1-5 PRACTICE

1) $n - 4 > -28$

2) $2n \geq 15$

↑ at least

3) $n + 7 < 5$

4) $\frac{n}{8} \leq -6$

5) $3(x+1) + 2 < 11$

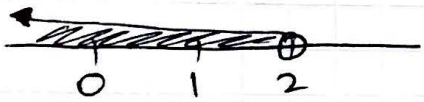
$-2 \quad -2$

$\frac{3(x+1)}{3} < \frac{9}{3}$

$x + 1 < 3$

$-1 \quad -1$

$\boxed{x < 2}$



← THIS PROBLEM CAN BE DONE BY DISTRIBUTING FIRST

$3x + 3 + 2 < 11$

$3x + 5 < 11$

$-5 \quad -5$

$\frac{3x}{3} < \frac{6}{3}$

$\boxed{x < 2}$

6) $5t - 2(t+2) \geq 8$

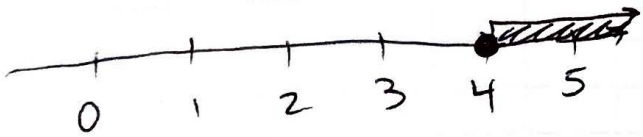
$5t - 2t - 4 \geq 8$

$3t - 4 \geq 8$

$+4 \quad +4$

$\frac{3t}{3} \geq \frac{12}{3}$

$t \geq 4$



7) $2[(2y-1)+y] \leq 5(y+3)$

$2[2y - 1 + y] \leq 5y + 15$

$2[3y - 1] \leq 5y + 5$

$6y - 2 \leq 5y + 5$

$-5y \quad -5y$

$y - 2 \leq 5$

$+2 \quad +2$

$\boxed{y \leq 7}$

8) $\frac{1}{3}(7a-1) \leq 2a+7$ (multiply the entire inequality to get rid of a fraction)

$3 \cdot \frac{1}{3}(7a-1) \leq 3(2a+7)$

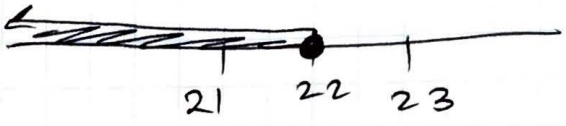
$7a-1 \leq 6a+21$

$-6a \quad -6a$

$a-1 \leq 21$

$+1 \quad +1$

$a \leq 22$



9) $5-2(n+2) \leq 4+n$

$5-2n-4 \leq 4+n$

$1-2n \leq 4+n$

$-n \quad -n$

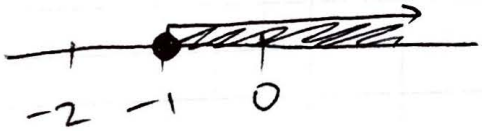
$1-3n \leq 4$

$-1 \quad -1$

$-3n \leq 3$

$\frac{-3n}{-3} \leq \frac{3}{-3}$

$n \geq -1$



*** WHEN DIVIDING OR MULTIPLYING BOTH SIDES OF AN INEQUALITY BY A NEGATIVE NUMBER, FLIP (SWITCH THE DIRECTION) OF THE INEQUALITY SIGN ***

10) $-2(w-7)+3 > w-1$

$-2w+14+3 > w-1$

$-2w+17 > w-1$

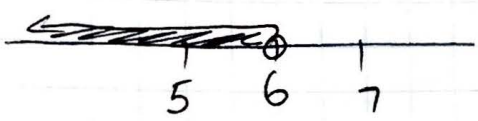
$-w \quad -w$

$-3w+17 > -1$

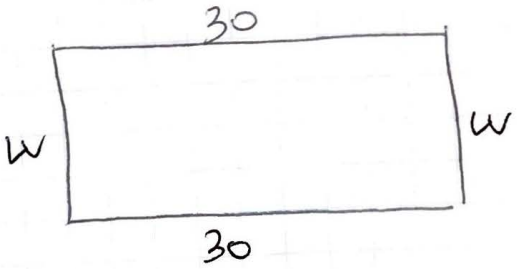
$-17 \quad -17$

$\frac{-3w}{-3} > \frac{-18}{-3}$

$\boxed{w < 6}$



11)



$2w + 2 \cdot 30 \leq 90$

↑ at most

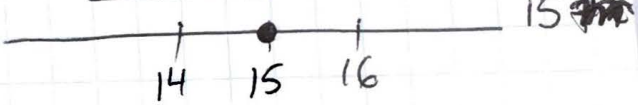
$2w + 60 \leq 90$

$-60 \quad -60$

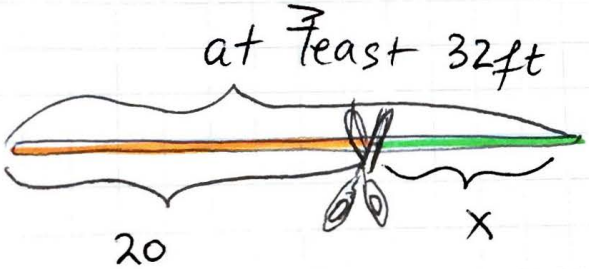
$\frac{2w}{2} \leq \frac{30}{2}$

$\boxed{w \leq 15}$

width must be less than or equal to 15



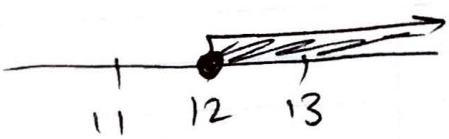
12)



$20 + x \geq 32$

$-20 \quad -20$

$\boxed{x \geq 12}$



13)

no more

$x \leq 0.06 \cdot 350$

↑ 6% of 350

$\boxed{x \leq 21}$

14) $\frac{144 \text{ miles}}{g} \geq 32 \frac{\text{miles}}{\text{gallon}}$

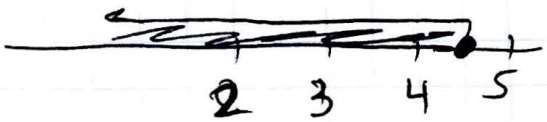
g ↑ at least

$\frac{144}{32} \geq \frac{32g}{32}$

$4.5 \geq g$

flip the inequality over to where the variable is on the left side!

