

NO CALCULATOR ALLOWED!

Solve each inequality or equation. Graph the solutions on a number line.

$$1. \begin{aligned} 4(-3r+1) &= -10(r-4) - 14r \\ -12r + 4 &= -10r + 40 - 14r \\ -12r + 4 &= -24r + 40 \\ \underline{+24r} \quad \underline{+24r} & \\ 12r + 4 &= 40 \\ -4 &\quad -4 \\ \hline 12r &= 36 \\ \frac{12r}{12} &= \frac{36}{12} \end{aligned}$$

$$r = 3$$



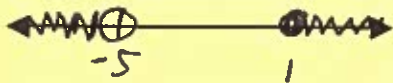
$$2. \begin{aligned} -(x+2) - 2x &= -2(x+1) \\ -x - 2 - 2x &= -2x - 2 \\ -3x - 2 &= -2x - 2 \\ \underline{+3x} \quad \underline{+3x} & \\ -2 &= x - 2 \\ \underline{+2} \quad \underline{+2} & \\ 0 &= x \end{aligned}$$



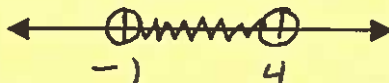
$$3. \begin{aligned} -37 &\geq -2(5+2y) \\ -37 &\geq -10 - 4y \\ \underline{+10} \quad \underline{+10} & \\ -27 &\geq -4y \\ \underline{-4} \quad \underline{-4} & \\ 6\frac{3}{4} &\leq y \\ y &\geq 6\frac{3}{4} \end{aligned}$$



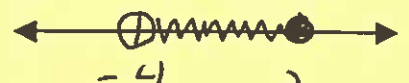
$$4. \begin{aligned} -3w + 7 &\leq -1 \text{ or } \frac{5w}{5} < \frac{-25}{5} \\ \underline{-7} \quad \underline{-7} & \\ -3w &\leq -8 \\ \underline{-3} \quad \underline{-3} & \\ w &\geq \frac{8}{3} \text{ or } w < -5 \end{aligned}$$



$$5. \begin{aligned} 15 > 4x - 1 > -5 \\ \underline{+1} \quad \underline{+1} & \\ 16 > 4x > -4 \\ \underline{4} \quad \underline{4} \quad \underline{4} & \\ 4 > x > -1 \end{aligned}$$

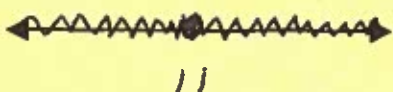


$$6. \begin{aligned} -16 < 3x - 4 \leq 2 \\ \underline{+4} \quad \underline{+4} & \\ -12 < 3x &\leq 6 \\ \underline{3} \quad \underline{3} \quad \underline{3} & \\ -4 < x &\leq 2 \end{aligned}$$

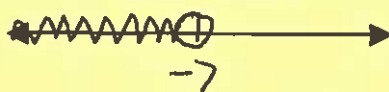


$$7. \begin{aligned} \frac{5}{-5} + 2x &\geq \frac{27}{-5} \text{ or } x - \frac{7}{5} < \frac{8}{5} \\ \underline{-5} \quad \underline{-5} \quad \underline{+5} & \quad \underline{+5} \\ 2x &\geq \frac{22}{-5} \text{ or } x < \frac{13}{5} \\ \underline{2} \quad \underline{2} & \\ x &\geq 11 \text{ or } x < 11 \end{aligned}$$

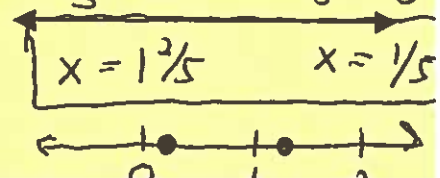
all real #'s



$$8. \begin{aligned} 5 - 5x &> 4(3-x) \\ 5 - 5x &> 12 - 4x \\ \underline{+5x} \quad \underline{+5x} & \\ 5 &> 12 + x \\ \underline{-12} \quad \underline{-12} & \\ -7 &> x \\ x &< -7 \end{aligned}$$



$$9. \begin{aligned} |7 - 3|5x - 4| &= -2 \\ \underline{-7} & \\ -8|5x - 4| &= -9 \\ \underline{-8} & \quad \underline{-3} \\ |5x - 4| &= \frac{9}{8} \\ 5x - 4 = \frac{9}{8} & \text{ or } 5x - 4 = -\frac{9}{8} \\ \underline{+4} \quad \underline{+4} & \quad \underline{+4} \quad \underline{+4} \\ \frac{5x}{5} = \frac{17}{8} & \quad \frac{5x}{5} = \frac{1}{8} \\ x = 1\frac{9}{8} & \quad x = \frac{1}{8} \end{aligned}$$



16. A store clerk earns \$350 per week plus 10% of her weekly sales.

a. Write an equation or inequality to represent what amount of sales are necessary for her to earn at least \$500.

$$350 + .10x \geq 500$$

b. What are the sales necessary for her to earn at least \$500 in one week?

$$\begin{array}{r} 350 + .10x \geq 500 \\ -350 \quad -350 \\ \hline .10x \geq 150 \\ \frac{.10x}{.10} \geq \frac{150}{.10} \\ x \geq 1500 \end{array}$$

$$x \geq 1500$$

17. Solve the formula for the circumference of a circle $C = 2\pi r$ for r . Then find r if $C = 41$.

$$r = \frac{C}{2\pi}$$

Formula

$$\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$$

$$x \geq 1500$$

$$r = \text{approx. } 6.5$$

18. Solve the formula for the volume of a cone $V = \frac{1}{3}\pi r^2 h$ for h . Then find h if $V = 24$ and $r = 3$.

$$h = \frac{3V}{\pi r^2}$$

Formula

$$\frac{3V}{\pi r^2} = \frac{\pi r^2 h}{\pi r^2}$$

$$h = \text{approx. } 2.5$$

19. Solve the formula for the area of a trapezoid $A = \frac{1}{2}h(b_1 + b_2)$ for b_2 . Then find b_2 if $A = 29$, $h = 7$ and $b_1 = 3$.

$$b_2 = \frac{2A}{h} - b_1$$

Formula

$$\frac{2A}{h} = \frac{h(b_1 + b_2)}{h}$$

$$\frac{2A}{h} = b_1 + b_2$$

$$-b_1 \quad -b_1$$

$$\frac{2A}{h} - b_1 = b_2$$

$$b_2 = \text{approx. } 5.3$$

