

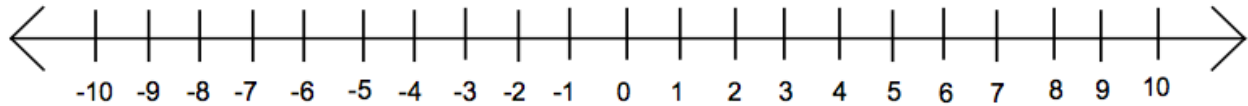
Math 4. Classwork # 14.



Absolute value of a number.

Mark the points A(0), B(1), C(-1), D(5), E(-5)

Is there anything in common between points F and G, D and E? *How far from zero is each number?*



$$|8| =$$

$$|-8| =$$

$$|24| =$$

$$|-24| =$$

Does a fraction have an absolute value?

$$\left| \frac{1}{4} \right| =$$

$$\left| -\frac{1}{4} \right| =$$

To solve an equation means to find all values which will give us a true statement when put into the equation instead of a variable. Can we solve the following equation? How many solutions does it have?

$$|x| = 5$$

$$|x| = 3$$

$$|y| = 10$$

$$|z| = -2$$

Select all numbers that have an absolute value of 12

$$a - \frac{1}{2}$$

$$b. 1.2$$

$$c. -12$$

$$d. 12$$

How would you compare these two numbers?

$$-6 \quad +3$$

$$|-6| \quad |3|$$

$$17 \quad -25$$

$$|17| \quad |-25|$$

Compare ($>$, $<$, or $=$), if possible, if a and b are positive numbers and x and y are negative numbers:

$$0 \dots x$$

$$a \dots 0$$

$$-b \dots 0$$

$$0 \dots -x$$

$$a \dots x$$

$$y \dots b$$

$$-y \dots x$$

$$-a \dots b$$

$$|x| \dots x$$

$$-|y| \dots y$$

$$a \dots |a|$$

$$|b| \dots |-b|$$

$$|x| \dots a$$

$$|x| \dots -x$$

$$|x| \dots -|y|$$

$$a \dots |-b|$$

Subtract Either Way Around

It doesn't matter which way around we do a subtraction, the absolute value will always be the same:

$$|7-3| = 4 \quad (7-3 = 4)$$

$$|3-7| = 4 \quad (3-7 = -4, \text{ and } |-4| = 4)$$

Solve equations:

$$\begin{array}{ccc} & |x - 15| = 5 & \text{since } |5| = |-5| = 5, \text{ then:} \\ & \swarrow \quad \searrow & \\ x - 15 = 5 & \text{or} & x - 15 = -5 \\ x = 5 + 15 = 20 & & x = -5 + 15 = 10 \\ & x = 20, 10 & \end{array}$$

$$|3(x - 5)| = 21$$

$$|8x - 10| = 6$$

$$|2x| = 42$$

Simplify the following expressions:

$$\text{a) } -(m - a) - (k + a) =$$

$$\text{b) } m + (k - a - m) =$$

$$\text{c) } m - (a + m) - (-a - m) =$$

$$\text{d) } a - (a - b)$$

Simplify the following expressions:

$$\text{a) } 2a + 3(a + b) - 3b =$$

$$\text{b) } 5(m - 3n) + 14n =$$

A swimming pool can be filled by one pipe in 5 hours, by another pipe in 10 hours and by a third pipe in 15 hours. How long it will take to fill up the pool if all three pipes are working?