Math 9 *Name:* _____

6.4 – Solving Linear Inequalities *Date:* _____

Review: Which of the following is a solution to: $x \le -3\frac{1}{3}$? -3 2 0 $-3\frac{1}{3}$

Graph: $c < 7$ $m \ge -2$

Adding/Subtracting to an Inequality

Add the same number to both sides of each inequality and see if the inequality remains true:

$7 > 2$ $-5 < 0$ $-10 \ge -15$ $15 \le 30$

Subtract the same number from both sides of each inequality and see if the inequality remains true:

$7 > 2$ $-5 < 0$ $-10 \ge -15$ $15 \le 30$

Conclusion: When we add/subtract the same number on both sides, the inequality _____.

Multiplying/Dividing Inequalities

Multiply and divide each inequality by a **POSITIVE** value and see if the inequality remains true:

$7 > 2$ $-5 < 5$ $-10 \ge -15$ $15 \le 30$

When we multiply or divide an inequality by a **POSITIVE** value, the inequality _____.

Multiply and divide each inequality by a **NEGATIVE** value and see if the inequality remains true:

$7 > 2$ $\quad -5 < 5$ $\quad -10 \geq -15$ $\quad 15 \leq 30$

When we multiply or divide an inequality by a **NEGATIVE** value, the inequality _____.

Solving Inequalities

When solving inequalities we use the same rules that we used for solving equations…

EXCEPT…. If we have to ***multiply/divide*** by a ***negative*** number, we must ***reverse*** the inequality symbol.

Solve: $2x + 4 = 10$

Solve: $2x + 4 < 10$

Solve: $-2x + 4 = 10$

Solve: $-2x + 4 \geq 10$

Solve the following inequalities and graph the solutions:

$4.2 + 2x < x - 6.5$

$y - 5 < 8$

$-11+3a \geq 2a+4$

$-5x \leq 10$

$-\frac{h}{3} < 9$

$-\frac{1}{5}b+3 > 2$

$-5x-8 < 2.5$

$15+3w \leq 7+w$

$-\frac{3}{x} \geq 10$

$12-\frac{1}{m}10 < 5$