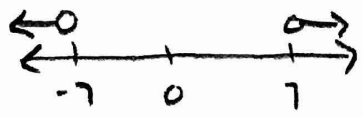
Homework: Absolute Value Inequalities (greater than) Name: Key

Solve each inequality and **graph** solutions. Great<u>OR</u> than

1. $|x| > 7$

m: 0

$x > 7$ or $x < -7$



2. $|7 - 3x| > 10$

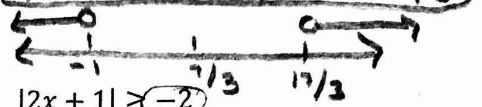
m: $\frac{-7}{-3} = \frac{7}{3}$

$7 - 3x > 10$ or $7 - 3x < -10$

$-7 \quad -7 \qquad -7 \quad -7$

$\frac{-3x}{-3} > \frac{3}{-3}$ Flip $\qquad \frac{-3x}{-3} < \frac{-17}{-3}$ Flip!

$x < -1$ or $x > 17/3$



3. $|2x - 5| \geq 7$

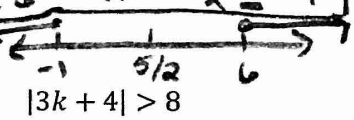
m: $\frac{5}{2}$

$2x - 5 \geq 7$ or $2x - 5 \leq -7$

$+5 \quad +5 \qquad +5 \quad +5$

$\frac{2x}{2} \geq \frac{12}{2}$ or $\frac{2x}{2} \leq \frac{-2}{2}$

$x \geq 6$ or $x \leq -1$



4. $|2x + 1| \geq -2$

m: $\frac{-1}{2}$

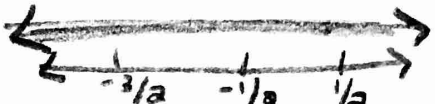
$2x + 1 \geq -2$ or $2x + 1 \leq 2$

$-1 \quad -1 \qquad -1 \quad -1$

$\frac{2x}{2} \geq \frac{-3}{2}$ $\qquad \frac{2x}{2} \leq \frac{1}{2}$

$x \geq -3/2$ $\qquad x \leq 1/2$

TR



5. $|3k + 4| > 8$

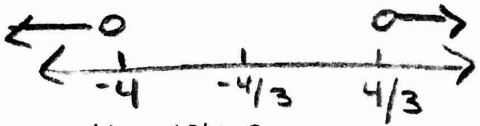
m: $-\frac{4}{3}$

$3k + 4 > 8$ or $3k + 4 < -8$

$-4 \quad -4 \qquad -4 \quad -4$

$\frac{3k}{3} > \frac{4}{3}$ $\qquad \frac{3k}{3} < \frac{-12}{3}$

$k > 4/3$ or $k < -4$



6. $|1 + 2x| > 5$

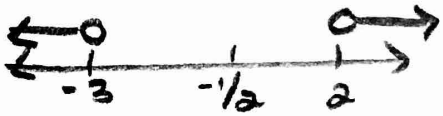
m: $\frac{-1}{2}$

$1 + 2x > 5$ or $1 + 2x < -5$

$-1 \quad -1 \qquad -1 \quad -1$

$\frac{2x}{2} > \frac{4}{2}$ $\qquad \frac{2x}{2} < \frac{-6}{2}$

$x > 2$ or $x < -3$



7. $|4x - 10| \geq 2$

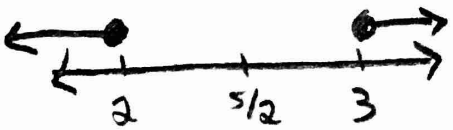
m: $\frac{10}{4} = \frac{5}{2}$

$4x - 10 \geq 2$ or $4x - 10 \leq -2$

$+10 \quad +10 \qquad +10 \quad +10$

$\frac{4x}{4} \geq \frac{12}{4}$ $\qquad \frac{4x}{4} \leq \frac{8}{4}$

$x \geq 3$ or $x \leq 2$



8. $|3s + 2| \geq -7$

m: $-\frac{2}{3}$

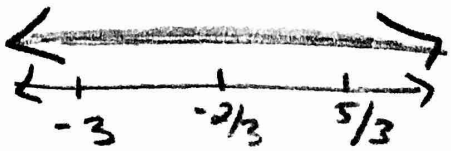
$3s + 2 > -7$ or $3s + 2 < 7$

