

6.5

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Math 9

Ch 6 Review Inequalities

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1. Solve for x given $x + 45 = 91$.

$$x = 91 - 45$$

$$x = 46$$

3. Solve for x given $x - 46 = 96$.

$$x = 96 + 46$$

$$x = 142$$

5. Solve for x given $4x + 29 = -105$.

$$4x = -105 - 29$$

$$4x = -134$$

$$x = -33.4$$

7. Solve for x : $\frac{4}{5}x + 23 = -25$

$$\frac{4}{5}x = -48$$

$$x = -60$$

9. Solve for x given $4(3x - 7) = -7$.

$$12x - 28 = -7$$

$$12x = 21$$

$$x = \frac{7}{4}$$

11. Solve for x : $\frac{12x - 7}{4} = \frac{5x + 18}{3}$

$$36x - 21 = 20x + 72$$

$$16x = 93$$

$$x = \frac{93}{16}$$

13. Solve: $x - 44 < -31$

$$x < 13$$

15. Solve: $12 - x < 31$

$$-x < 31 - 12$$

$$-x < 19$$

$$x > -19$$

17. Solve: $44 - x < -31$

$$\frac{-x < -75}{-1 \quad -1}$$

$$x > 75$$

2. Solve for x given $x + 34 = 72$.

$$x = 72 - 34$$

$$x = 38$$

4. Solve for x given $x + 64 = 22$.

$$x = 22 - 64$$

$$x = -42$$

6. Solve for x given $\frac{4}{5}x - 23 = 25$.

$$\frac{4}{5}x = 48$$

$$x = 48 \left(\frac{5}{4}\right)$$

$$x = 60$$

8. Solve for x : $4(3x - 7) = 7$

$$12x - 28 = 7$$

$$12x = 35$$

$$x = \frac{35}{12}$$

10. Solve for x given $4(x - 1) + 4x = 2(3x + 1)$.

$$4x - 4 + 4x = 6x + 2$$

$$8x - 4 = 6x + 2$$

$$2x = 6$$

$$x = 3$$

12. Solve: $x - 26 > 35$

$$x > 61$$

14. Solve: $x - 26 > -35$

$$x > -11$$

16. Solve: $26 - x > 35$

$$-x > 9$$

$$\frac{-x > 9}{-1 \quad -1}$$

$$x < -9$$

18. Solve: $26 - x > -35$

$$-x > -61$$

$$x < 61$$

19. Solve: $5x - 18 > 2(4x - 15)$

$$\begin{aligned} 5x - 18 &> 8x - 30 \\ 12 &> 3x \\ 4 &> x \end{aligned}$$

21. How many of the following numbers are solutions to $2x - 17 < 13$?

$-15, -1, 13, 15$

$$\begin{aligned} 2x &< 30 \\ x &< 15 \end{aligned}$$

Solve.

23. $8 - 2x + 13 < 5x - 3 - 2x$

$$\begin{aligned} 21 - 2x &< 3x - 3 \\ 18 &< 5x \\ \frac{18}{5} &< x \end{aligned}$$

25. $3(2x - 5) > 5x - 3$

$$\begin{aligned} 6x - 15 &> 5x - 3 \\ x &> 12 \end{aligned}$$

27. $5(2w + 3) < 4(15 - w) - 3$

$$\begin{aligned} 10w + 15 &< 60 - 4w - 3 \\ 10w + 15 &< 57 - 4w \\ 14w &< 42 \\ w &< 3 \end{aligned}$$

29. The cost of a new car (N) is more than 4 times the cost of a particular used car (U). Which of the following relationships correctly describes the relationship between N and U ?

