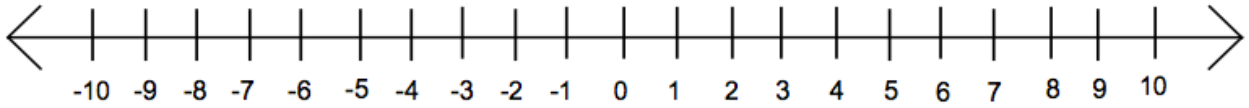
Math 4. Classwork # 13.

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 +3 |-6| |3| 17 -25 |17| |-25|

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

$0 \ldots x$ $a \ldots 0$ $-b \ldots 0$ $0 \ldots -x$

$a \ldots x$ $y \ldots b$ $-y \ldots x$ $-a \ldots b$

$|x| \ldots x$ $-|y| \ldots y$ $a \ldots |a|$ $|b| \ldots |-b|$

$|x| \ldots a$ $|x| \ldots -x$ $|x| \ldots -|y|$ $a \ldots |-b|$

Subtract Either Way Around

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

$|7-3| = 4$ *(7−3 = 4)*

$|3-7| = 4$ *(3−7 = −4, and |−4| = 4)*

Solve equations:

$|x - 15| = 5$ since $|5| = |-5| = 5$, then:

$x - 15 = 5$ *or* $x - 15 = -5$

$x = 5 + 15 = 20$ $\quad$ $x = -5 + 15 = 10$

$x = 20,10$

$|3(x - 5)| = 21$ $\quad$ $|8x - 10| = 6$ $\quad$ $|2x| = 42$

Simplify the following expressions:

a) $-(m - a) - (k + a) =$

b) $m + (k - a - m) =$

c) $m - (a + m) - (-a - m) =$

d) $a - (a - b)$

Simplify the following expressions:

a) $2a + 3(a + b) - 3b =$

b) $5(m - 3n) + 14n =$

A swimming pool can be filed 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?