$-2 \quad -2 \qquad -2 \quad -2$

$\frac{3s}{3} > \frac{-9}{3}$ $\qquad \frac{3s}{3} < \frac{5}{3}$

$s > -3$ $\qquad s < 5/3$

TR



9. $\left|\frac{2-3x}{5}\right| \geq 2$

m: $\frac{2}{3}$

$\frac{2-3x}{5} \geq 2$ or $\frac{2-3x}{5} \leq -2$

$\cdot 5 \quad \cdot 5 \qquad \cdot 5 \quad \cdot 5$

$2 - 3x \geq 10$ $\qquad 2 - 3x \leq -10$

$-2 \quad -2 \qquad -2 \quad -2$

$\frac{-3x}{-3} \geq \frac{8}{-3}$ Flip $\qquad \frac{-3x}{-3} \leq \frac{-12}{-3}$ Flip

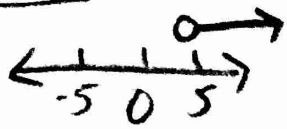
$x \leq -8/3$ or $x \geq 4$

10. $2m + 7 > 17$ (Be careful!!)

$-7 \quad -7$

$\frac{2m}{2} > \frac{10}{2}$

$m > 5$



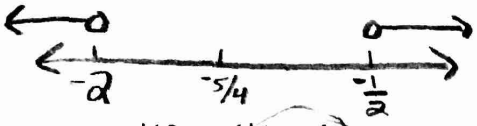
11. $|4x + 5| > 3$

$4x+5>3$ or $4x+5<-3$

$-5\ -5$ $\quad$ $-5\ -5$

$\frac{4x>-2}{4}$ $\quad$ $\frac{4x<-8}{4}$

$x > -\frac{1}{2}$ or $x < -2$



12. $|4 - 11x| \geq 9$

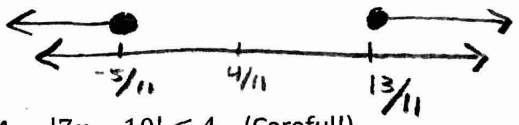
$4-11x \geq 9$ or $4-11x \leq -9$

$-4\ -4$ $\quad$ $-4\ -4$

$\frac{-11x \geq 5}{-11}$ $\quad$ $\frac{-11x \leq -13}{-11}$

Flip $\quad$ Flip!

$x \leq -\frac{5}{11}$ $\quad$ $x \geq \frac{13}{11}$



13. $|10x + 1| \geq -4$

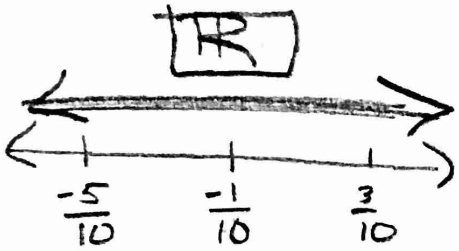
$10x+1 \geq -4$ or $10x+1 \leq 4$

$-1\ -1$ $\quad$ $-1\ -1$

$\frac{10x \geq -5}{10}$ $\quad$ $\frac{10x \leq 3}{10}$

$x \geq -\frac{1}{2}$ or $x \leq \frac{3}{10}$

R



14. $|7x - 10| \leq 4$ (Careful!)

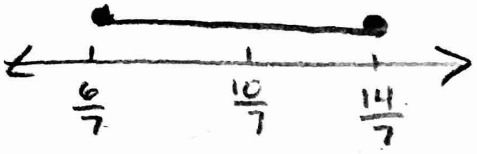
less than AND

$7x-10 \leq 4$ and $7x-10 \geq -4$

$+10\ +10$ $\quad$ $+10\ +10$

$\frac{7x \leq 14}{7}$ $\quad$ $\frac{7x \geq 6}{7}$

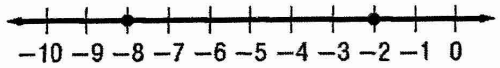
$x \leq 2$ and $x \geq \frac{6}{7}$



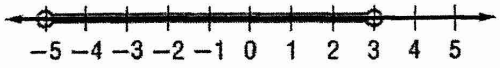
Match each open sentence with the graph of its solution set.

1. $|x| > 2$ C
2. $|x + 5| = 3$ A
3. $|x - 2| \leq 3$ D
4. $|x + 1| < 4$ B

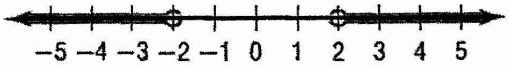
a.



b.



c.



d.