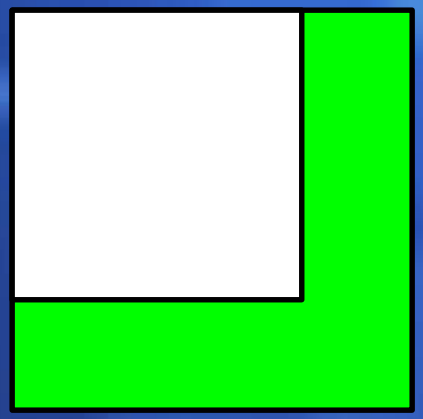
In the figure shown, two squares share a common vertex A. The larger square has an area of 49 cm^2. The smaller square has an area of 25 cm^2. What is the perimeter of the green region?

A



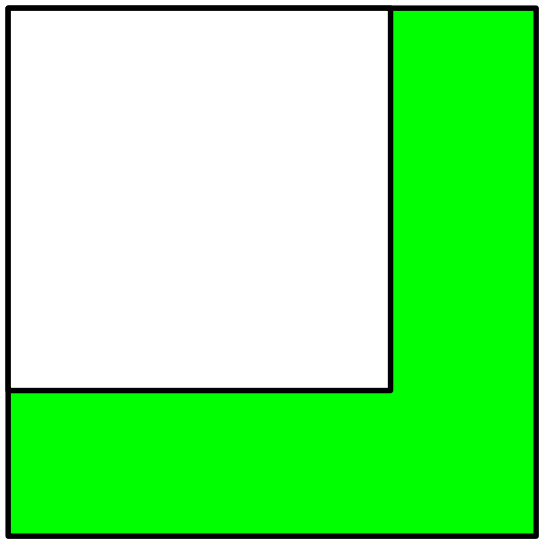
SQUARES AND SQUARE ROOTS

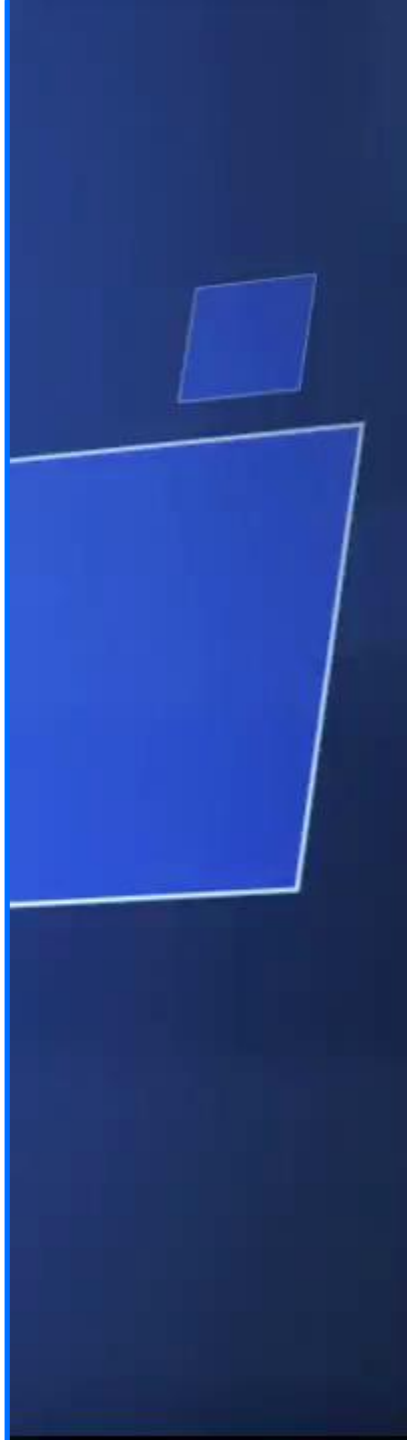
Unit 2: Order of Operations, Exponents, Factors and Fractions