$\boxed{g \leq 4.5}$



15) $3(2x+1) > 5x - (2-x)$

$6x + 3 > 5x - 2 + x$

$-5x \quad -5x$

$x + 3 > -2 + x$

$3 > -2$ ALWAYS TRUE

16) $2(x-1) \geq x + 7$

$2x - 2 \geq x + 7$

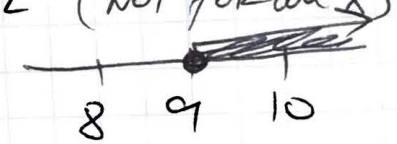
$-x \quad -x$

$x - 2 \geq 7$

$+2 \quad +2$

$\boxed{x \geq 9}$

SOMETIMES TRUE (NOT FOR ALL x)



17) $7x + 2 \leq 2(2x-4) + 3x$

$7x + 2 \leq 4x - 8 + 3x$

$7x + 2 \leq 7x - 8$

$2 \leq -8$ NEVER TRUE!

18) $5(x-3) < 2(x-9)$

$5x - 15 < 2x - 18$

$-2x \quad -2x$

$3x - 15 < -18$

$+15 \quad +15$

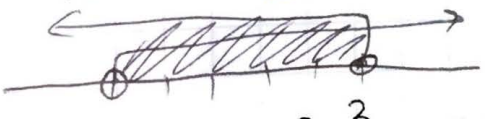
$\frac{3x}{3} < \frac{-3}{3}$

$x < -1$

SOMETIMES TRUE

19) $\frac{3x}{3} > \frac{-6}{3}$ and $\frac{2x}{2} < \frac{6}{2}$

$x > -2$ and $x < 3$



$-2 < x < 3$

OR $(-2, 3)$

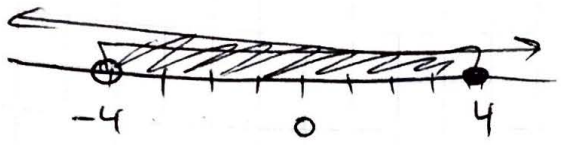
20) $\frac{4x}{4} \geq \frac{-12}{4}$ and $7x \leq 7$

$x \geq -3$ and $x \leq 1$

$-3 \leq x \leq 1$ $[-3, 1]$

21) $5x > -20$ AND $8x \leq 32$

$x > -4$ AND $x \leq 4$

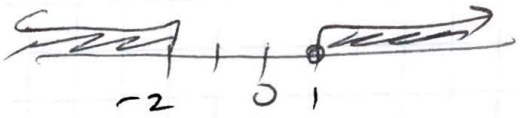


$-4 < x \leq 4$

$(-4, 4]$

22) $6x < -12$ OR $5x > 5$

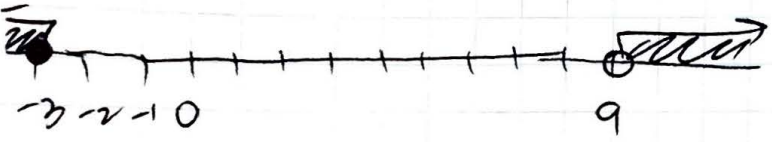
$x < -2$ OR $x > 1$



$(-\infty, -2) \cup [1, \infty)$

23) $\frac{6x}{6} \leq \frac{-18}{6}$ OR $\frac{2x}{2} > \frac{18}{2}$

$x \leq -3$ OR $x > 9$



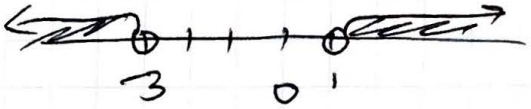
$(-\infty, -3] \cup (9, \infty)$

24) $2x > 3 - x$ OR $2x < x - 3$

$+x \quad +x \qquad -x \quad -x$

$\frac{3x}{3} > \frac{3}{3}$ OR $x < -3$

$x > 1$ OR $x < -3$



$(-\infty, -3) \cup (1, \infty)$

25)

$5200 \leq 4t + 660 \leq 6250$

$-660 \qquad -660 \quad -660$

$\frac{4540}{4} \leq \frac{4t}{4} \leq \frac{5590}{4}$

$1135 \leq t \leq 1397.5$

SHE CAN SAVE BETWEEN (AND INCLUDING) $1135 AND $1397.5

26)

$\frac{39}{6.5} < \frac{6.5h}{6.5} < \frac{52}{6.5}$

$6 < h < 8$

SHE CAN LEAVE IT TAKES BETWEEN 6 AND 8 HOURS

27)

$42 \times 5.5 < b < 49 \times 5.5$

$231 < b < 269.5$