

Agenda:

- 1) Bell Ringer: go over pgs 19 and 29
- 2) Lesson 3: ordering and comparing numbers, absolute value, integers, approximating square roots
- 3) Homework: pgs 49-51

Sep 15-10:44 PM

Approximating and Ordering Irrational Numbers

Essential Question: How do you place irrational numbers (such as  $\sqrt{20}$ ) on a number line?

1) Approximate the  $\sqrt{13}$  to the nearest tenth and place on the number line.

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2) Approximate each of the following irrational numbers and graph on the number line.

A)  $\sqrt{10} \approx 3.16$       B)  $\sqrt{12} \approx 3.46$       C)  $\sqrt{14} \approx 3.7$

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3) Put the following numbers in order from least to greatest.

$-7.5, -\sqrt{55}, -789\%, -\sqrt{64}$

3 4 2 1

4) Order the following from least to greatest.

$\sqrt{7}, 7, \sqrt{11}, 3.5, 389\%$

1 5 2 3 4

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5) Order the following numbers from least to greatest and then place on the number line in their approximate places.

$-\sqrt{26}, \sqrt{43}, 6, 5.5$

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Something to think about.....

Unit 1 - Rational Proportions

Unit 2 - Number Systems

How do you order  $\sqrt{2}$ ,  $\sqrt{3}$ , and  $\sqrt{4}$ ?

⑦  $1 + \frac{1}{5} = 1\frac{1}{5}$  or  $\frac{6}{5}$


$15000 \div 18000 = \frac{5}{6}$

$\frac{3 \frac{1}{2}}{4 \frac{1}{8}}$

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Number Sense and Operations: Lesson 3

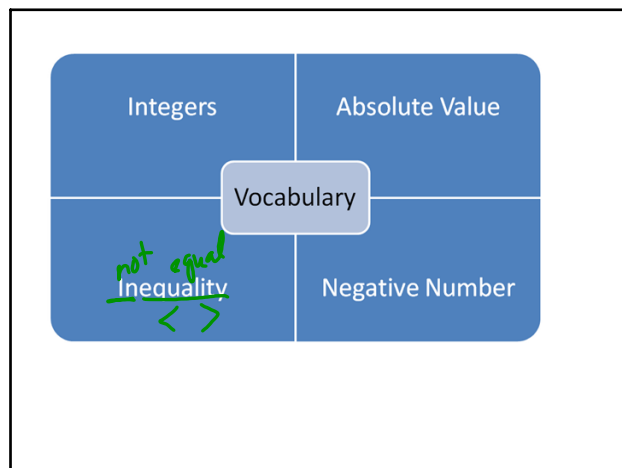
Lesson 3: Integers, Square Roots, Absolute Value, and Ordering Numbers on a Number Line



What you'll learn:

- To compare and order integers on a number line
- To find the absolute value of an expression
- To approximate square roots and cubic roots

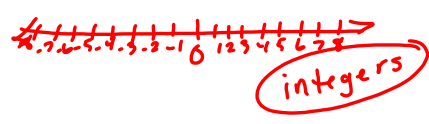
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Notes:

Draw a number line below from -8 to +8.



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Negative numbers, zero, and positive numbers are all integers.

Integers can be represented as points on a number line.

Where are integers used in the real-world?

- 1) #
- 2) Temp.
- 3) sea level

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Write an integer for each situation.

- A profit of \$1300 +1300
- 400 feet above sea level +400
- 300 feet below sea level -300
- 2 under par -2
- A temperature drop of 10 degrees -10

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A mathematical sentence containing a  $<$  or  $>$  is called an inequality.

An inequality compares two numbers.

$<$  less than       $>$  greater than

Fill in each blank below.

- 1)  $-3$   $\leq$   $5$
- 2)  $0$   $\leq$   $10$
- 3)  $6$   $\geq$   $-13$
- 4)  $-5$   $>$   $-7$
- 5)  $9$   $>$   $-14$

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Place the following integers in order. -10, 5, 0, -8, 4, -2

$-10, -8, -2, 0, 4, 5$

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A number's distance from zero is called the number's absolute value.

4 and -4 have the same absolute value. They are both 4 away from zero.

Find each of the following absolute values:

- 1)  $|5| = 5$
- 2)  $|-6| = 6$
- 3)  $|-19| = 19$
- 4)  $|0| = 0$
- 5)  $|-12| = 12$

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Practice:

- 1) Write two inequalities using 4 and -2.

$$4 > -2$$

$$-2 < 4$$

- 2) Graph the following integers on a number line: -3, 6, -1



- 3) Describe a situation that involves integers?

- 4) Where does the square root of 13 go on a number line? Is it an integer? Why or why not?

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

$\sqrt{13}$  Between 3 and 4

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Approximating Square Roots

Essential Question: How do you place irrational numbers (such as  $\sqrt{20}$ ) on a number line?

- 1) Make a list of the perfect squares from 1 to 225.

$$\sqrt{1} = 1$$

$$\sqrt{4} = 2$$

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

$$\sqrt{25} = 5$$

$$\sqrt{36} = 6$$

$$\sqrt{49} = 7$$

$$\sqrt{64} = 8$$

$$\sqrt{81} = 9$$

$$\sqrt{100} = 10$$

$$\sqrt{121} = 11$$

$$\sqrt{144} = 12$$

$$\sqrt{169} = 13$$

$$\sqrt{196} = 14$$

$$\sqrt{225} = 15$$

P. 33

- 2) Approximate the  $\sqrt{13}$  to the nearest whole number.

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

4

Your turn- Approximate each of the following to the nearest whole number.

A)  $\sqrt{10}$

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

B)  $\sqrt{66}$

$$\sqrt{64} = 8$$

$$\sqrt{81} = 9$$

C)  $\sqrt{28}$

$$\sqrt{25} = 5$$


$$\sqrt{36} = 6$$

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3) Place each of the following numbers on the number line below.

$\sqrt{20}$ ,  $\sqrt{55}$ ,  $-\sqrt{3}$ ,  $-\sqrt{9}$



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Homework:

1) Approximate the square roots to the nearest whole number.

A)  $\sqrt{31}$                       B)  $\sqrt{109}$                       C)  $\sqrt{139}$

2) Tell whether each number is rational or irrational. Explain your reasoning.

A)  $\sqrt{41}$

B)  $-16.75$

C)  $\sqrt{36}$


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3) Order the following from least to greatest.

$\sqrt{7}$ , 7,  $\sqrt{11}$ , 3.5

4) Place the following on a number line in their approximate places.

$\sqrt{26}$ ,  $\sqrt{43}$ , 6, 5.5



5) Solve the equation:  $x^2 = 85$

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