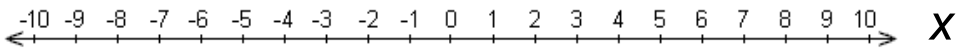
1.2 Absolute Value Notation and Interval Notation

Math Learning Target:

"I can graph transformations of the absolute value function, and state all properties. I can express a solution in set notation, absolute value notation and interval notation. I can graph all solutions on the real number line. I can apply what I have learned in familiar and unfamiliar settings."

absolute value The **absolute value** of a number is its distance from the origin if the number is placed on the real number line.

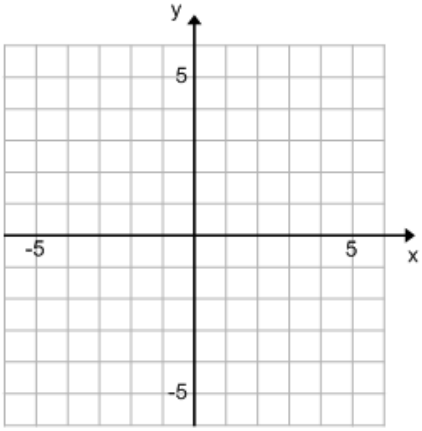


Let x represent an unknown real number. Its absolute value is represent by $|x|$.

Since each element x on an axis has one, and only one, absolute value, the absolute value of x can be described as a function.

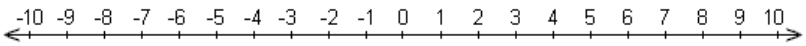
Graph $f(x) = |x|$

Important Properties:

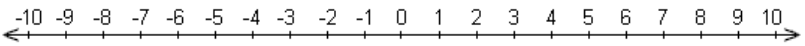


Examples

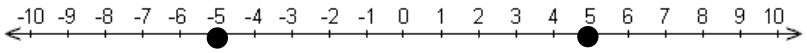
1. Express using absolute value notation: $\{x \in R \mid x \leq -5 \text{ or } x \geq 5\}$



2. Graph on the real number line: $\{x \in R \mid |x| < 4\}$



3. Express using absolute value notation:



4. Express in interval notation:
   a) $\{x \in R \mid x > 6\}$

   b) $\{x \in R \mid -3 \leq x \leq 5\}$

   c) $\{x \in R \mid \ \mid x \mid < 2\}$

   If #4 was difficult, study video lessons 1, 2 and 3:

   http://courseware.cemc.uwaterloo.ca/8/assignments/75/0

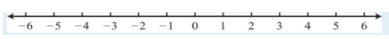
On any assessment in this course, you must be prepared to present your solution in set notation, interval notation and absolute value notation.

And finally... what is $\sqrt{x^2}$ simplified?

MathSIP!

pg. 16 #2, 3, 4*, 5, 7 + quizzes below

**Final Answer Corrections:*

4c:  i.e. no solution (so no "shading")

4d:  i.e. entire number line (entire line is "shaded")

Now do these two quick quizzes:

http://courseware.cemc.uwaterloo.ca/8/assignments/75/3

http://courseware.cemc.uwaterloo.ca/8/assignments/75/4