

Unit 0 HW 0.3 Solving Inequalities

Write the inequality that represents the sentence.

1. Four less than a number is greater than -28 .
2. Twice a number is at least 15.
3. A number increased by 7 is less than 5.
4. The quotient of a number and 8 is at most -6 .

Solve each inequality. Graph the solution.

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| 5. $3(x + 1) + 2 < 11$ | 6. $5t - 2(t + 2) \geq 8$ |
| 7. $2[(2y - 1) + y] \leq 5(y + 3)$ | 8. $\frac{1}{3}(7a - 1) \leq 2a + 7$ |
| 9. $5 - 2(n + 2) \leq 4 + n$ | 10. $-2(w - 7) + 3 > w - 1$ |

Solve each problem by writing an inequality.

11. **Geometry** The length of a rectangular yard is 30 meters. The perimeter is at most 90 meters. Describe the width of the yard.
12. **Geometry** A piece of rope 20 feet long is cut from a longer piece that is at least 32 feet long. The remainder is cut into four pieces of equal length. Describe the length of each of the four pieces.
13. A school principal estimates that no more than 6% of this year's senior class will graduate with honors. If 350 students graduate this year, how many will graduate with honors?
14. Two sisters drove 144 miles on a camping trip. They averaged at least 32 miles per gallon on the trip. Describe the number of gallons of gas they used.

Is the inequality *always*, *sometimes*, or *never* true?

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| 15. $3(2x + 1) > 5x - (2 - x)$ | 16. $2(x - 1) \geq x + 7$ |
| 17. $7x + 2 \leq 2(2x - 4) + 3x$ | 18. $5(x - 3) < 2(x - 9)$ |

Solve each compound inequality. Graph the solution.

19. $3x > -6$ and $2x < 6$

20. $4x \geq -12$ and $7x \leq 7$

21. $5x > -20$ and $8x \leq 32$

22. $6x < -12$ or $5x > 5$

23. $6x \leq -18$ or $2x > 18$

24. $2x > 3 - x$ or $2x < x - 3$

Solve each problem by writing and solving a compound inequality.

- 25.** A student believes she can earn between \$5200 and \$6250 from her summer job. She knows that she will have to buy four new tires for her car at \$90 each. She estimates her other expenses while she is working at \$660. How much can the student save from her summer wages?
- 26.** Before a chemist can combine a solution with other liquids in a laboratory, the temperature of the solution must be between 39°C and 52°C . The chemist places the solution in a warmer that raises the temperature 6.5°C per hour. If the temperature is originally 0°C , how long will it take to raise the temperature to the necessary range of values?
- 27.** The Science Club advisor expects that between 42 and 49 students will attend the next Science Club field trip. The school allows \$5.50 per student for sandwiches and drinks. What is the advisor's budget for food for the trip?