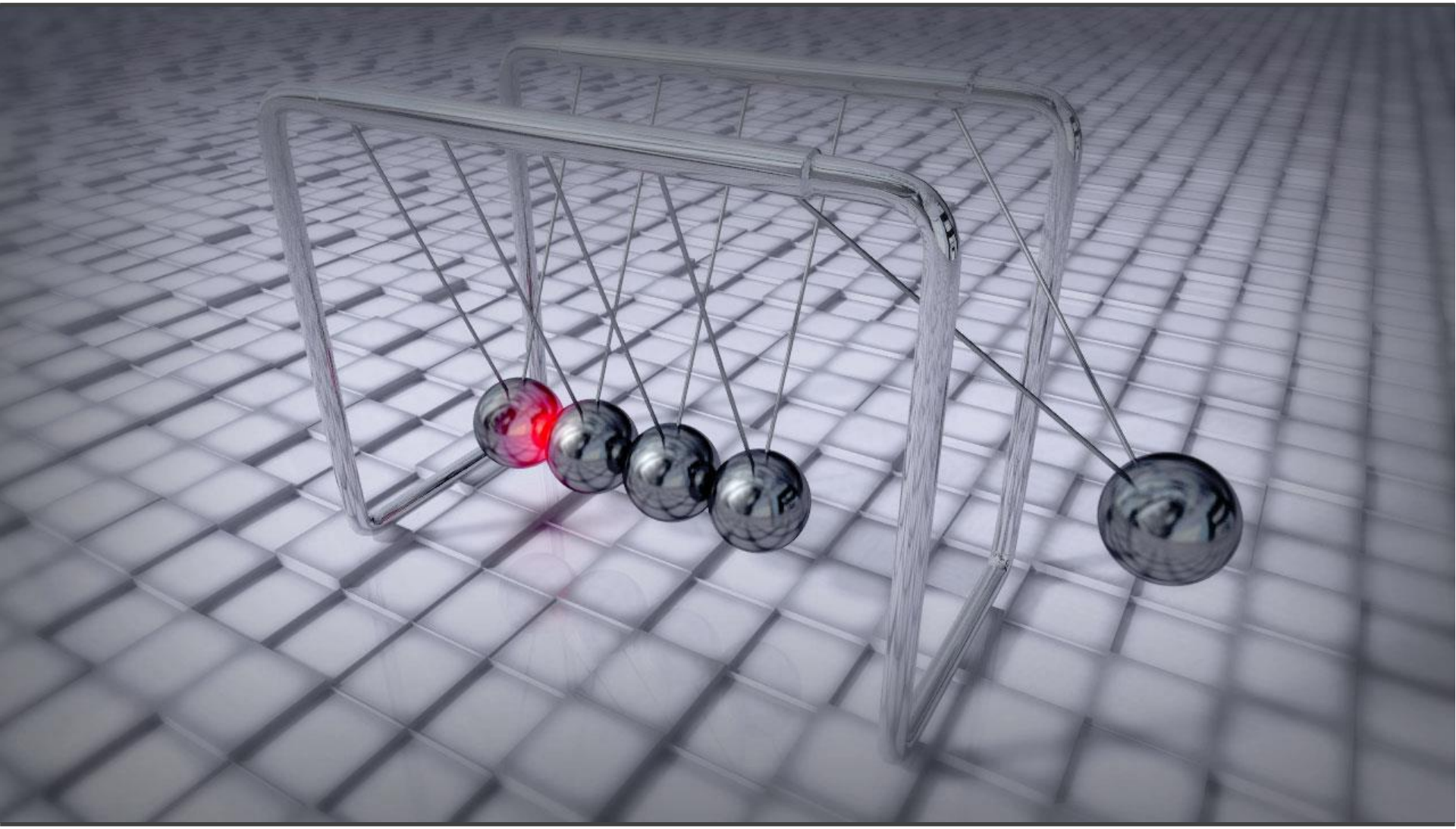
Do Now

In the figure shown, two squares share a common vertex A. The larger square has an area of 49 cm^2. The smaller square has an area of 25 cm^2. What is the perimeter of the green region?

