Solving Inequalities

Vocabulary:

Inequality is a mathematical sentence that compares two unequal expressions.

Here is a chart of words or phrases associated with the inequality symbols:

$<$	$\leq$	$\geq$	$>$

Open dot means the number is _____ of the solution set, thus it is not shaded.

Closed dot means the number _____ of the solution set, thus it is shaded.

Solving Inequalities

Solve and graph the solution set for the following problems. Then give the solution in interval notation.

A. **5x > 25**

B. x + 5 ≤ 4

B. −2*x* > 6

C. $-\frac{1}{2}n \leq 5$

D. $3 \geq 4d + 7$

E. $-4p + 28 \geq 8$

F. $2h - 13 < -23$

Practice: Solve and graph the following inequalities, make your own number line. Then give the solution in interval notation.

1. $-5m < 20$

2. $\frac{j}{6} \leq 0$

3. $5a > -10$

4. $\frac{c}{-3} \geq 6$

5. $m + 6 > 2$

6. $y - 3 < -4$

7. $4x + 11 \geq 19$

8. $6 < \frac{x}{-2}$

9. $27 \geq -0.9r$

10. $5m - 3 > -18$

Multi-Step Inequalities

Solve and graph the solution set for the following problems. Then give the solution in interval notation

1: $9x + 4 \leq 3x - 14$

2: $-2(x - 4) - 3x < 23$

Practice: Solve and graph the solution set for the following problems. Then give the solution in interval notation

1. $5x + 3 < 2x + 15$

2. $2(3 + 3g) > 2g + 14$

Solve the following problems. Then give the solution in interval notation

3. $2(3b-2) < 4b+8$

4. $11y-2 \le 3y+14$

5. $3q+6 \le -5(q+2)$

6. $1 < 8+b$

7. $-4x-4 < 8$

8. $5-9c > -13$

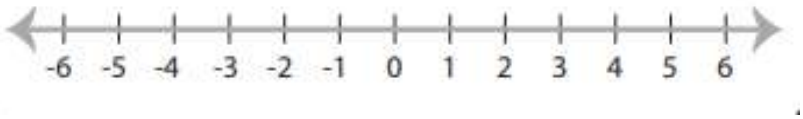
9. A high school class is planning its annual hayride. There is a flat fee of $50 plus $30 per hour to hire the hay wagon. The class has a budget of $280 for the hayride.

Part A: Write an inequality to find *h*, the number of hours they can hire the hay wagon and stay within budget.

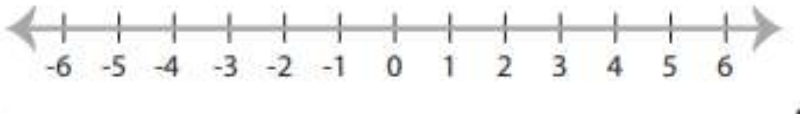
Part B: Solve the inequality.

Solving and Graphing Compound Inequalities	Graph the following compound inequalities and then write the solution in interval notation

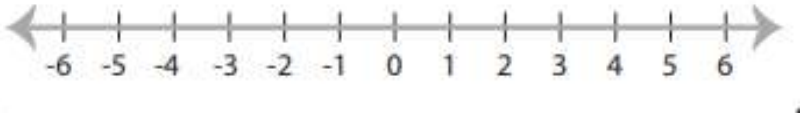
1. $x > 4$ or $x < -2$



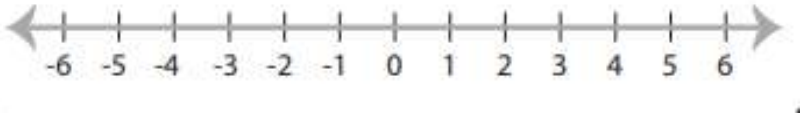
2. $x \geq 3$ or $x < -1$

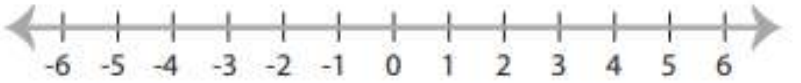
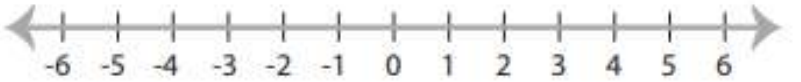
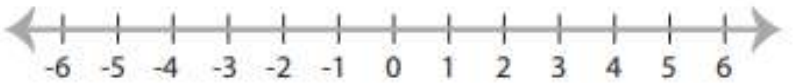


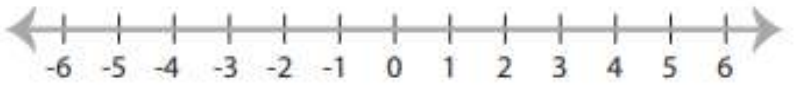
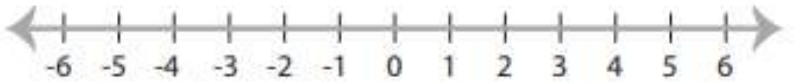
3. $x > -4$ and $x \leq 2$



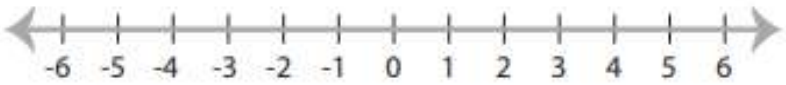
4. $-5 \leq x \leq 4$



Solve the compound inequality, graph the solution and then write the solution in interval notation	1. $x+2\leq -3$ or $x-5>-2$  2. $\frac{x}{4}\geq 8$ or $x-16\leq 10$  3. $x+5>6$ or $-6x \geq 18$ 

Solve the compound inequality, graph the solution and then write the solution in interval notation	1. $x+5>6$ and $6x \leq 18$  2. $-15 \leq x-13 \leq 0$ 

3. $-11 < \frac{x}{3} < -9$



4. $-14 < -11 + x \leq -12$