Algebra 1

Name _Key_

# Review for PC #2 - Unit 1

**Solve each inequality and graph its solution.**
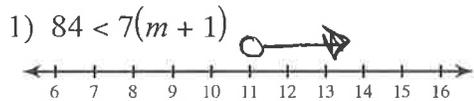
1) $84 < 7(m + 1)$

$84 < 7m + 7$
$-7 \qquad -7$

$\dfrac{77}{7} < \dfrac{7m}{7}$

$11 < m$

$\boxed{m > 11}$

2) $7 + \dfrac{m}{8} \geq 5$

$7 + \dfrac{m}{8} \geq 5$
$-7 \qquad -7$

$8 \cdot \dfrac{m}{8} \geq -2 \cdot 8$

$\boxed{m \geq -16}$

3) $-4 + 4(5 + 5m) \leq 7m - 36$
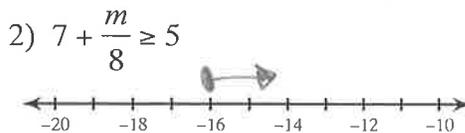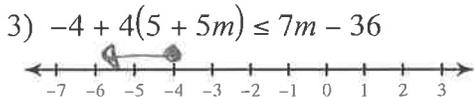
$-4 + 20 + 20m \leq 7m - 36$
$16 + 20m \leq 7m - 36$
$\quad -7m \qquad -7m$

$16 + 13m \leq -36$
$-16 \qquad -16$

$\dfrac{13m}{13} \leq \dfrac{-52}{13}$

$\boxed{m \leq -4}$

4) $5p + 20 < 5(3p + 8)$
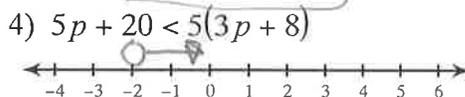
$5p + 20 < 15p + 40$
$-5p \qquad -5p$

$20 < 10p + 40$
$-40 \qquad -40$

$\dfrac{-20}{10} < \dfrac{10p}{10}$

$-2 < p$

$\boxed{p > -2}$

5) $-8(n - 6) \leq -2(n - 6)$
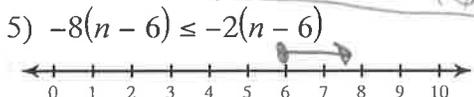
$-8n + 48 \leq -2n + 12$
$+8n \qquad +8n$

$48 \leq 6n + 12$
$-12 \qquad -12$

$\dfrac{36}{6} \leq \dfrac{6n}{6} \qquad 6 \leq n$

$\boxed{n \geq 6}$

6) $5(m - 2) < -(-3 - 6m)$
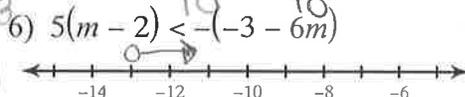
$5m - 10 < 3 + 6m$
$-5m \qquad -5m$

$-10 < 3 + 1m$
$-3 \quad -3$

$-13 < m \qquad \boxed{m > -13}$

Translate the words into an inequality and graph. Then find all of the choices that would have this graph as a solution.

7) A number is at least −3. $\boxed{x \geq -3}$

  Ⓐ $x + 23 \geq -4(x - 2)$
  B) $2x + 7 - x \geq 2x + 4$
  Ⓒ $-6x \leq 18$
  Ⓓ $2(x + 1) \leq 3x + 5$

d) $2x + 2 \leq 3x + 5$
$-2x \qquad -2x$

$2 \leq x + 5$
$-5 \qquad -5$

$-3 \leq x$
$\qquad x \geq -3$

a) $x + 23 \geq -4x + 8$
$+4x \qquad +4x$

$5x + 23 \geq 8$
$-23 - 23$

$5x \geq -15$

$x \geq -3$

b) $2x + 7 - x \geq 2x + 4$
$x + 7 \geq 2x + 4$
$-x \qquad -x$

$7 \geq x + 4$
$-4 \qquad -4$

$3 \geq x$

$x \leq 3$

c) $-6x \leq 18$
$-6 \quad -6$

$x \geq -3$

Solve each compound inequality and graph its solution.

