$|3x| - 4 \leq 10$

$\textcolor{red}{+4 \qquad +4}$

Isolate the absolute value

Check for a negative

$|3x| \leq 14$

flip/negative

$\dfrac{3x}{3} \leq \dfrac{14}{3}$

$\dfrac{3x}{3} \geq \dfrac{-14}{3}$

$x \leq \dfrac{14}{3}$

$x \geq \dfrac{-14}{3}$

$\dfrac{-14}{3} \qquad\qquad \dfrac{14}{3}$

$-2|5x| \leq 10$

$\dfrac{}{-2} \qquad \dfrac{}{-2}$

flip when we divide by a negative

$|5x| \geq -5$

all solutions

$\boxed{\text{all real numbers}}$

1.) $|x-4| - 6 > 12$
$\;+6\qquad +6$

$$|x-4| > 18$$

flip inequality change sign

$x-4 > 18$
$\;+4\qquad +4$

$$\boxed{x > 22}$$

$x-4 < -18$
$\;+4\qquad +4$

$$\boxed{x < -14}$$

$|2x-8| - 2 > 20$
$\;+2\qquad +2$

$$|2x-8| > 22$$

$2x-8 > 22$
$\;+8\qquad +8$

$$\frac{2x}{2} > \frac{30}{2}$$

$$x > 15$$

$2x-8 < -22$
$\;+8\qquad +8$

$$\frac{2x}{2} < \frac{-14}{2}$$

$$x < -7$$

1.) (5 pts each, 10 pts total) (3-1) Graph each of the following inequalities.

   a) $x \leq -4$

   follow

                                −4

   b) $9 > y$

   opposite

                                  9

2.) (5 pts each, 15 pts total) (3-2) Solve each inequality. Graph and check the solution.

   a) $f + 12 < 5$

      $-12 \; -12$

      $f < -7$

                                  −7

   b) $-8 \leq t + 3$

   c) $7 \geq g - 13$

     $+13 \quad +13$

                                  20

      $20 \geq g$

3.) (5 pts each, 20 pts total) (3-3) Solve each inequality. Graph and check the solution.

a) $\dfrac{8n}{8} > \dfrac{48}{8}$

$n > 6$

$n = 0$ $\qquad$ $n = 10$

$0 \cancel{>} 6$ $\qquad$ $10 > 6$

b) $98 \geq -14d$

c) $\left(\dfrac{y}{-3}\right) < \left(15\right)(-3)$ flip, multiplied by a negative!

$y > -45$

d) $-16 \leq \dfrac{b}{6}$

4.) (5 pts each, 20 pts total) (3-4) Solve each inequality. Graph and check the solution.

a) $13t - 8t > -45$

$$\frac{5t}{5} > \frac{-45}{5}$$

$$t > -9$$

-9

b) $2(5t - 25) + 5t \leq -80$

$$10t - 50 + 5t \leq -80$$

$$15t - 50 \leq -80$$
$$+50 \quad +50$$

$$\frac{15t}{15} \leq \frac{-30}{15}$$

-2

$$t \leq -2$$

c) $-4p + 28 < 8$

d) $3(4g - 6) \geq 6(g + 2)$

$$12g - 18 \geq 6g + 12$$
$$+18 \qquad +18$$

$$12g \geq 6g + 30$$
$$-6g \quad -6g$$

5

$$\frac{6g}{6} \geq \frac{30}{6}$$

$$g \geq 5$$

3

5.) (5 pts each, 20 pts total) (3-5) Solve each inequality. Graph and check the solution.

a) -4d > 8 and 2d > -6

b) 7 + 2a > 9 or -4a > 8
   -7   -7   -4   -4

$$\frac{2a}{2} > \frac{2}{2}$$ $$\boxed{a < -2}$$

$$\boxed{a > 1}$$

c) -1 < h - 2 ≤ 5
   +2   +2 +2

$$1 < h ≤ 7$$

$$1 < h$$

d) t + 5 < 2 or 3t + 1 ≥ 10

6.) (5 pts each, 10 pts total) (3-6) Solve each inequality. Graph and check the solution.

a) $|j| - 2 \geq 6$

b) $5 > |v + 2| + 3$

$5 > |v + 2| + 3$
$\quad -3 \qquad\quad -3$

$2 > |v+2|$

$2 > v+2 \qquad -2 < v+2$
$-2 \quad -2 \qquad -2 \quad -2$

$0 > v \qquad\qquad -4 < v$

$|v+2| + 3 < 5$
$\qquad\quad -3 \qquad -3$

$|v+2| < 2$

$v+2 < 2 \qquad\qquad v+2 > -2$
$-2 \quad -2 \qquad\qquad\quad -2 \quad -2$

$v < 0 \qquad\qquad\qquad v > -4$

$\xleftarrow{\quad} \oplus \xrightarrow{\quad} \oplus \xrightarrow{\quad}$
$\qquad -4 \qquad\quad 0$

7.) (5 pts each) (3-6) Solve the equation.

a) $|3c| - 45 = -18$
$\qquad\quad +45 \quad +45$

$|3c| = 27$

$\dfrac{3c}{3} = \dfrac{27}{3} \qquad\qquad \dfrac{3c}{3} = \dfrac{-27}{3}$

$\boxed{c = 9} \qquad\qquad\quad \boxed{c = -9}$