

Name KEY

### Warm up

Find the slope of the LINE that passes through these points in the table. Choose two separate coordinate pairs to find the slope twice. Leave your answer as a simplified fraction. Show your work neatly.

Remember  $m = \frac{\Delta y}{\Delta x}$

x	y
-2	4
0	3
2	2
4	1

$(-2, 4)$   $(0, 3)$        $(0, 3)$   $(4, 1)$

$$m = \frac{3-4}{0-(-2)} = \frac{-1}{2}$$
$$m = \frac{1-3}{4-0} = \frac{-2}{4} = \frac{-1}{2}$$

For each of the following equations, state if the equation is linear, quadratic, absolute value, or other.

$$2x - 3y = 10$$

Linear

$$|x + 3| = 5$$

absolute value

$$3\left(\frac{1}{2}\right)^x = y$$

other

$$3x^2 = 27$$

quadratic





The equation for an exponential equation is :

$$y = a \cdot b^x$$

What does the  $a$  represent?

starting value  
This lab!  
100 pennies

What does the  $b$  represent?

The multiplier  
 $b > 1$  growth This lab  
 $0 < b < 1$  decay  $\frac{1}{2}$

What does the  $x$  represent?

input  
# of trial

What does the  $y$  represent?

output  
# of pennies with tails up

7-43. Graph your data on your own graph paper.

- a) Examine and describe the resulting graph. Where does the graph cross the  $y$ -axis? Does the graph have any **asymptotes**? (a line that the graph you created never crosses) Should the graph be **continuous** or **discrete**? (Should you connect the points?)

$y$ -intercept  $(0, 100)$   
asymptote  $y = 0$  ( $x$ -axis)  
The graph is discrete.

- b) Is this situation increasing or decreasing? What does this mean about the multiplier?

Decreasing  
The multiplier is less than 1.

- c) Using what you know about the probability of flipping a fair coin, what would you expect or estimate the multiplier to be?

$$\frac{1}{2}$$

- d) Write an equation for an exponential function that models the data. Make sure you also write a "let" statement for your variables.

$$f(x) = 100 \left(\frac{1}{2}\right)^x$$

$y =$

You need ( ) around the  $\frac{1}{2}$ !

- e) What output does your function give for  $x = 0$ ? What could this mean in relation to the situation?

$$f(0) = 100 \left(\frac{1}{2}\right)^0$$
$$= 100(1)$$

$$f(0) = 100$$

This is the number of pennies the experiment starts with.

- f) Could there be an output value for  $x = -1$ ? If so, what might it mean?

The output could be the number of pennies if there had been a previous trial.

$$f(-1) = 100 \left(\frac{1}{2}\right)^{-1} = 100(2)$$
$$= 200$$

