

Inequalities & Absolute Value Equations Review

Solve each inequality and graph its solution.

1) $44 \geq 8p + 4$

$$p \leq 5: \text{---} \bullet \text{---}$$

$$44 \geq 8p + 4$$

$$\underline{-4} \quad \underline{-4}$$

$$\frac{40}{8} \geq \frac{8p}{8}$$

$$5 \geq p \text{ Double Flip!}$$

$$p \leq 5$$

2) $80 > -10(a - 4)$

$$a > -4: \text{---} \circ \text{---}$$

$$80 > -10(a - 4)$$

$$80 > -10a + 40$$

$$\underline{-40} \quad \underline{-40}$$

$$\frac{40}{-10} > \frac{-10a}{-10}$$

$$-4 < a \text{ Double Flip!}$$

$$a > -4$$

3) $\frac{-9+p}{22} \leq -1$

$$p \leq -13: \text{---} \bullet \text{---}$$

$$\frac{22(-9+p)}{22} \leq \frac{22(-1)}{22}$$

$$-9+p \leq -22$$

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

$$p \leq -13$$

4) $\frac{k}{5} - 5 < -5$

$$k < 0: \text{---} \circ \text{---}$$

$$\frac{k}{5} - 5 < -5$$

$$\underline{+5} \quad \underline{+5}$$

$$(5) \frac{k}{5} < 0(5)$$

$$k < 0$$

5) $-6(7+a) \geq -96$

$$a \leq 9: \text{---} \bullet \text{---}$$

$$-6(7+a) \geq -96$$

$$-42 - 6a \geq -96$$

$$\underline{+42} \quad \underline{+42}$$

$$-6a \geq -54$$

$$\underline{-6} \quad \underline{-6} \text{ Flip!}$$

$$a \leq 9$$

6) $\frac{n+2}{5} \leq 2$

$$n \leq 8: \text{---} \bullet \text{---}$$

$$5 \left(\frac{n+2}{5} \right) \leq 2(5)$$


$$n+2 \leq 10$$

$$\underline{-2} \quad \underline{-2}$$

$$n \leq 8$$

Solve each compound inequality and graph its solution.

7) $\frac{b}{10} \geq -1$ and $b - 10 \leq -12$

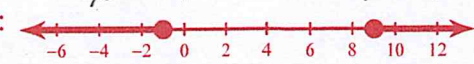
$-10 \leq b \leq -2$: 

$\frac{b}{10} \geq -1$
 $10\left(\frac{b}{10}\right) \geq -1(10)$
 $b \geq -10$

$b - 10 \leq -12$
 $\quad +10 \quad +10$

 $b \leq -2$

8) $-4x \leq -36$ or $x - 4 \leq -5$

$x \leq -1$ $x \geq 9$
 $x \geq 9$ or $x \leq -1$: 

$-4x \leq -36$
 $\quad -4 \quad -4$

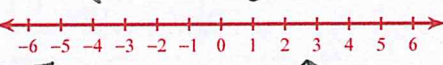
 $x \geq 9$

FUP! $x \geq 9$

$x - 4 \leq -5$
 $\quad +4 \quad +4$

 $x \leq -1$

9) $-3 \leq n - 8 < -7$

No solution.: 

$-3 \leq n - 8 < -7$
 $+8 \quad +8 \quad +8$

 $5 \leq n < 1$

no overlap

No solution

10) $\frac{n}{2} > -4$ or $n - 9 < -16$

{ All real numbers. } : 

$(2)\frac{n}{2} > -4(2)$
 $n > -8$

$n - 9 < -16$
 $\quad +9 \quad +9$

 $n < -7$

All real numbers

Solve each equation.

11) $\left|\frac{n}{8}\right| = -1$
 negative sign
 No solution.

12) $|v - 10| = 19$
 {29, -9}

$v - 10 = 19$
 $\quad +10 \quad +10$

 $v = 29$

$v - 10 = -19$
 $\quad +10 \quad +10$

 $v = -9$

$$13) |-10x| = 80$$

$$\{-8, 8\}$$

$$\frac{-10x}{-10} = \frac{80}{-10} \quad \frac{-10x}{-10} = \frac{-80}{-10}$$

$$x = -8$$

$$x = 8$$

$$14) |a-2| = 2$$

$$\{4, 0\}$$

$$\frac{a-2}{+2} = \frac{2}{+2} \quad \frac{a-2}{+2} = \frac{-2}{+2}$$

$$a = 4$$

$$a = 0$$

$$15) |p-7| - 2 = 15$$

$$\{24, -10\}$$

$$\frac{|p-7| - 2}{+2} = \frac{15}{+2}$$

$$|p-7| = 17$$

$$\frac{p-7}{+7} = \frac{17}{+7}$$

$$p = 24$$

$$\frac{p-7}{+7} = \frac{-17}{+7}$$

$$p = -10$$

$$17) |5n-10| + 5 = 30$$

$$\{7, -3\} \quad \frac{|5n-10| + 5}{-5} = \frac{30}{-5}$$

$$|5n-10| = 25$$

$$\frac{5n-10}{+10} = \frac{25}{+10}$$

$$\frac{5n}{5} = \frac{35}{5}$$

$$n = 7$$

$$\frac{5n-10}{+10} = \frac{-25}{+10}$$

$$\frac{5n}{5} = \frac{-15}{5}$$

$$n = -3$$

$$19) -9|5a| - 9 = -99$$

$$\{2, -2\} \quad \frac{-9|5a| - 9}{+9} = \frac{-99}{+9}$$

$$\frac{-9|5a|}{-9} = \frac{-90}{-9}$$

$$|5a| = 10$$

$$\frac{5a}{5} = \frac{10}{5}$$

$$a = 2$$

$$\frac{5a}{5} = \frac{-10}{5}$$

$$a = -2$$

$$16) |10+4a| + 8 = 10$$

$$\{-2, -3\} \quad \frac{|10+4a| + 8}{-8} = \frac{10}{-8}$$

$$|10+4a| = 2$$

$$\frac{10+4a}{-10} = \frac{2}{-10}$$

$$\frac{4a}{4} = \frac{-8}{4}$$

$$a = -2$$

$$\frac{10+4a}{-10} = \frac{-2}{-10}$$

$$\frac{4a}{4} = \frac{-12}{4}$$

$$a = -3$$

$$18) |4n| - 7 = -7$$

$$\{0\}$$

$$\frac{|4n| - 7}{+7} = \frac{-7}{+7}$$

$$|4n| = 0$$

$$\frac{4n}{4} = \frac{0}{4}$$

$$n = 0$$

$$20) -9 + 4|9b| = 63$$

$$\{2, -2\} \quad \frac{-9 + 4|9b|}{+9} = \frac{63}{+9}$$

$$\frac{4|9b|}{4} = \frac{72}{4}$$

$$|9b| = 18$$

$$\frac{9b}{9} = \frac{18}{9}$$

$$b = 2$$

$$\frac{9b}{9} = \frac{-18}{9}$$

$$b = -2$$