Solving Inequalities Worksheet

1) $0 > 3x - 3 - 6$

2) $4x + 1 - 1 \geq -8$

3) $-1 \leq 2n + 4 - 5$

4) $-6 > 5n + 5 + 4$

5) $2p - 4p \leq -2$

6) $7 < -(-k - 3) + 2$

7) $3 - 2(n - 4) > -1$

8) $-2(b + 1) - 4 < 10$

9) $26 + m \geq 5(-6 + 3m)$

10) $20 - 2p \geq -2(p + 2) + 4p$

11) $-6(1 + 6x) < 6(1 - 5x)$

12) $2(1 - 4r) \leq -2(r + 3) - 4$

13) $-2(1 - 5x) > -(x + 1) - 1$

14) $5x - (x + 2) > -5(1 + x) + 3$

Solving Inequalities Worksheet

1) $0 > 3x - 6$

$0 > 3x - 6$

$+9 \quad +9$

$\frac{9}{3} > \frac{3x}{3}$

$3 > x$ becomes $x < 3$

$(-\infty, 3)$

2) $4x + 3x \geq -8$

$7x \geq -8$

$\frac{7x}{7} \geq \frac{-8}{7}$

$x \geq -2$

$[-2, \infty)$

3) $-1 \leq \frac{1}{2}x - 5$

$-1 \leq \frac{1}{2}x - 5$

$+5 \quad +5$

$\frac{4}{1} \leq \frac{\frac{1}{2}x}{\frac{1}{2}}$

$8 \leq x$ or $x \geq 8$

$[8, \infty)$

4) $-6 > x + 4$

$-6 > x + 4$

$-4 \quad -4$

$-10 > x$

$x < -10$

$(-\infty, -10)$

5) $2p - 4 \leq -2$

$2p - 4 \leq -2$

$+4 \quad +4$

$\frac{2p}{2} \leq \frac{2}{2}$

$p \leq 1$

$(-\infty, 1]$

flips to $\geq$ due to neg number.

6) $7 < -4(k - 3) + 2$

$7 < -4k + 12 + 2$

$7 < -4k + 14$

$-14 \quad -14$

$\frac{-7}{-4} < \frac{-4k}{-4}$

$\frac{7}{4} < k$

$k > \frac{7}{4}$

$(\frac{7}{4}, \infty)$

7) $3 - 2(n + 4) > -1$

$3 - 2n - 8 > -1$

$-2n - 5 > -1$

$+5 \quad +5$

$\frac{-2n}{-2} > \frac{4}{-2}$

$n < -2$

$(-\infty, -2)$

8) $(1 - 11) - 4 < 10$

$-10 - 4 < 10$

$-14 < 10$

$+14 \quad +14$

$\frac{0}{-2} < \frac{24}{-2}$

$0 < -12$

$b > -4$

$(-4, \infty)$

9) $5(m + 3m) \geq 5(-2 + 3m)$

$5m + 15m \geq -10 + 15m$

$20m \geq -10 + 15m$

$-15m \quad -15m$

$\frac{5m}{5} \geq \frac{-10}{5}$

$m \geq -2$

$[-2, \infty)$

10) $0 - 1 - (-p + 2) + 4p$

$-1 + p - 2 + 4p$

$p - 3 + 4p$

$+3 \quad +3$

$\frac{-4p}{-4} \geq \frac{-24}{-4}$

$p \leq 6$

$(-\infty, 6]$

11) $6(x + 5) < 6(1 - 5x)$

$6x + 30 < 6 - 30x$

$+30x \quad +30x$

$\frac{36x}{36} < \frac{36}{36}$

$x < 1$

$(-\infty, 1)$

12) $1 - \frac{1}{2}(r + 3) < -4$

$1 - \frac{1}{2}r - \frac{3}{2} < -4$

$-\frac{1}{2}r - \frac{1}{2} < -4$

$+\frac{1}{2} \quad +\frac{1}{2}$

$\frac{-\frac{1}{2}r}{-\frac{1}{2}} < \frac{-\frac{7}{2}}{-\frac{1}{2}}$

$r < 7$

$(-\infty, 7)$

13) $2(x + 5) > -(x + 1) - 1$

$2x + 10 > -x - 1 - 1$

$2x + 10 > -x - 2$

$+x \quad +x$

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

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

$(-\frac{2}{3}, \infty)$

14) $x - 1 - x - 2 > -5(1 + x) + 3$

$-3 > -5 - 5x + 3$

$-3 > -2 - 5x$

$+5x \quad +5x$

$\frac{5x}{5} > \frac{2}{5}$

$x > \frac{2}{5}$

$(\frac{2}{5}, \infty)$