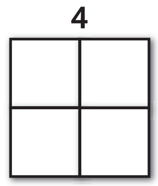
ACTIVITY 5.7 **Making Squares**

Name:

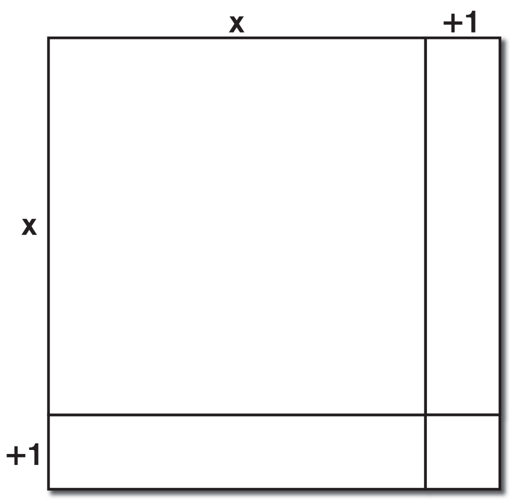
Square numbers, often called perfect squares, are numbers that can be represented as a product of the same two numbers. Examples you may know are $1 = 1^2$, $4 = 2^2$, $9 = 3^2$, and $16 = 4^2$. Each of these numbers can also be modeled with unit Algebra Tiles. For example,



The diagram is a square with an area of 4 units.

Variable expressions can also represent squares. With Algebra Tiles, $\mathbf{x}^2$ is a square where each side has the length $\mathbf{x}$.

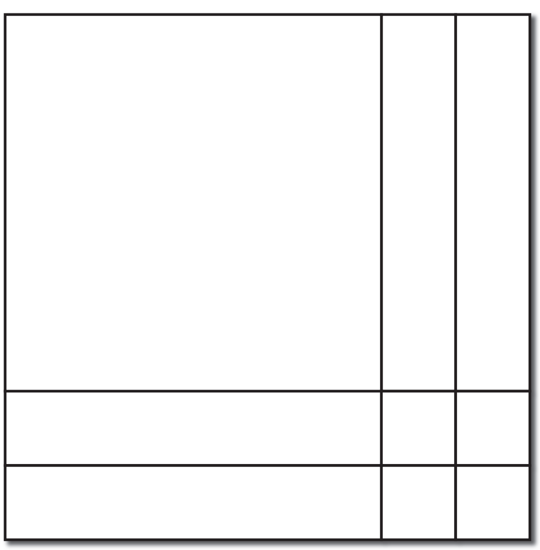
Below is an example of another square. We can write different expressions for the square.



$(\mathbf{x} + 1)^2 = \mathbf{x}^2 + \mathbf{x} + \mathbf{x} + 1 = \mathbf{x}^2 + 2\mathbf{x} + 1$

$(\mathbf{x} + 1)^2$ is a perfect square.

Make a square out of Algebra Tiles on your work mat for the next example and write two different expressions for the square.

1. 

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Now, use your work mat to make squares for each of the following. Write another expression for each of your squares.

2. $(x + 3)^2 =$ ______________________

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3. $(x - 1)^2 =$ ______________________

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4. $(x - 2)^2 =$ ______________________

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How many unit squares do you have in each of your models?

5. $(x + 3)^2$ has __________ unit squares

6. $(x - 1)^2$ has __________ unit squares

7. $(x - 2)^2$ has __________ unit squares

8. What do you notice about the constant term in your expressions for each?

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9. What is the constant term for $(x + 5)^2$ when it is expanded?

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How many x-tiles do you have in each of your models?

10. $(x + 3)^2$ has __________ x-tiles

11. $(x - 1)^2$ has __________ x-tiles

12. $(x - 2)^2$ has __________ x-tiles

13. What do you notice about the coefficient of the x–term in your expressions for each?

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14. What is the coefficient of the x–term in $(x + 5)^2$?

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