8) $24 \le 3x < 27$
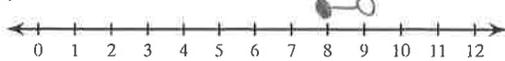
$$\frac{24}{3} \le \frac{3x}{3} \qquad \frac{3x}{3} < \frac{27}{3}$$

$$\boxed{8 \le x < 9}$$

9) $2x > 0$ or $x - 3 < -5$

$$\frac{2x}{2} > \frac{0}{2} \qquad \begin{array}{c} x - 3 < -5 \\ +3 \quad +3 \end{array}$$
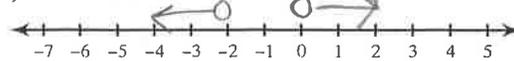
$$\boxed{x > 0 \quad \text{or} \quad x < -2}$$

10) $-3 - 6n > -39$ or $6n - 10 \ge 44$

$$\begin{array}{c} -3 - 6n > -39 \\ +3 \qquad +3 \end{array} \qquad \begin{array}{c} 6n - 10 \ge 44 \\ +10 \quad +10 \end{array}$$
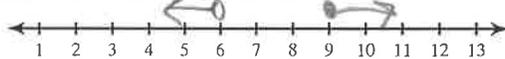
$$\frac{-6n}{-6} > \frac{-36}{-6} \qquad \frac{6n}{6} \ge \frac{54}{6}$$

$$\boxed{n < 6} \quad \text{or} \quad \boxed{n > 9}$$

11) $-17 \le 2n + 1 \le 15$

$$\begin{array}{c} -17 \le 2n + 1 \\ -1 \qquad -1 \end{array} \qquad \begin{array}{c} 2n + 1 \le 15 \\ -1 \quad -1 \end{array}$$

$$\frac{-18}{2} \le \frac{2n}{2} \qquad \frac{2n}{2} \le \frac{14}{2}$$
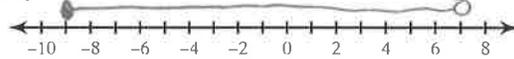
$$-9 \le n \qquad \boxed{-9 \le n \le 7} \qquad n \le 7$$

12) The French club is sponsoring a bake sale. If their goal is to raise at least \$140, how many pastries must they sell at \$3.50 each in order to meet that goal? Write and solve the inequality.

$$\frac{3.5x}{3.5} \ge \frac{140}{3.5}$$

$$\boxed{x \ge 40 \text{ pastries}}$$

13) Four times the quantity of the sum of a number and 15 is at least 120 and no more than 165. Write and solve a compound inequality to find all possible values of x.

$$120 \le 4(x + 15) \le 165$$

$$\boxed{15 \le x \le \frac{165}{4}}$$

$$\begin{array}{c} 120 \le 4x + 60 \\ -60 \qquad -60 \end{array} \qquad \begin{array}{c} 4x + 60 \le 165 \\ -60 \quad -60 \end{array}$$

$$\frac{60}{4} \le \frac{4x}{4} \qquad 4x \le 165$$

$$15 \le x \qquad x \le 41.25$$

$$x \le \frac{165}{4}$$

Write an algebraic proof for each equation.

14)
$8(-2a - 8) = -160$	given
$-16a - 64 = -160$	Dist. POE
$+64 \quad +64$	Add POE
$-16a = -96$	Simplify
$\frac{-16a}{-16} = \frac{-96}{-16}$	Div POE
$\boxed{a = 6}$	Simplify

15)
$-90 = 2(7k + 4)$	given
$-90 = 14k + 8$	Dist. POE
$-8 \qquad -8$	Subt. POE
$-98 = 14k$	Simplify
$\frac{-98}{14} \quad \frac{14k}{14}$	Divide POE
$\boxed{-7 = k}$	Simplify

16)
$-190 = -5(7x - 4)$	given
$-190 = -35x + 20$	Dist. POE
$-20 \qquad -20$	Subt. POE
$-210 = -35x$	Simplify
$\frac{-210}{-35} \quad \frac{-35x}{-35}$	Div. POE
$\boxed{6 = x}$	Simplify

17)
$3(7n - 4) = -117$	given
$21n - 12 = -117$	Dist. POE
$+12 \quad +12$	Add POE
$\frac{21n}{21} = \frac{-105}{21}$	Simplify / Div. POE
$\boxed{n = -5}$	Simplify