LEARNING OBJECTIVE: We will estimate the value of square roots as between two integers. (G8M7L2)
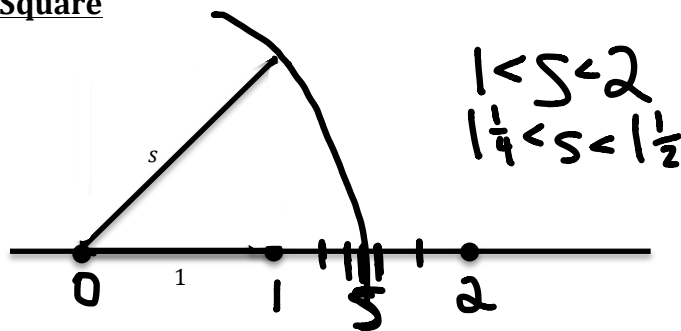
CONCEPT DEVELOPMENT:

The Unit Square

$1 < s < 2$

$1\frac{1}{4} < s < 1\frac{1}{2}$

Positive Square Roots

A positive number whose square is equal to a positive number b is denoted by the symbol $\sqrt{b}$. The symbol $\sqrt{b}$ is automatically denotes a positive number. The number $\sqrt{b}$ is called the positive square root of b.
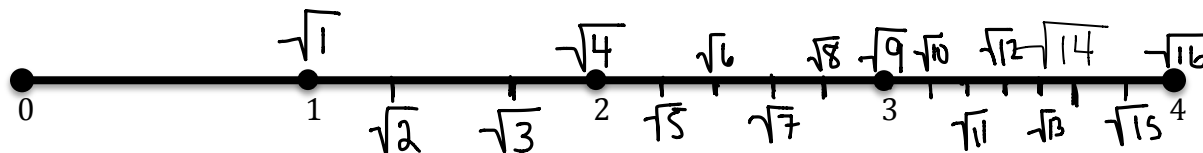
Example:

$\boxed{\sqrt{9} = 3}$

$3 \times 3 = 9$

Non-Example

$\sqrt{9} = -3$

$-\sqrt{9} = -3$ ✓

What is the positive square root of 25?

5 because 5×5=25

Estimating on a Number Line

Perfect squares have square roots that are equal to integers, but there are MANY numbers that are not perfect squares.

Guided Practice:

Steps for Determining Square Roots
1. Determine if the number you are finding the square root for is a perfect square. IF so, identify the positive square root.
2. If the number is not a perfect square, identify the two integer numbers it falls between and determine which one is a better approximation.
3. Use a calculator to check your approximation.

$\sqrt{361}$ 19	$\sqrt{576}$ 24
$\sqrt{49}$ $\underline{\sqrt{51}}$ $\sqrt{64}$ $7 < \sqrt{51} < 8$ closer to 7 $7\frac{2}{15}$	$\sqrt{64}$ $\sqrt{78}$ $\sqrt{81}$ 8 9 $8 < \sqrt{78} < 9$ but closer to 9
$\sqrt{144}$ $\sqrt{164}$ $\sqrt{169}$ 12 13 $12 < \sqrt{164} < 13$ Closer to 13	$\sqrt{123}$
$\sqrt{225}$ $\sqrt{247}$ $\sqrt{256}$ 15 16 $15 < \sqrt{247} < 16$ closer to 16	$\sqrt{281}$

NAME:_____   Math _____, Period _____

Mr. Rogove   Date:_____

Independent Practice:
Complete the following.

$\sqrt{115} =$	$\sqrt{500} =$
$\sqrt{300} =$	$\sqrt{19} =$
$\sqrt{222} =$	$\sqrt{89} =$
$\sqrt{230}$ = a # between 15 and 16 (but closer to 15) $\sqrt{225}$ $\sqrt{230}$ $\sqrt{256}$	$\sqrt{323}$ = a # between 17 and 18 (but closer to 18)
$\sqrt{600}$ = a # between 24 and 25 (but closer to 24)	$\sqrt{26}$ = a # between 5 and 6 (but closer to 5)
$\sqrt{109}$ = a # between 10 and 11 (but closer to 10)	$\sqrt{120}$ = a # between 10 and 11 (but closer to 11)

Activating Prior Knowledge:

We know our square roots of perfect squares. Simplify if possible.

$\sqrt{324}$	$\sqrt{196}$

Closure:

Give Exit Ticket for Lesson 2.

Notes:

This maps to lesson 2 from Mod 7, Grade 8.
Do NCTM activity with this lesson?