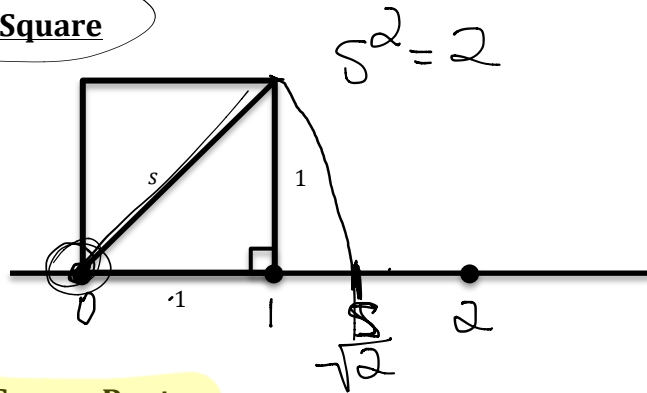


LEARNING OBJECTIVE: We will estimate the value of square roots (Lesson 68)

CONCEPT DEVELOPMENT:

The Unit Square



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 .

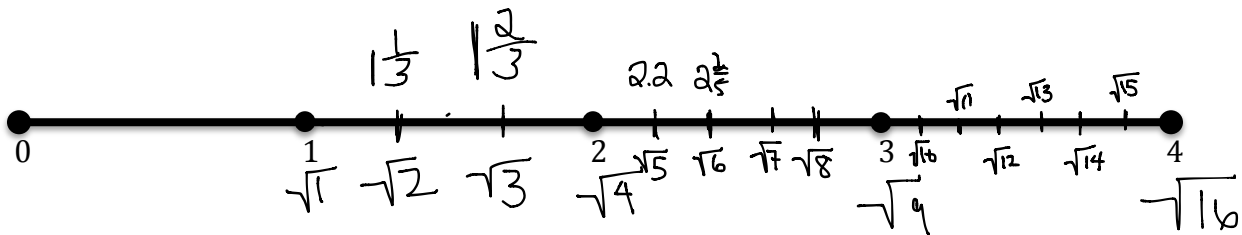
Example:
 $\sqrt{9} = 3$

Non-Example
 $\sqrt{9} = -3$

What is the positive square root of 25?

5

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.

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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
$\sqrt{49}$ $\sqrt{51}$ $\sqrt{64}$ 7 $7\frac{2}{3}$ 8 7.14	$\sqrt{64}$ $\sqrt{78}$ $\sqrt{81}$ 8 $8\frac{14}{17}$ 9 8.83
$\sqrt{144}$ $\sqrt{164}$ $\sqrt{169}$ 12 $12\frac{20}{25}$ 13 $12\frac{4}{5}$ 12.81	$\sqrt{121}$ $\sqrt{123}$ $\sqrt{144}$ 11 $11\frac{2}{23}$ 12 11.09
$\sqrt{225}$ $\sqrt{247}$ $\sqrt{256}$ 15 $15\frac{20}{31}$ 16 15.72	$\sqrt{256}$ $\sqrt{281}$ $\sqrt{289}$ 16 $16\frac{25}{33}$ 17 16.76

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INDEPENDENT PRACTICE:

Complete the following. The first row is an example.

$\sqrt{1} = 1$	$\sqrt{4} = 2$
$\sqrt{9} = 3$	$\sqrt{16} = 4$
$\sqrt{25} = 5$	$\sqrt{36} = 6$
$\sqrt{49} = 7$	$\sqrt{64} = 8$
$\sqrt{81} = 9$	$\sqrt{100} = 10$
$\sqrt{121} = 11$	$\sqrt{144} = 12$
$\sqrt{169} = 13$	$\sqrt{196} = 14$
$\sqrt{225} = 15$	$\sqrt{256} = 16$
$\sqrt{289} = 17$	$\sqrt{324} = 18$
$\sqrt{361} = 19$	$\sqrt{400} = 20$
$\sqrt{441} = 21$	$\sqrt{484} = 22$
$\sqrt{529} = 23$	$\sqrt{576} = 24$
$\sqrt{625} = 25$	$\sqrt{\quad} = \text{a \# between 17 and 18}$
$\sqrt{\quad} = \text{a \# between 24 and 25}$	$\sqrt{\quad} = \text{a \# between 5 and 6}$
$\sqrt{\quad} = \text{a \# between 10 and 11}$	$\sqrt{\quad} = \text{a \# between 2 and 3}$

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ACTIVATING PRIOR KNOWLEDGE:

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

$\sqrt{324}$	$\sqrt{196}$
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CLOSURE:

Give Exit Ticket for Lesson 2.

NOTES:

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