

Linear Unit: Solving Inequalities

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. $x + 5 \leq 4$

B. $-2x > 6$

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

| | |
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| | <p>Solve the following problems. Then give the solution in interval notation</p> <p>3. $2(3b - 2) < 4b + 8$</p> <p>4. $11y - 2 \leq 3y + 14$</p> <p>5. $3q + 6 \leq -5(q + 2)$</p> <p>6. $1 < 8 + b$</p> <p>7. $-4x - 4 < 8$</p> <p>8. $5 - 9c > -13$</p> <p>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.</p> <p>Part A: Write an inequality to find h, the number of hours they can hire the hay wagon and stay within budget.</p> <p>Part B: Solve the inequality.</p> |
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**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

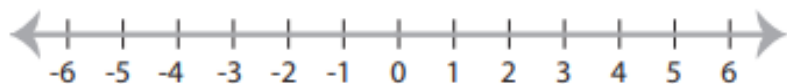
1. $x + 2 \leq -3$ or $x - 5 > -2$



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

