

Solving and Graphing Inequalities



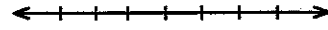
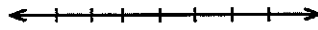
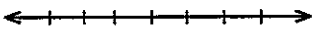
Solving an inequality is very similar to solving an equation. The main difference is that we have an inequality symbol instead of an _____.

Examples 1, 2, & 3: Solve the following inequalities. Graph each solution.

1) $p + 7 < 13$

2) $t - 14 \geq -6$

3) $5y < 20$

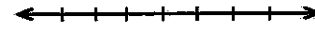
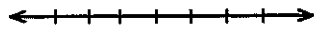
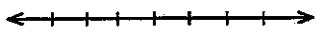


Try these: Solve the following inequalities. Graph each solution. Show all work!

4) $3m \leq -12$

5) $z - (-6) > 2$

6) $c / 2 < -7$



A Special Case: When multiplying or dividing by a _____ number, you must _____ in order to keep the inequality

Why?

Suppose you start with the true statement: $2 < 3$.
 Now, multiply both sides by negative 2, for example.
 What did you get?



Example: Solve: $-4n > 24$

INEQUALITIES

Inequalities Review

Which number is a solution of the inequality?

____ 1. $-6 \geq 6y$

- a. 1 b. -1 c. 36 d. 8

____ 2. $8x + 2 \geq 18$

- a. 2 b. -2 c. 0 d. -4

Write an inequality to model the situation.

____ 3. Thomas earned \$44 or less.

- a. $t > 44$ b. $t \leq 44$ c. $t < 44$ d. $t \geq 44$

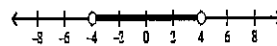
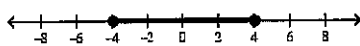
____ 4. A number exceeds 55.

- a. $n \leq 55$ b. $n < 55$ c. $n \geq 55$ d. $n > 55$

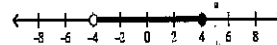
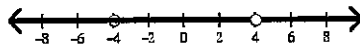
Write a compound inequality that represents each situation. Graph your solution.

____ 5. all real numbers that are greater than -4 and less than 4

- a. $-4 \leq x \leq 4$ c. $-4 < x < 4$

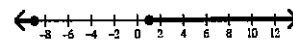
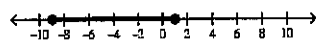


- b. $-4 < x < 4$ d. $-4 < x \leq 4$

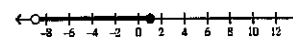
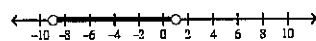


____ 6. all real numbers at least -9 and at most 1

- a. $-9 \leq x \leq 1$ c. $-9 \geq x \geq 1$



- b. $-9 < x < 1$ d. $-9 \geq x \geq 1$



Solve the inequality. Then graph your solution.

7. $x + 4 \geq -6$

8. $r - 3 < 4$

9. $-\frac{x}{4} \leq 8$

10. $-3x + 8 > -1$

Solve the inequality. (4 points each)

11. $4 - 6y > 5(y + 3)$

12. $-4x + 2 < 22$

13. $5(w - 3) \geq 30$

14. $14x - 8 \leq -2x + 24$

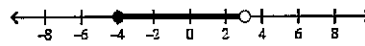
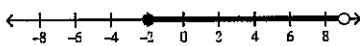
Multiple Choice: *Identify the choice that best completes the statement or answers the question.*

Solve the inequality. Then graph your solution.

___ 15. $-12 \leq 2x - 4 < 10$

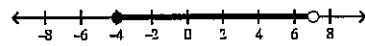
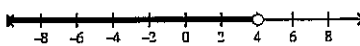
a. $-2 \leq x < 9$

c. $-4 \leq x < 3$



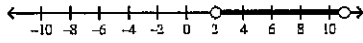
b. $-10 \leq x < 4$

d. $-4 \leq x < 7$

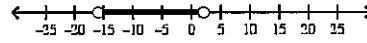


16. $-5 < 2x - 9 < 13$

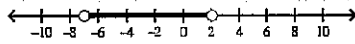
a. $2 < x < 11$



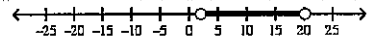
c. $-16 < x < 2$



b. $-7 < x < 2$

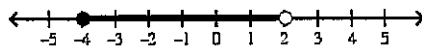


d. $2 < x < 20$



Write a compound inequality that the graph could represent.

17.



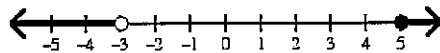
a. $-2 \leq x < 4$

c. $x \geq -4$ or $x < 2$

b. $-4 < x \leq 2$

d. $-4 \leq x < 2$

18.



a. $q < -5$ or $q \geq 3$

c. $-5 \leq q < 3$

b. $q > -3$ or $q \leq 5$

d. $q < -3$ or $q \geq 5$

Short Answer

19. Your class hopes to collect at least 325 cans of food for the annual food drive. There were 141 cans donated the first week and 148 more the second week.

a. Write an inequality that describes this situation. Let c represent the number of cans of food that must be collected by the end of the third week for your class to meet or surpass your goal.

b. How many cans are needed to meet or surpass your goal?

20. The French club is sponsoring a bake sale. If their goal is to raise at least \$150, how many pastries must they sell at \$3.00 each in order to meet that goal? Write and solve an inequality.

21. Tina can type at least 42 words per minute. Write and graph an inequality to model this situation.