

key

## Integrated Algebra Check 2.2 Linear Functions

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Sketch the graph of a function.



2. Sketch the graph of a non-function



3. Write the 3 forms of a linear function

$$\underline{y = mx + b} \quad \underline{Ax + By = C}$$
$$\underline{y - y_1 = m(x - x_1)}$$

4. Write a linear model that represents the problem:

A. You have been offered a job that pays you \$200 plus 5% of sales.

Let  $x = \$\text{sales}$                       Let  $y = \text{total pay}$

EQ:  $\underline{y = .05x + 200}$

B. Ms. Miller has a \$50 gift card to the ice cream shop. She has told her students she will buy them a cone for \$3 or a shake for \$2. Write an equation that represents the number of cones,  $c$ , and shakes,  $s$ , she can buy for \$50.

$$\underline{3c + 2s = 50}$$

C. Our class is selling popcorn for a fundraiser. It costs \$120 to rent the machine for the afternoon. We estimate it will cost \$.25 per bag to make the popcorn. We've decided that \$2 would be a good selling price.

A.  $R(x) = \underline{2x}$

B.  $C(x) = \underline{.25x + 120}$

C.  $P(x) = \underline{2x - (.25x + 120)} = 1.75x - 120$

5. Write the slope formula:  $m = \frac{y_2 - y_1}{x_2 - x_1}$

6. A data set is linear if there is a constant rate of change

7. Is this data set linear? If so, write the equation of the line that passes through these points:

x	y
9	11
12	16
15	21
21	31

Yes:

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

$$y = mx + b$$

$$11 = \frac{5}{3} \cdot 9 + b$$

$$11 = 15 + b$$

$$b = -4$$

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

8. In 2010, UCONN tuition was \$7860. Since then, tuition has increased at a constant rate of \$740 per year. Write a linear model that represents the tuition cost  $T(x)$   $x$  years after 2010.

$$(0, 7860) \quad y = 740x + 7860$$

9. Write the equation of the line that has a slope of 2 and passes through (5, 2)

$$2 = 2(5) + b$$

$$2 = 10 + b$$

$$-8 = b$$

$$y = 2x - 8$$