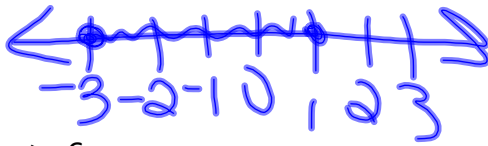


Solve and/or graph the solution of the inequality on a number line.

17. $-3 \leq x \leq 1$



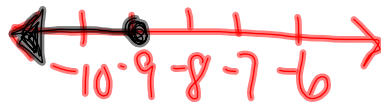
18. $x \geq -6$



19. ~~$4x \geq 36$~~

~~$x \geq 9$~~

$x \leq -9$



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Solve the proportion.

~~$\frac{3}{8} = \frac{12}{x}$~~

~~$\frac{3x}{-8} = \frac{96}{-3}$~~

$x = -32$

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Solve the equation using the zero product principle.

21. $x(3x + 13) = 10$

$$\begin{array}{r} 3x^2 + 13x = 10 \\ -10 \quad -10 \\ \hline 3x^2 + 13x - 10 \end{array}$$

$$\begin{array}{l} (3x-2)(x+5) \\ 3x-2=0 \quad x+5=0 \\ \begin{array}{r} +2+2 \\ \hline \end{array} \quad \begin{array}{r} -5-5 \\ \hline \end{array} \end{array}$$

$$\frac{3x-2}{3} = \frac{2}{3} \quad \boxed{x = \frac{2}{3} \text{ or } x = -5}$$

22. $(7x - 9)(x + 1) = 0$

$$7x - 9 = 0 \text{ or } x + 1 = 0$$

$$\boxed{x = \frac{9}{7} \text{ or } x = -1}$$

23. $x^2 + 5x - 14 = 0$

$$(x - 2)(x + 7) = 0$$

$$x - 2 = 0 \text{ or } x + 7 = 0$$

$$\boxed{x = 2 \text{ or } x = -7}$$

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Let x represent the number. Use the given conditions to write an equation. Solve the equation and find the number.

24. A number increased by 341 is equal to 547. Find the number.

$$\begin{array}{l} x + 341 = 547 \\ x = 206 \end{array}$$

25. If 6 times a number is added to -3, the result is equal to 9 times the number.

$$\begin{array}{l} 6x + (-3) = 9x \\ 6x - 3 = 9x \\ -3 = 3x \\ x = -1 \end{array}$$

Simplify the algebraic expression.

26. $-5(10x + 8) + 3(10x + 4)$

$$\begin{array}{l} -50x - 40 + 30x + 12 \\ \hline \boxed{-20x - 28} \end{array}$$

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Solve the problem.

27. Claire has received scores of 85, 88, 87, and 75 on her algebra tests. What is the minimum score she must receive on the fifth test to have an overall test score average of at least 83?

$$\frac{85+88+87+75+x}{5} \geq 83$$
$$5 \cdot \frac{335+x}{5} \geq 83 \cdot 5 \quad \boxed{x \geq 80}$$
$$335+x=415$$

28. A car rental agency charges \$150 per week plus \$0.20 per mile to rent a car. How many miles can you travel in one week for \$190?

$$\begin{array}{r} 150 + 0.2x = 190 \\ -150 \quad -150 \\ \hline .2x = 40 \\ \cdot 2 \quad \cdot 2 \quad \boxed{x = 200} \end{array}$$

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Factor the trinomial, or state that the trinomial is prime.

29. $x^2 + 5x - 6$
 $(x+6)(x-1)$

Evaluate

30. $-9x + 1$ for $x = -4$ $-9(-4) + 1 = 36 + 1 = \boxed{37}$

31. $x^2 - 5x + y^2$ $x = -1$ & $y = -2$

$$(-1)^2 - 5(-1) + (-2)^2$$
$$1 + 5 + 4 = \boxed{10}$$

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Use a proportion to solve the problem.

32. The distance that an object falls when it is dropped is directly proportional to the square of the amount of time since it was dropped. An object falls 39.2 meters in 2 seconds. Find the distance the object falls in 4 seconds.

$$\begin{aligned} y &= kx \\ \frac{39.2}{2} &= \frac{k(2)}{2} & y &= 19.6(4) \\ 19.6 &= k & y &= 78.4 \end{aligned}$$

33. When the temperature stays the same, the volume of a gas is inversely proportional to the pressure of the gas. If a balloon is filled with 275 cubic inches of a gas at a pressure of 14 pounds per square inch, find the new pressure of the gas if the volume is decreased to 55 cubic inches.

$$\begin{aligned} y &= \frac{k}{x} \\ 14 &= \frac{k}{275} & y &= \frac{3850}{55} \\ \frac{1}{1} \times \frac{k}{275} & & y &= 70 \\ k &= 3850 & & \end{aligned}$$

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