

Advanced Algebra
Chapter 1 Review

Name KEY

1. Solve each equation.

a) $7k - 4 = 5k + 16$

$$2k - 4 = 16$$

$$2k = 20$$

$$k = 10$$

b) $5(x + 2) - 11 = 2x - (-9 + 7x)$

$$5x + 10 - 11 = 2x + 9 - 7x$$

$$5x - 1 = -5x + 9$$

$$10x - 1 = 9$$

$$10x = 10$$

$$x = 1$$

c) Solve $\frac{A = \pi r_1 r_2}{\pi r_1 \pi r_2}$ for r_2 .

$$r_2 = \frac{A}{\pi r_1}$$

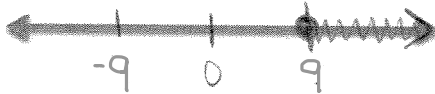
2. Solve each inequality and graph the solutions.

a) $5w - 12 \geq 3(w + 2)$

$$5w - 12 \geq 3w + 6$$

$$2w - 12 \geq 6$$

$$2w \geq 18 \quad w \geq 9$$



b) $14 - 3x < 26$

$$\frac{-3x < 12}{-3} \quad \frac{-3}{-3}$$

$$x > -4$$



3. Solve each compound inequality and graph the solutions.

a) $-5 < y + 4 \leq 7$

$$\begin{array}{r} -4 \quad -4 \quad -4 \\ \hline -9 < y \leq 3 \end{array}$$



b) $2(3x + 1) < 5x - 4$ or $1 - 3x > 4 - 5x$

$$6x + 2 < 5x - 4$$

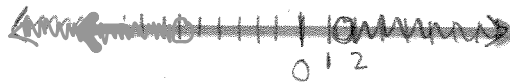
$$x + 2 < -4$$

$$x < -6$$

$$1 + 2x > 4$$

$$\frac{2x > 3}{2} \quad \frac{3}{2}$$

$$x > 3/2$$



4. Solve each equation and graph the solutions.

a) $3|2x - 4| = 6$

$$|2x - 4| = 2$$

$$2x - 4 = 2 \quad 2x - 4 = -2$$

$$\frac{2x}{2} = \frac{6}{2} \quad \frac{2x}{2} = \frac{-2}{2}$$

$$x = 3 \text{ or } x = -1$$



b) $-2|d - 5| + 7 = 27$

$$\frac{-2|d - 5| = 20}{-2} \quad \frac{-2}{-2}$$

$$|d - 5| = -10$$

$$|d - 5| = -10$$

no solution since absolute value cannot be negative



5. Solve each inequality and graph the solutions.

a) $|2x - 5| < 3$

$$\begin{array}{r} 2x - 5 < 3 \\ +5 \quad +5 \\ \hline 2x < 8 \\ \frac{2x}{2} < \frac{8}{2} \\ x < 4 \end{array}$$

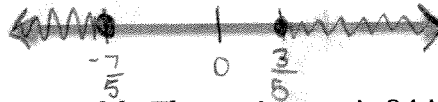
$$\begin{array}{r} 2x - 5 > -3 \\ \frac{2x}{2} > \frac{2}{2} \\ x > 1 \end{array}$$



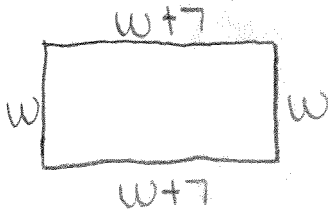
b) $3|5k + 2| - 8 \geq 7$

$$\begin{array}{r} 3|5k + 2| \geq 15 \\ \frac{3|5k + 2|}{3} \geq \frac{15}{3} \\ |5k + 2| \geq 5 \end{array}$$

$$\begin{array}{l} 5k + 2 \geq 5 \quad \text{or} \quad 5k + 2 \leq -5 \\ -2 \quad -2 \qquad \qquad -2 \quad -2 \\ \hline 5k \geq 3 \qquad \qquad \qquad 5k \leq -7 \\ \frac{5k}{5} \geq \frac{3}{5} \qquad \qquad \qquad \frac{5k}{5} \leq \frac{-7}{5} \\ k \geq \frac{3}{5} \qquad \qquad \qquad \text{or} \quad k \leq -\frac{7}{5} \end{array}$$



6. The length of a rectangle is 7 inches more than its width. The perimeter is 94 inches. Write an equation and find the dimensions of the rectangle. $w = \text{width}$ $l = \text{length}$



$$w + (w + 7) + w + (w + 7) = 94 \quad \text{Equation: } 4w + 14 = 94$$

$$\begin{array}{r} 4w + 14 = 94 \\ -14 \quad -14 \\ \hline 4w = 80 \end{array}$$

$$\frac{4w}{4} = \frac{80}{4}$$

$$w = 20 \text{ inches} \quad l = 27 \text{ inches}$$

Solutions: $w = 20 \text{ inches}$ $l = 27 \text{ inches}$

$$l = w + 7$$

$$l = 20 + 7$$

7. It costs \$40.95 for an electrician to come to your home and \$16.25 for every hour of work done. Write an equation and find the number of hours an electrician worked if it cost \$90.50.

$x = \text{number of hours}$

$$\begin{array}{r} 16.25x + 40.95 = 90.50 \\ -40.95 \quad -40.95 \\ \hline 16.25x = 49.55 \\ \frac{16.25x}{16.25} = \frac{49.55}{16.25} \end{array}$$

$$x = 3.05$$

Equation: $16.25x + 40.95 = 90.5$

Solution: 3.05 hours

8. You have at most \$20 to spend at the store. You want to buy socks. The athletic socks you like are \$5 per pair, and the dress socks you need are \$3 per pair. You buy some of each type of sock. Write an inequality to represent the situation. Then find how many athletic socks you can buy if you need 3 pairs of dress socks.

$y = \text{number of dress socks}$
 $x = \text{number of athletic socks}$

$$5x + 3y \leq 20$$

$$5x + 3(3) \leq 20$$

$$\begin{array}{r} 5x + 9 \leq 20 \\ -9 \quad -9 \\ \hline 5x \leq 11 \end{array}$$

$$\frac{5x}{5} \leq \frac{11}{5}$$

$$x \leq 2.2$$

Inequality: $5x + 3y \leq 20$

Solution: 2 pair's athletic socks

Since you cannot buy .2 of a sock, you can buy 2 pairs of athletic socks