

# Study Guide Unit 1

# Answer Key

$$\begin{aligned} \textcircled{1} \quad 6(x+2) - 5x &= 61 \\ 6x + 12 - 5x &= 61 \\ x + 12 &= 61 \\ -12 \quad -12 & \\ \hline x &= 49 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad 10 &= -2(x-5) \\ -10 &= -2x + 10 \\ 10 \quad \quad -10 & \\ \hline 0 &= -2x \\ -2 \quad -2 & \\ \hline 0 &= x \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad 3(4x-3) &= -6 + 12x \\ 12x - 9 &= -6 + 12x \\ -12x \quad \quad -12x & \\ \hline -9 &= -6 \\ \hline \text{No Solution} & \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad \frac{1}{2}(8x-6) - x &= 5(x+2) - 3 \\ 4x - 3 - x &= 5x + 10 - 3 \\ 3x - 3 &= 5x + 7 \\ -5x \quad \quad -5x & \\ \hline -2x - 3 &= 7 \\ +3 \quad +3 & \\ \hline -2x &= 10 \\ -2 \quad -2 & \\ \hline x &= -5 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad -2(x+1) &> 12 \\ -2x - 2 &> 12 \\ +2 \quad +2 & \\ \hline -2x &> 14 \\ -2 \quad -2 & \\ \hline x &< -7 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad 5x - 4(x-1) &> -5x + 40 \\ 5x - 4x + 4 &> -5x + 40 \\ x + 4 &> -5x + 40 \\ +5x \quad +5x & \\ \hline 6x + 4 &> 40 \\ -4 \quad -4 & \\ \hline 6x &> 36 \\ 6 \quad 6 & \\ \hline x &> 6 \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad \frac{3x-4}{5} + 2 &> 6 \\ -2 \quad -2 & \\ \hline \frac{3x-4}{5} &> 4 \\ \text{s.} \quad \frac{3x-4}{5} &> 4 \cdot 5 \end{aligned}$$

⑦ 2 ways to check

① take answer  
 $x > 6$   
plug 3 in for x  
 $3 > 6$

No

② plug 3 into inequality  
 $5(3) - 4(3-1) > -5(3) + 40$   
 $15 - 4(2) > -15 + 40$   
 $15 - 8 > -15 + 40$   
 $7 > 25$

No

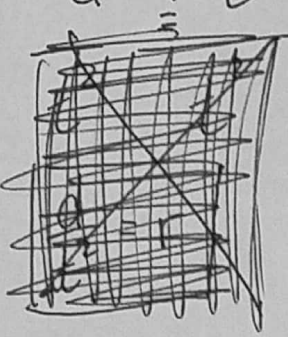
$$\begin{aligned} 3x - 4 &> 20 \\ +4 \quad +4 & \\ \hline 3x &> 24 \\ 3 \quad 3 & \\ \hline x &> 8 \end{aligned}$$

$x > 8$

⑨  $d = r t^2$  for  $t$

$$\frac{d}{r} = \frac{r t^2}{r}$$

$$\frac{d}{r} = t^2$$

$$\sqrt{\frac{d}{r}} = t$$


⑩  $4x - 2y = 12$  for  $y$

$$\begin{array}{r} 4x - 2y = 12 \\ -4x \qquad -4x \\ \hline -2y = -4x + 12 \\ \frac{-2y}{-2} = \frac{-4x + 12}{-2} \\ y = 2x - 6 \end{array}$$

⑪  $C = \frac{5}{9}(F - 32)$  for  $F$

$$9C = 5(F - 32)$$

$$\frac{9}{5}C = F - 32$$

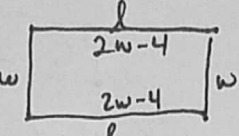
$$\frac{9}{5}C + 32 = F$$

⑫  $A = \frac{h(b_1 + b_2)}{2}$  for  $h$

$$2A = h(b_1 + b_2)$$

$$\frac{2A}{(b_1 + b_2)} = h$$

⑬



$l = 2w - 4$

Perimeter = Add all sides = 64

$$64 = 2w - 4 + 2w - 4 + w + w$$

$$64 = 6w - 8$$

$$72 = 6w$$

$$12 = w$$

The length is 20 in and width is 12 in

⑭  $J = \text{Jack's age}$   $L = \text{Jill's age}$

$$J + L = 49$$

$$J = 4L + 4$$

$$4L + 4 + L = 49$$

$$5L + 4 = 49$$

$$5L = 45$$

$$L = 9$$

Jill is 9 years old.

⑮ 3 consecutive even integers

$$x, x+2, x+4$$

$$2x = x+4 + 12$$

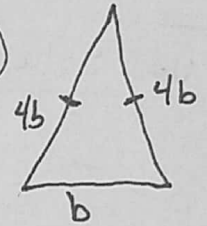
$$2x = x + 16$$

$$-x \quad -x$$

$$x = 16$$

$$16, 18, 20$$

⑯



Perimeter = 45 (add all sides)

$$4b + 4b + b = 45$$

$$9b = 45$$

$$b = 45$$

The length of the base is 45 in.

⑰ 3 consecutive integers

$$x, x+1, x+2$$

$$x + x+1 + x+2 = 51$$

$$3x + 3 = 51$$

$$-3 \quad -3$$

$$3x = 48$$

$$x = 12$$

12, 13, 14

14 is the largest

⑱  $\frac{1}{3}(6x - 9) = x + 1 - 2x$

$$\frac{2x - 3}{+x} = \frac{-x + 1}{+x}$$

$$\frac{3x - 3}{+3 \quad +3} = 1$$

$$3x = 4$$

$$x = \frac{4}{3}$$

⑲  $A = \frac{1}{2}bh$

$$90 = \frac{1}{2}(18)h$$

$$90 = 9h$$

$$\frac{90}{9} = \frac{9h}{9}$$

$$10 = h$$

10 cm = h

⑳  $e = \text{earnings per hour}$

you earn \$9 per hour

$$\begin{array}{r} 5e + 6e + 30 = 129 \\ -30 \quad -30 \\ \hline 11e = 99 \\ e = 9 \end{array}$$