A





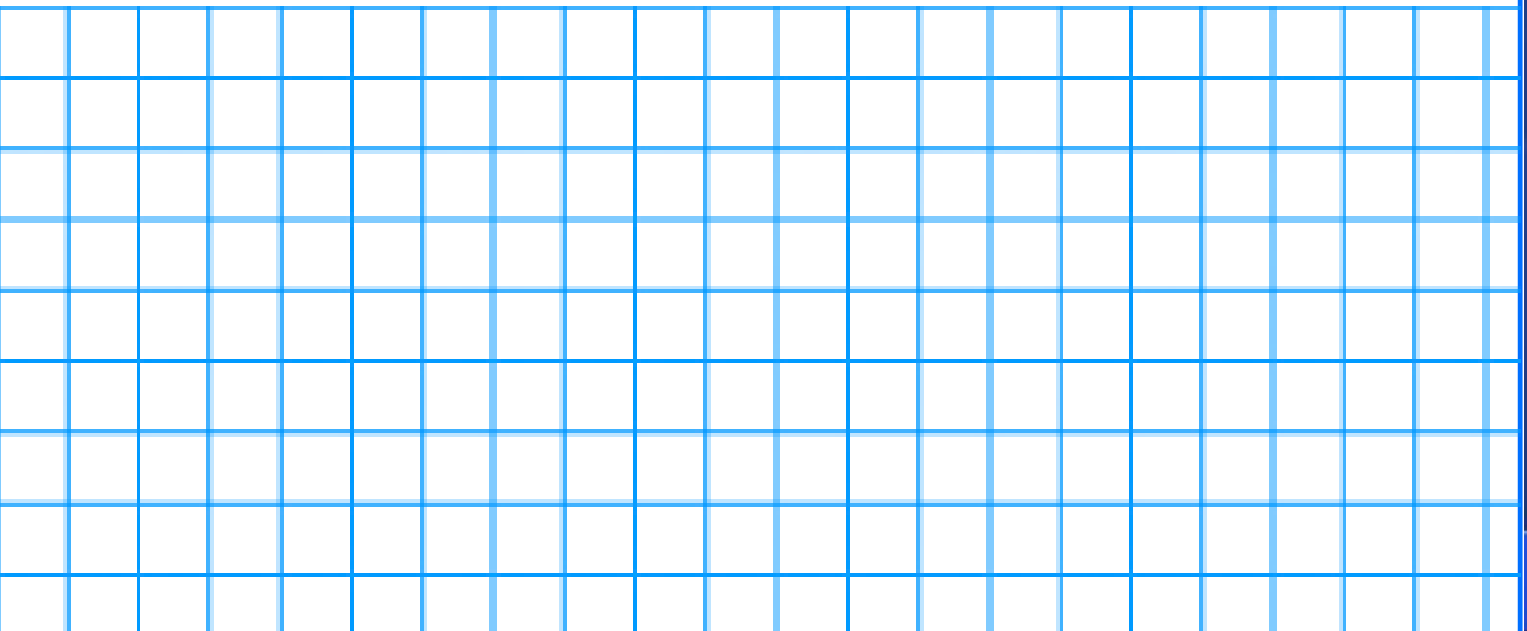


Test Results

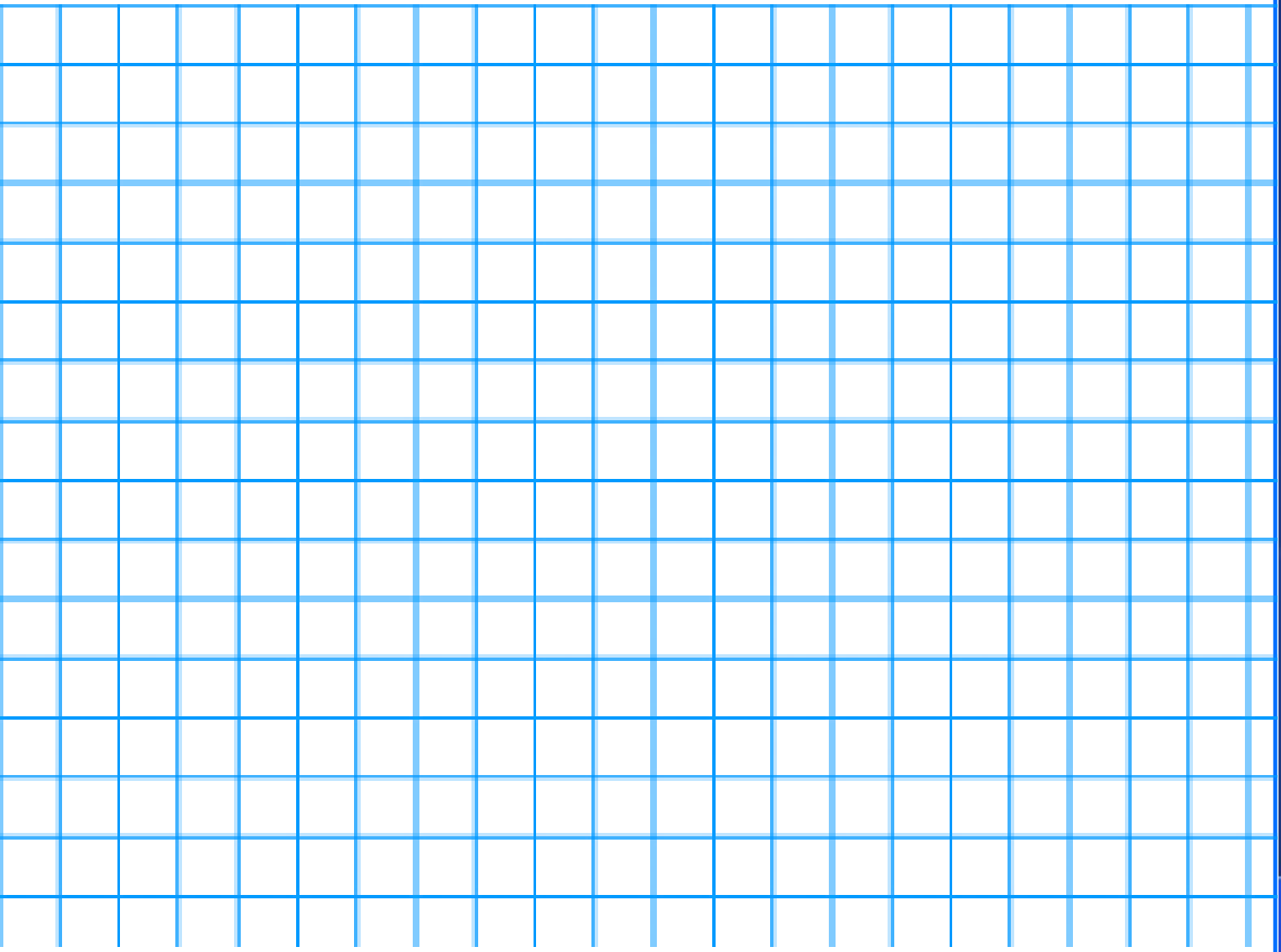
NOTES

Square it up:

Use exactly 4 square tiles to make as many different **solid** rectangles as you can. **Do not stack tiles on top of each other**. Sketch the different rectangles you find using the light blue squares on this page to represent the color tiles. Label the dimensions of each of your rectangles.



Repeat the process above to make rectangles using exactly 10 square tiles. Sketch and dimension your rectangles below.



Which of these, 4 or 10, can be used to create a rectangle that is also a square? Why?

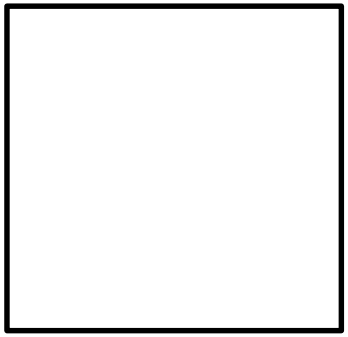
Can you name another number of tiles that could be used to create a square?

You ask a friend to build a rectangle using exactly 16 square tiles. What is the probability that you can guess the dimensions of the rectangle she will build?

You ask a friend to build a square using exactly 16 square tiles. What is the probability that you can guess the dimensions of the square she will build?

Squaring a number: The area of the square to the right is 25 square units.

$5^2 = 25$

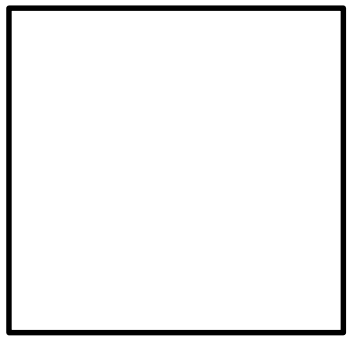


This area can be found by multiplying the square's side length by itself,
$5 \times 5 = 25$ or $5^2 = 25$.

When a number is multiplied by itself we say we are ***squaring*** the number, so 5 squared is 25.

Square Root of a number: If you know the area of a square (25 in this example), and you are trying to find the length of a side of the square, you are looking for a number that, when multiplied by itself, results in a product equal to the area of the square.

$$\sqrt{25} = 5$$



This operation is called finding the square root.

Using this example, the square root of 25 is 5 because $5 \times 5 = 25$. The square root symbol looks almost like the house we use when doing long division but it is not the same thing. The square root symbol looks like this: $\sqrt{}$

Inverse Operations: Just like addition and subtraction are inverse operations, and multiplication and division are inverse operations, squaring a number and finding the square root of a number are inverse operations. Example: $4 \times 4 = 16$ and $\sqrt{16} = 4$.

Model	$\text{side}^2 = \text{Area}$	$\sqrt{\text{Area}} = \text{side}$
	$1^2 = 1$	$\sqrt{1} = 1$
	$2^2 = 4$	$\sqrt{4} = 2$
	$3^2 = 9$	$\sqrt{9} = 3$
	$4^2 = 16$	$\sqrt{16} = 4$