

Review:

Solve the following absolute value equations:

a. $|m| = 10$
 $m = 10$ $m = -10$
 $\{10, -10\}$

b. $|-8x - 2| = 6$ $\{-1, \frac{1}{2}\}$
 $-8x - 2 = 6$
 $+2 \quad +2$
 $-8x = 8$
 $x = -1$
 $-8x - 2 = -6$
 $+2 \quad +2$
 $-8x = -4$
 $x = \frac{1}{2}$

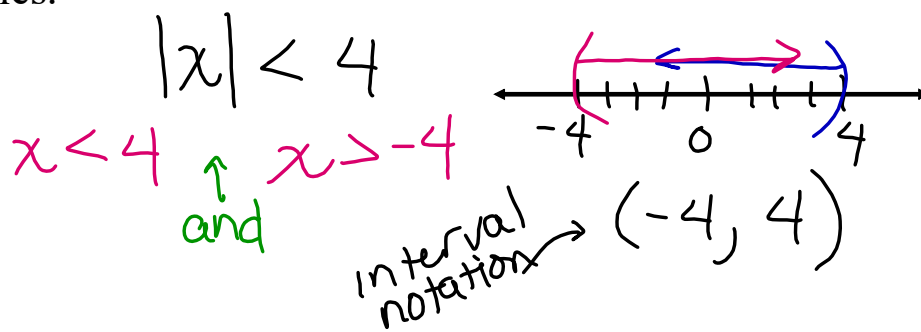
c. $-9|a - 7| = -18$
 $-9 \quad -9$
 $|a - 7| = 2$

$|a - 7| = 2$
 $a - 7 = 2$ $a - 7 = -2$
 $+7 \quad +7$ $+7 \quad +7$
 $a = 9$ $a = 5$
 $\{5, 9\}$

① abs. val by itself
 ② make 2 equations (one = + one = -)

Solving Absolute Value Inequalities:

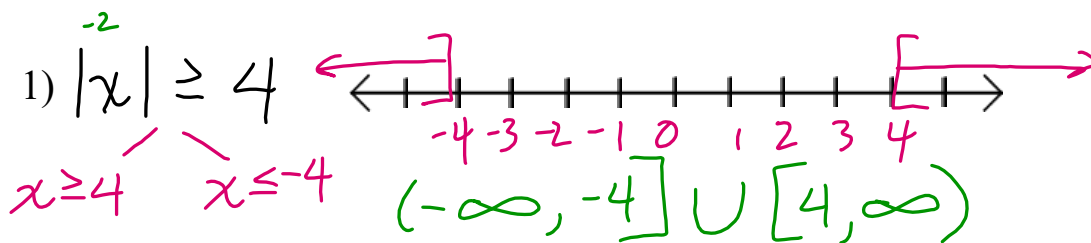
Just like solving absolute value equations create two equations, solving absolute value inequalities create two inequalities.



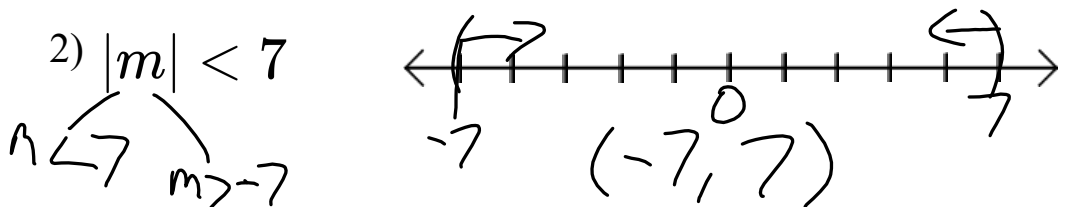
What happens to the inequality sign when I multiply or divide by a negative?

flips

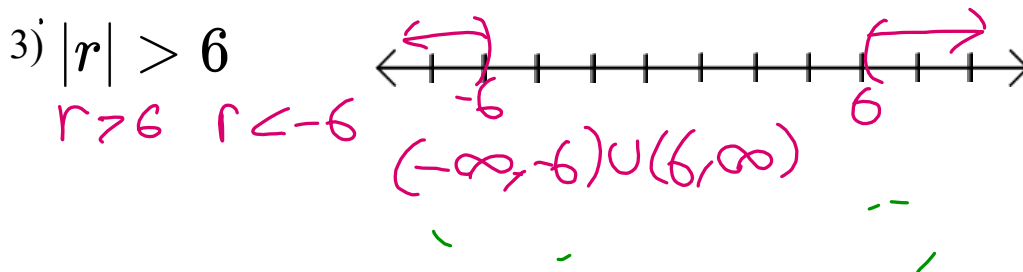
Solve the following absolute value inequalities. Graph and write in interval notation.

1) $|x| \geq 4$ 

$x \geq 4$ $x \leq -4$ $(-\infty, -4] \cup [4, \infty)$

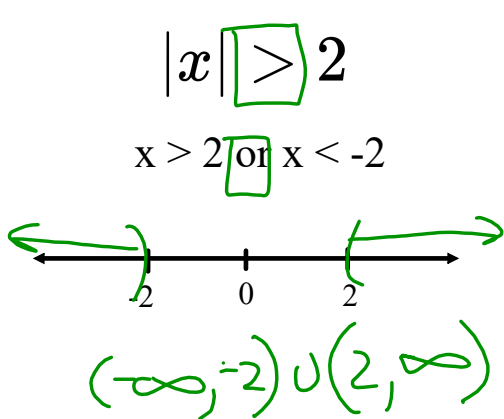
2) $|m| < 7$ 

$m < 7$ $m > -7$ $(-7, 7)$

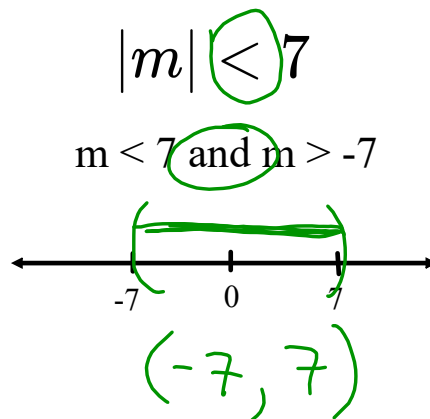
3) $|r| > 6$ 

$r > 6$ $r < -6$ $(-\infty, -6) \cup (6, \infty)$

Did you notice any relationship between the inequality signs and the graphs?

$|x| > 2$ 

$x > 2$ or $x < -2$ $(-\infty, -2) \cup (2, \infty)$

$|m| < 7$ 

$m < 7$ and $m > -7$ $(-7, 7)$

$>$ is OR
 $<$ is AND

Practice:

Textbook p. 104

15-16, 29-32 (all)

Graph all inequalities and write in interval notation.