

Equation Development 3.2

Algebra 2

KEY

Solve, check, and graph the following equations and inequalities.

1) $-3x + 7 < -17$

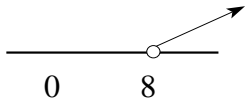
$$-3x < -24$$

$$x > 8$$

$$\checkmark -3(10) + 7 < -17$$

$$-30 + 7 < -17$$

$$-23 < -17 \checkmark$$



2) $-4x > -9x + 30$

$$\underline{+9x} \quad \underline{+9x}$$

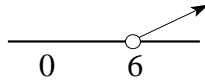
$$5x > 30$$

$$x > 6$$

$$\checkmark -4(7) > -9(7) + 30$$

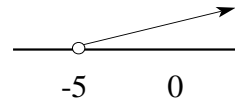
$$-28 > -63 + 30$$

$$-28 > -33 \checkmark$$



3) $-12x + 6 > -6(4 + 3x)$

$$-5 < x$$



4) $66 = -3x^2 - 9$

$$75 = -3x^2$$

$$-25 = x^2$$

$$\sqrt{-25} = x$$

$$x = 5i$$

5) $-x + 11 = 5x - 7$

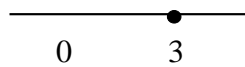
$$18 = 6x$$

$$x = 3$$

$$\checkmark -(3) + 11 = 5(3) - 7$$

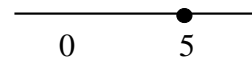
$$8 = 15 - 7$$

$$8 = 8 \checkmark$$



6) $12 - 5x - 32 + 15x = 30$

$$x = 5$$



$$7) \frac{21}{32}x = \frac{3}{19}$$

$$\left(\frac{32}{21}\right) \frac{21}{32}x = \frac{3}{19} \left(\frac{32}{21}\right)$$

$$x = \frac{3}{19} \cdot \frac{32}{21}$$

$$x = \frac{32}{133}$$

$$\frac{21}{32} \left(\frac{32}{133}\right) = \frac{3}{19} \quad \checkmark$$

$$\frac{3}{19} = \frac{3}{19}$$

$$8) \frac{12}{21}x - 3 = 17$$

$$x = 35$$

$$9) \frac{1}{5}x + 3 + \frac{3}{4}x = 2$$

$$x = -20/19$$

$$10) \frac{1}{5}x + 7 = \frac{2}{5}x - 5$$

$$\frac{1}{5} \left(-\frac{20}{19}\right) + 3 + \frac{3}{4} = 2$$

$$\frac{-4}{19} + 3 - \frac{15}{19} = 2$$

$$-1 + 3 = 2$$

$$x = 60$$

$$2 = 2 \checkmark$$

$$11) -3|c - 9| = 12$$

$$|c - 9| = -4$$

Distance cannot be negative!

$$12) |3t + 6| + 5 = 38$$

$$|3t + 6| = 33$$

$$3t + 6 = 33 \quad 3t + 6 = -33$$

$$3t = 27 \quad 3t = -39$$

$$t = 9 \quad t = -13$$

$$\checkmark 3(9) + 6 + 5 = 38$$

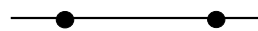
$$\checkmark 3(-13) + 6 + 5 = 38$$

$$|33| = 33$$

$$|-33| + 5 = 38$$

$$33 = 33 \checkmark$$

$$38 = 38 \checkmark$$



-13

9

$$13) -4|5p| + 7 = -33$$

$$p = 2$$

$$p = -2$$

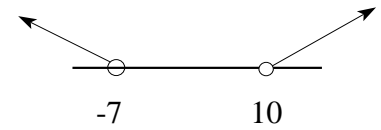
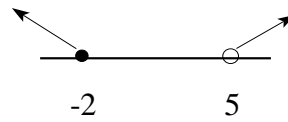
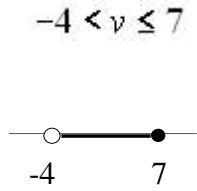
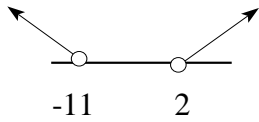
Solve and graph the compound inequalities.

14) $-11 \geq c > 2$

15) $24 > -6v \geq -42$

16) $p > 5$ or $3p \leq -6$

17) $5b + 2 < -33$ or $2b - 7 > 13$



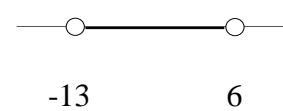
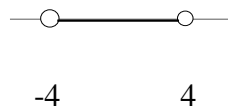
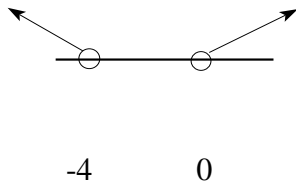
18) $-3m > 12$ or $8m > 0$

19) $-18 < 4m - 2 < 14$

20) $-15 < -3m + 3 < 42$

$m < -4$ or $m > 0$

$-16 < 4m < 16$
 $-4 < m < 4$



Solve each literal equation.

21) $3x + 3y = 12$

22) $4y - 2x = -8$

23) $\frac{1}{2}c = 3d + 7$

24) $\frac{3}{4}f + \frac{3}{2}g = 8$

$3x = -3y + 12$

$4y = 2x - 8$

$c = 6d + 14$

$\frac{3}{4}f = -\frac{3}{2}g + 8$

$x = -y + 4$

$y = \frac{1}{2}x - 2$

$f = -2g + \frac{32}{3}$