

## 1.2 - Solving Equations and Inequalities

Date \_\_\_\_\_ Period \_\_\_\_\_

Solve each equation.

1)  $-3x - x = -24$  (Collect like terms)

$$\begin{array}{r} -6 \\ -4x = -24 \\ -4 \quad -4 \\ \hline x = 6 \end{array}$$

2)  $-5x - 2x = 14$

$$\begin{array}{r} -2 \\ -7x = 14 \end{array}$$

3)  $-2 = -3x + 4x$  (collect)

$$\begin{array}{r} -2 \\ -2 = x \\ \hline x = -2 \end{array}$$

4)  $7 = -6n + 7n$

$$\begin{array}{r} 7 \\ 7 = n \end{array}$$

5)  $7(7 - 7m) = 343$  (distribute)

$$\begin{array}{r} -6 \\ 49 - 49m = 343 \\ -49 \quad -49 \\ -49m = 296 \\ -49 \quad -49 \\ \hline m = -6 \end{array}$$

6)  $-1 + 4(4n + 3) = -101$

$$\begin{array}{r} -7 \\ -1 + 16n + 12 = -101 \end{array}$$

7)  $2(1 - 5p) = 82$  (distribute)

$$\begin{array}{r} -8 \\ 2 - 10p = 82 \\ -2 \quad -2 \\ -10p = 80 \\ -10 \quad -10 \\ \hline p = -8 \end{array}$$

8)  $285 = 5(7x + 1)$

$$\begin{array}{r} 8 \\ 285 = 35x + 5 \end{array}$$

9)  $b + 7 = 5 + 8b - 8b$  (collect like)

$$\begin{array}{r} -2 \\ b + 7 = 5 \\ -7 \quad -7 \\ \hline b = -2 \end{array}$$

10)  $n + 3 = 2n + 8$

$$\begin{array}{r} -5 \\ n + 3 = n + 8 \end{array}$$

11)  $7 + 2(3p + 4) = -6p - 21$  (distribute)

$$\begin{array}{r} -3 \\ 7 + 6p + 8 = -6p - 21 \text{ (collect)} \\ -6p \quad -6p \\ 15 + 6p = -6p - 21 \\ +6p \quad +6p \\ 12p + 15 = -21 \\ -15 \quad -15 \\ \hline p = -3 \end{array}$$

12)  $-7(1 - k) - 4k = -8k + 15$

$$\begin{array}{r} 2 \\ -7 + 7k - 4k = -8k + 15 \end{array}$$

Solve each proportion.

13)  $\frac{6}{x} = \frac{8}{7}$  (cross multiply)

$$\begin{array}{r} 5.25 \\ 42 = 8x \\ \frac{42}{8} = \frac{8x}{8} \\ x = 5\frac{1}{8} \end{array}$$

14)  $\frac{2}{a} = \frac{9}{3}$

$$\begin{array}{r} 0.66 \\ 2 = 9a \\ \frac{2}{9} = a \end{array}$$

$$\begin{array}{r} 5.25 \\ x = 5.25 \end{array}$$

(cross multiply)  $\leftarrow$  distribute

15)  $\frac{8}{6} = \frac{n-2}{9}$   $8(9) = 6(n-2)$

$72 = 6n - 12$   
 $+12$   $+12$   
 $84 = 6n$   $\boxed{n=14}$

16)  $\frac{10}{2} = \frac{8}{x+2}$

$\boxed{-0.4}$

17)  $\frac{4}{p+5} = \frac{3}{p}$   $4p = 3(p+5)$

$4p = 3p + 15$   
 $-3p$   $-3p$   
 $\boxed{p=15}$

18)  $\frac{8}{3} = \frac{r-5}{r}$

$\boxed{-3}$

19)  $\frac{6}{r-3} = \frac{10}{r-4}$   $6(r-4) = 10(r-3)$   
 $6r - 24 = 10r - 30$

$-10r$   $-10r$   
 $-4r - 24 = -30$   
 $+24$   $+24$   
 $-4r = -6$   $\boxed{r = \frac{3}{2} = 1.5}$

20)  $\frac{n-5}{n+1} = \frac{2}{6}$

$\boxed{8}$

Solve each inequality and graph its solution.

21)  $r + 1 \leq 17$

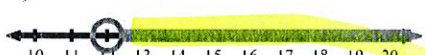


$r \leq 16$

$r + 1 \leq 17$   
 $-1$   $-1$   
 $r \leq 16$

Less than or equal to filled in circle

22)  $n + 20 > 32$



$n > 12$

23)  $15 - n \leq 9$



$n \geq 6$   
 $15 - n \leq 9$   
 $-15$   $-15$   
 $-n \leq -6$   
 $-1$   $-1$   
 $n \geq 6$

divide both sides by negative you flip inequality sign

24)  $-7a \geq 84$



$a \leq -12$

25)  $5 - 4(-4a + 8) \leq 85$



$a \leq 7$   
 $5 + 16a - 32 \leq 85$  (collect like terms)  
 $16a - 27 \leq 85$   
 $+27$   $+27$   
 $16a \leq 112$   $\boxed{a \leq 7}$

26)  $-86 < -2(8 + 7k)$



$k < 5$