Algebra 1
Mrs. Moore

Name: Key

Two-Step and Multi-Step Inequalities (Day 1)

Solving Linear Inequalities: Follow the exact same steps as when solving equations with one exception:

**When multiply or divide by a NEGATIVE number,

you MUST flip the inequality symbol**

TWO-STEP INEQUALITIES

a. $3x - 7 < 8$

$+7 \quad +7$

$\frac{3x}{3} < \frac{15}{3}$

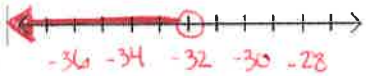
$x < 5$

b. $5 + \frac{x}{4} < -3$

$-5 \quad -5$

$4 \cdot \frac{x}{4} < -8 \cdot 4$

$x < -32$

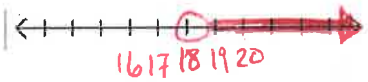


c. $\frac{2}{3}x - 5 > 7$

$+5 \quad +5$

$\frac{3}{2} \cdot \frac{2}{3}x > 12 \cdot \frac{3}{2}$

$x > 18$

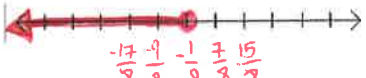


d. $\frac{1}{6} - \frac{2}{3}x \geq \frac{1}{4}$

$-\frac{1}{6} \quad -\frac{1}{6}$

$-\frac{3}{2} \cdot -\frac{2}{3}x \geq \frac{1}{12} \cdot -\frac{3}{2}$

$x \leq -\frac{1}{8}$



e. $-5y + 2 \geq -13$

$-2 \quad -2$

$\frac{-5y}{-5} \geq \frac{-15}{-5}$

$y \leq 3$

f. $2 \cdot 10 > \frac{5 - 3x}{2} \cdot 2$

$20 > 5 - 3x$

$-5 \quad -5$

$\frac{15}{-3} > \frac{-3x}{-3}$

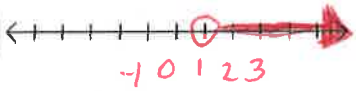
$-5 < x$ rewrite $x > -5$

g. $2 - 7x < -5$

$-2 \quad -2$

$\frac{-7x}{-7} < \frac{-7}{-7}$

$x > 1$

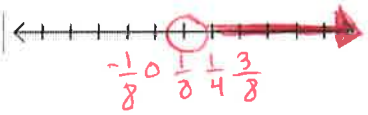


h. $\frac{4}{5}x + \frac{1}{2} > \frac{3}{5}$

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

$\frac{5}{4} \cdot \frac{4}{5}x > \frac{1}{10} \cdot \frac{5}{4}$

$x > \frac{1}{8}$



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Two-Step and Multi-Step Inequalities

MULTI-STEP INEQUALITIES

a. $-2(s+4) \le 16$

$-2s - 8 \le 16$
$+8 \quad +8$
$\frac{-2s}{-2} \le \frac{24}{-2}$

$s \ge -12$

b. $\frac{1}{3}(3x+6) \ge -1$

$x + 2 \ge -1$
$-2 \quad -2$
$x \ge -3$

Classwork: Complete the following problems. Be sure to show it to one of the teachers BEFORE YOU LEAVE CLASS in order to earn your participation points.

1. $2x - 5 \le 23$

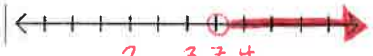
$+5 \quad +5$
$\frac{2x}{2} \le \frac{28}{2}$

$x \le 14$

2. $-6y + 5 < -16$

$-5 \quad -5$
$\frac{-6y}{-6} < \frac{-21}{-6}$

$y > \frac{7}{2}$



3. $4(x-3) < -4$

$4x - 12 < -4$
$+12 \quad +12$
$\frac{4x}{4} < \frac{8}{4}$

$x < 2$

4. $-7(r-3) \ge -14$

$-7r + 21 \ge -14$
$-21 \quad -21$
$\frac{-7r}{-7} \ge \frac{-35}{-7}$

$r \le 5$

5. $\frac{2-x}{3} > -2$ ·3

$2 - x > -6$
$-2 \quad -2$
$\frac{-x}{-1} > \frac{-8}{-1}$

$x < 8$

6. $\frac{1}{2} - \frac{2}{3}x > \frac{1}{3}$

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

$-\frac{3}{2} \cdot -\frac{2}{3}x > -\frac{1}{6} \cdot -\frac{3}{2}$

$x < \frac{1}{4}$