbers (1,4,9 and 16) are 1, 2, 3 and 4 respectively.

?   How many tiles would be on each side of the 5th square number? *5*

?   How many tiles would be on each side of the 6th square number? *6*

?   What do you notice about these numbers? *They increase by 1 with each new square number.*
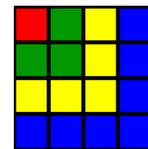
Exponents and Square Numbers
Discuss the concept of exponents with the class. Square numbers are represented by placing a small 2 to the upper right of a number. For example, a square with 3 tiles on a side is represented by 3^2. This means that you multiply 3 by itself, or 3 x 3 to solve for the total number of tiles in the square.

?   How many tiles are there in a square with ten tiles on each side? *$10^2=100$*

?   How would you figure out how many tiles are in a square with 200 tiles on each side? *Multiply 200 by 200.*

MATERIALS:
-Square tiles

ACTIVITY SHEET
EXAMPLE

1 red square, add

3 green squares, add

5 yellow squares, add

7 blue squares

ZENO
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