

# TWO STEP EQUATIONS STUDY GUIDE

$$\begin{array}{r} 1) -2x - 6 = 10 \\ +6 \quad +6 \\ \hline -2x = 16 \\ -2 \quad -2 \\ \hline \boxed{x = -8} \end{array}$$

$$\text{check: } -2(-8) - 6 \\ 16 - 6 = 10 \checkmark$$

$$\begin{array}{r} 2) \frac{3+x}{2} = 9 \times 2 \\ 3+x = 18 \\ -3 \quad -3 \\ \hline \boxed{x = 15} \end{array}$$

$$\text{check: } \frac{3+15}{2} = 9 \rightarrow \frac{18}{2} = 9 \checkmark$$

$$\begin{array}{r} 3) \frac{x}{6} + 2 = -8 \\ -2 \quad -2 \\ \hline 6 \times \frac{x}{6} = -10 \times 6 \\ \boxed{x = -60} \end{array}$$

$$\text{check: } \frac{-60}{6} + 2 = -8$$

$$-10 + 2 = -8 \checkmark$$

$$\begin{array}{r} 4) -2(x+8) = 10 \\ -2x - 16 = 10 \\ +16 \quad +16 \\ \hline -2x = 26 \\ -2 \quad -2 \\ \hline \boxed{x = -13} \end{array}$$

$$\text{check: } -2(-13+8) = 10 \\ -2x - 5 = 10 \checkmark$$

$$\begin{array}{r} 5) \frac{3}{4}x + 9 = 7 \\ -9 \quad -9 \\ \hline \frac{3}{4}x = -2 \\ \frac{4}{3} \times \frac{3}{4}x = -2 \times \frac{4}{3} \\ \boxed{x = -\frac{8}{3} \text{ or } -2\frac{2}{3}} \end{array}$$

$$\text{check: } \frac{3}{4}x - \frac{8}{3} + 9 = 7$$

$$\frac{-24}{12} + 9 = 7$$

$$-2 + 9 = 7 \checkmark$$

$$6. \quad \boxed{80} = \boxed{8} \boxed{b} + \boxed{22}$$

total
unit rate (k)
variable
fee/one-time amount

$$80 = 8b + 22$$

$$\begin{array}{r} 80 \\ -22 \\ \hline 58 = 8b \end{array}$$

$$\boxed{b = \$7.25}$$

Check:  $80 = 8(7.25) + 22$   
 $\quad \quad \quad \checkmark$   
 $80 = 58 + 22 \checkmark$

$$7. \quad \boxed{21.50} = \boxed{1.50} \boxed{r} + \boxed{5}$$

$$21.50 = 1.50r + 5$$

$$\begin{array}{r} 21.50 \\ -5 \\ \hline 16.5 = 1.50r \end{array}$$

$$\boxed{r = 11} \quad 11 \text{ rides}$$

Check:  $21.50 = 1.50(11) + 5$   
 $\quad \quad \quad \checkmark$   
 $21.50 = 16.5 + 5 \checkmark$

### REVIEW

8. 
$$\begin{array}{c} 3(2x+3) \\ \boxed{\phantom{000000}} \\ 2x+3 \end{array}$$

$$3(2x+3) = 6x+9$$

$$\begin{array}{r} 6x+9 \\ + 6x+9 \\ \hline 12x+18 \end{array} \rightarrow \text{LENGTH!}$$

$$12x+18 + 4x+6 =$$

$$\begin{array}{r} 2x+3 \\ + 2x+3 \\ \hline 4x+6 \end{array} \rightarrow \text{WIDTH}$$

$$\boxed{P = 16x + 24}$$

$$9. \quad 800 \times 1.07 = \boxed{\$856}$$

10. mi/hr.

$$\frac{4}{3} \left( \frac{3}{4} \mid \frac{4}{5} \right) \times \frac{4}{3}$$

$$\frac{5}{4} \left( \frac{1}{15} \mid \frac{1}{15} \right) \times \frac{5}{4}$$

$1 \text{ mile} = 1/15 \text{ hr}$   
 $1 \text{ hour} = 15/1 \text{ mile}$

11.  $P = 40$

$$\begin{array}{c} 3w \\ \boxed{\phantom{000000}} \\ w \end{array}$$

$$\frac{8w = 40}{8 \quad 8}$$

$$\boxed{15 \times 5 = 75 \text{ units}^2}$$

$\checkmark w = 5 \text{ units}$   
 $\checkmark 3(5) = 15 \text{ units (length)}$

12.  $k = \frac{y}{x} (5, 3)$

$k = \frac{3}{5}$

$y = \frac{3}{5}x$

$5x + 3y = 0$

$28.5 = 0$

$120 + 120 = 240$

$120 = 240$

$2(120) = 240$

$120 = 240$

$11 = 11$

$P + x = (3 + 5x)$

$P + 10x + 8$

$15x + 8$

$170 = 15x + 8$

$162 = 15x$

$10x + 18 + 10 = 28$

$6 = 10x + 28$

$10x + 18 = 28$

1 mile = 1.6 km  
1 hour = 60 minutes

1/2 hr = 30 min  
1/4 hr = 15 min  
1/8 hr = 7.5 min

$10x = 10$



$10 = 10$

$10 = 10$

$10 = 10$

$10 = 10$

$10 = 10$