

# More Practice for Linear Functions and Equations Quiz

Name:

Answers

1) Solve:  $5 + 2x - 3(x + 4) = 6 + 2x - 1$

$$5 + 2x - 3x - 12 = 5 + 2x$$

$$-x - 7 = 5 + 2x$$

$$+x$$

$$+x$$

$$-7 = 5 + 3x$$

$$-12 = 3x$$

$$-\frac{12}{3} = x$$

$$x = -4$$

2) Solve:  $(x + 3 - 2x) - \left(\frac{1}{5}x - 2\right) = 5$

$$5x + 15 - 10x = x - 10$$

$$15 - 5x = x - 10$$

$$+5x$$

$$+5x$$

$$15 = 6x - 10$$

$$25 = 6x$$

$$x = \frac{25}{6}$$

3) Solve:  $\frac{5}{8}(x - 2) = 1 - \frac{3}{4}x + 2$

$$\frac{5}{8}x - \frac{5}{4} = 3 - \frac{3}{4}x$$

$$8 \cdot \left(\frac{5}{8}x - \frac{10}{8}\right) = \left(3 - \frac{6}{8}x\right) \cdot 8$$

$$5x - 10 = 24 - 6x$$

$$11x - 10 = 24$$

$$11x = 34$$

$$x = \frac{34}{11}$$

4) Ann makes \$8 per hour plus a weekly bonus of \$20 if she always arrives to work on time.

a) Write an equation that represents the Ann's weekly income,  $y$ , if she works  $x$  hours.

$$y = 8x + 20$$

b) How much will Ann make if she works a 40 hour week and gets her bonus?

$$y = 8(40) + 20 = \$340$$

c) If Ann has to earn \$180 this week, how many hours must she work?

$$180 = 8x + 20$$

$$160 = 8x$$

$$x = 20$$

20 hours

d) What is the slope of this line and what does it mean in the context of this story?

slope is the rate of change = 8 dollars/hour

e) What is the y-intercept of this line and what does it mean in the context of this story?

y int. is the starting value = \$20

5) Write the equation of each line below.

a) line with slope  $= \frac{2}{3}$  and y-intercept  $= -4$

$$y = \frac{2}{3}x - 4$$

b) line with slope  $= -\frac{1}{3}$  and point  $(-6, 4)$

$$y = -\frac{1}{3}x + b$$

$$4 = -\frac{1}{3}(-6) + b$$

$$4 = 2 + b$$

$$2 = b$$

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

c) line with points  $(-2, 7)$  and  $(6, 3)$

$$\text{slope} = \frac{7-3}{-2-6} = \frac{4}{-8} = -\frac{1}{2}$$

$$3 = -\frac{1}{2}(6) + b$$

$$3 = -3 + b$$

$$6 = b$$

$$y = -\frac{1}{2}x + 6$$

6) Because snowy crickets are cold-blooded animals, their metabolic rates are closely linked to the temperature of their surroundings. For this reason, crickets chirp when they're warm and don't chirp when it's chilly. In fact, if you know the temperature ( $t$ ) in degrees Fahrenheit, you can predict the number of times a cricket chirps per minute ( $C$ ) using the equation  $C(t) = 4t - 160$ . (4 points total)

a) Evaluate  $C(50)$ .  $= 4(50) - 160$   
 $= 40 \text{ chirps/min}$

At  $50^\circ\text{F}$ , crickets chirp at 40 chirps/min

b) Turn this math sentence into an English sentence:  $C(70) = 120$

At  $70^\circ\text{F}$ , snowy crickets chirp 120 times each minute.

c) What might be happening to the crickets in this situation?  $C(40) = 0$

$40^\circ\text{F}$  is too cold for crickets to chirp.

7) Given the function,  $y = 3x - 5$ , find the domain and range and explain why this is a function.

Domain:

Range:

Why is this a function?

Each  $x$  has exactly 1  $y$ .