

## Do Now

Please place your homework in front of you and work quietly on this Do Now. Thank you!

Combine your understanding of scientific notation, laws of exponents, and the associative property to calculate this product. Express your answer in standard form.

$$\left(1.25 \times 10^{12}\right)\left(3 \times 10^{-8}\right)$$

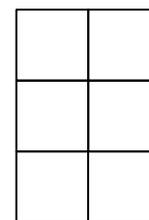
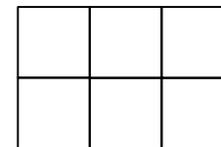


Combine your understanding of scientific notation, laws of exponents, and the associative property to calculate this product. Express your answer in standard form.

$$(1.25 \times 10^{12})(3 \times 10^{-8})$$

# NOTES

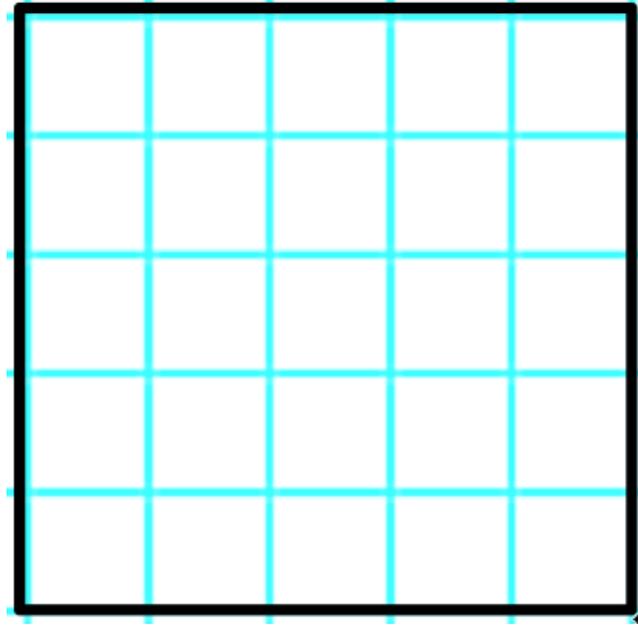
Let's agree that these two rectangles have the same dimensions: 2 cm. by 3 cm. In other words, their orientation does not matter. If your friend makes a solid rectangle using exactly 12 square tiles without stacking any tiles on top of each other, what is the probability of guessing the dimensions of your friend's rectangle?



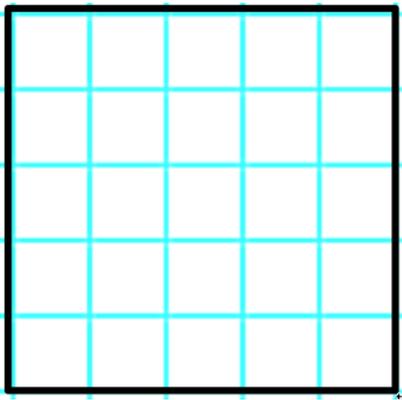
Calculate the probability of guessing the dimensions of your friend's rectangle if they used exactly 16 square tiles.

If your friend gave you a hint that the rectangle they made using 16 tiles was also a square, then what would be the probability of guessing its dimensions?

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



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.

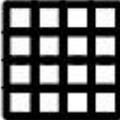


**Square Root of a number:** If you know the area of a square (25 in this example), and you are trying to find the length of a side of the square, you are looking for a number that, when multiplied by itself, results in a product equal to the area of the square.

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 is called a radical and it looks like this:



**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	side <sup>2</sup> = area	$\sqrt{\text{Area}} = \text{side}$
	$1^2 = 1$	$\sqrt{1} = 1$
	$2^2 = 4$	$\sqrt{4} = 2$
	$3^2 = 9$	$\sqrt{9} = 3$
	$4^2 = 16$	$\sqrt{16} = 4$

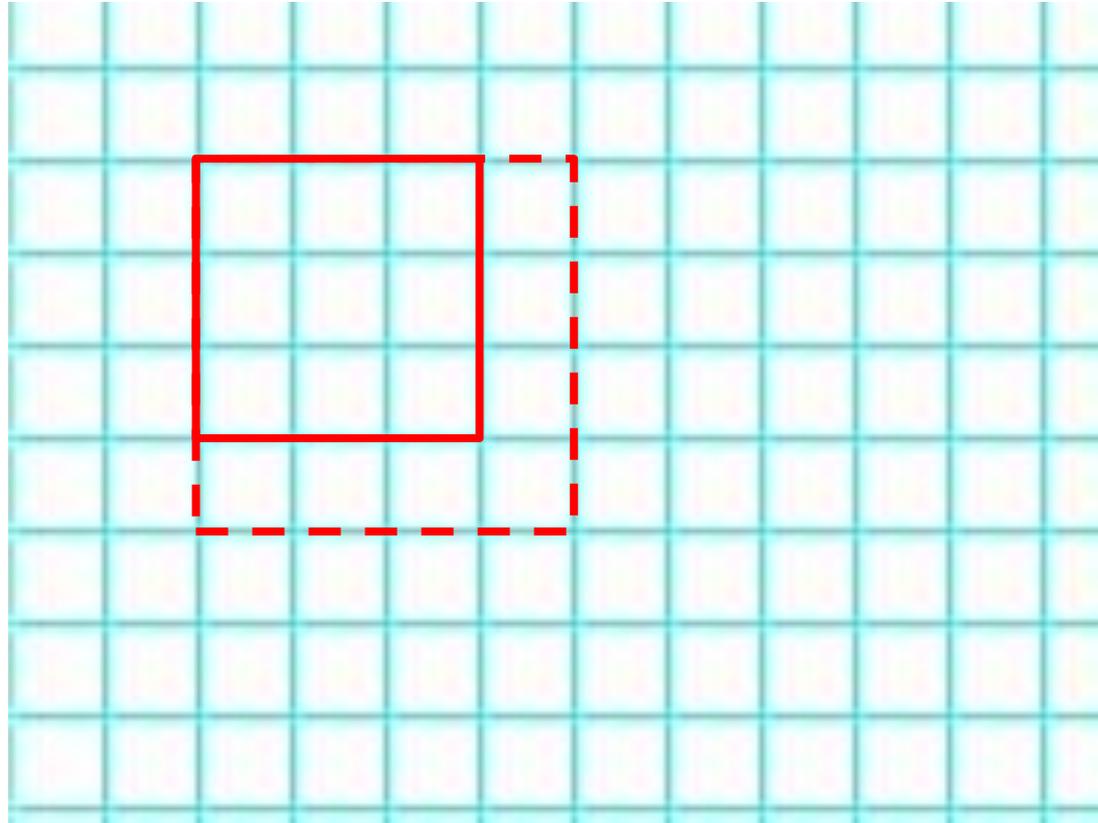
$$\sqrt{169}$$

There is another integer, that when multiplied by itself results in a product of 169. What is that integer?

$$\sqrt{\frac{4}{9}}$$

The square root of any positive number that is not a perfect square is an irrational number. These square roots may only be approximated.  $\sqrt{13}$  is between which two whole numbers?

Approximation method:



Approximate  $\sqrt{96}$