- a) $N > 4U$
- b) $U < 4N$
- c) $N - U = 4$
- d) $N = 4U + 4$
- e) $4U > N$

$$N > 4U$$

20. Solve: $-4(-6 - 5x) - 23 < 9(2x + 3)$

$$\begin{aligned} 24 + 20x - 23 &< 18x + 27 \\ 20x + 1 &< 18x + 27 \\ 2x &< 26 \\ x &< 13 \end{aligned}$$

22. How many of the following numbers are solutions to $13 - 2x < 28$?

$-15, -14, 10, 15$

$$\begin{aligned} -2x &< 15 \\ x &> \frac{15}{-2} \end{aligned}$$

24. $k + 10 + 6k - 12 > 4k - 2k$

$$\begin{aligned} k + 10 + 6k - 12 &> 2k \\ 7k - 2 &> 2k \\ -2 &> -5k \\ \frac{2}{5} &< k \end{aligned}$$

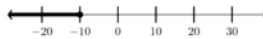
26. $7(3 - 4n) < 12n - 19$

$$\begin{aligned} 21 - 28n &< 12n - 19 \\ 40 &< 40n \\ 1 &< n \end{aligned}$$

28. $11(2 - x) \leq 3x - 4(2x + 5)$

$$\begin{aligned} 22 - 11x &\leq 3x - 8x + 20 \\ 22 - 11x &\leq -5x + 20 \\ 2 &\leq 6x \\ \frac{1}{3} &\leq x \end{aligned}$$

30. Which inequality describes the graph?



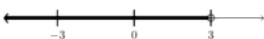
- a) $3x \leq -30$
- b) $-3x < 30$
- c) $3x \leq 30$
- d) $-3x \leq -30$
- e) $-3x \geq -30$

$$\begin{aligned} x &\geq -10 \\ -3x &\geq 30 \end{aligned}$$

31. Solve for n : $n + (n + 1) + (n + 2) = -75$

$$\begin{aligned} 3n + 3 &= -75 \\ 3n &= -78 \\ n &= -26 \end{aligned}$$

33. Which inequality describes the graph?



- a) $-x > -3$ b) $-x \leq -3$ c) $-x < -3$
 d) $-x \geq -3$ e) $-x < 3$

$$x < 3 \rightarrow -x < -3$$

35. Which inequality describes the graph?



- a) $-x > -4$ b) $-x \leq -4$ c) $-x < -4$
 d) $-x \geq -4$ e) $-x < 4$

$$x \geq 4$$

37. Angela's basketball team is in first place in their league. The second place team has won 10 games. Write an inequality that describes the number of games won by Angela's team.

$$x > 10 \geq 0$$

39. Write an inequality to describe Tom's height. Tom is taller than Elise, who is 54 inches tall.

$$T > 54$$

41. Mrs. Torres has decided to spend no more than \$10,000 plus 2 times her annual income to buy a house. What is the smallest yearly income she must have in order to afford a house that is \$113,000?

$$\begin{aligned} 10,000 + 2a &\geq 113,000 \\ 2a &\geq 103,000 \\ a &\geq 51,500 \end{aligned}$$

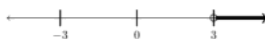
her income must be at least \$51,500.

32. What is the number of integer solutions to $1 < x^2 < 25$?

$$x = 2, 3, 4$$

so 3

34. Which inequality describes the graph?



- a) $-x > -3$ b) $-x \leq -3$ c) $-x < -3$
 d) $-x \geq -3$ e) $-x < 3$

$$3 < x \rightarrow -3 < -x$$

36. Which inequality describes the graph?



- a) $-x > -4$ b) $-x \leq -4$ c) $-x < -4$
 d) $-x \geq -4$ e) $-x < 4$

$$x \leq 4$$

38. Lincoln Junior High's debate team is in second place. The first place debate team has won 12 debates. Write an inequality describing the number of debates won by Lincoln.

$$12 > x \geq 0$$

40. Sandy and Therese were born on the same date, but different years. Sandy is 15. Therese is younger than Sandy. Write an inequality to describe Therese's age.

$$15 > T \geq 0$$

42. Carmen is buying a new car, and wishes to spend no more than $\frac{2}{5}$ of his yearly salary on the car. The car he wants costs \$11,500. What is the minimum yearly salary he must make in order to buy this car?

$$\begin{aligned} \frac{2}{5}x &\geq 11,500 \\ x &\geq 11,500 \times \frac{5}{2} \\ x &\geq 28,750 \end{aligned}$$

AT LEAST \$28,750