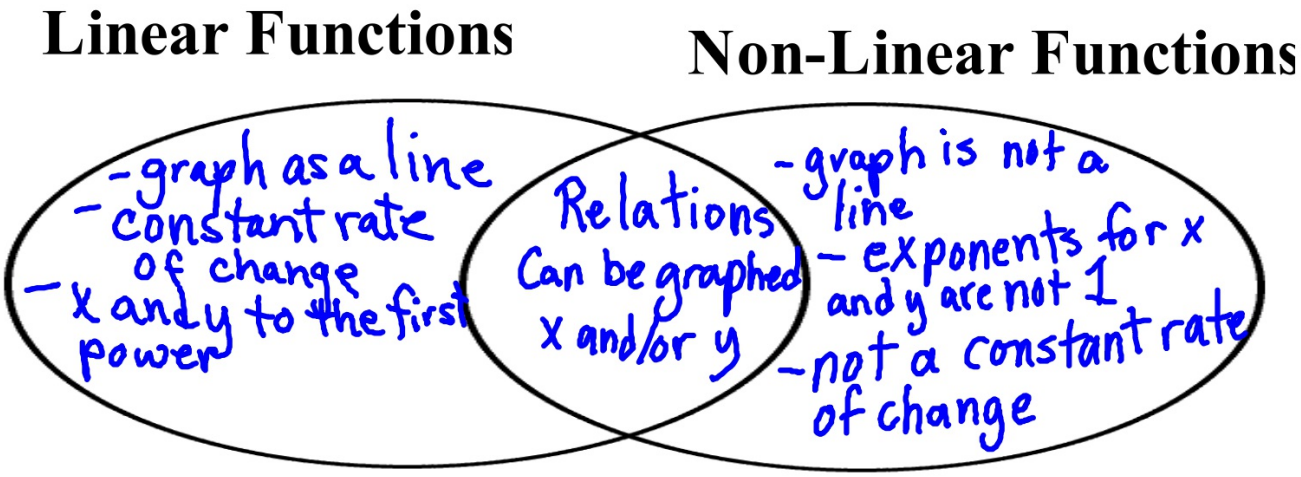
**Compare and Contrast linear and non-linear functions by using a Venn-diagram. You can include examples, characteristics, etc.**



**Determine if the numerical pattern is linear:** constant rate of change

a) 4, 7, 10, 13 (+3, +3, +3) linear

b) 5, 10, 20, 25, 30, 40 (+5, +10, +5, +5, +10) non-linear

1. A car company charges a $45 fee to use their vehicle. They also charge an additional $0.35 per mile (m). Write a function that models the total cost (c) of taking a passenger to the airport.

begin

slope

C represents: the total cost M represents: number of miles

Equation: $C = .35m + 45$

2. Sofia is saving for an IPhone. She starts off with begin $50 that her parents gave her. She plans to deposit slope $30 per month from her paycheck.

a. Write an equation to represent how much money ~~Susan~~ Sofia has saved.

Equation: $y = 30x + 50$

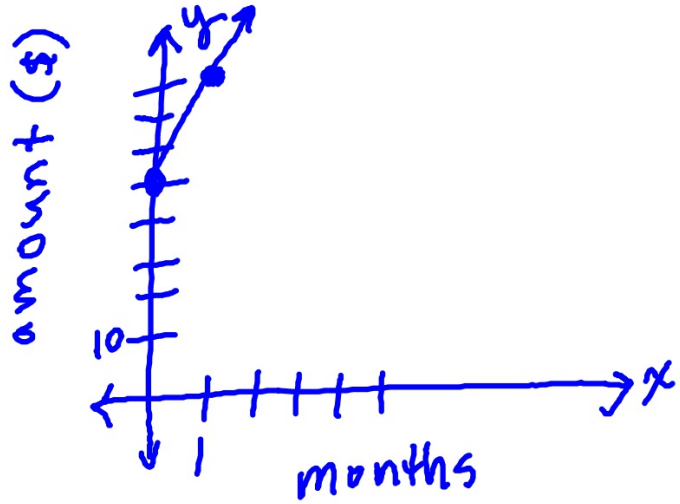
b. What does x represent?

number of months

c. What does y represent?

the total amount of savings

d. Draw a graph to represent how much money Sofia has saved.



3. You are flying a helicopter on a really hot day. At 6,000 feet (begin), your engines fail. The helicopter's instruments say that you are losing 400 vertical feet for every horizontal mile (slope). Given this information, x represents each horizontal mile and y represents the total distance traveled.

a. What does x represent?

number of horizontal miles

b. What does y represent?

total distance traveled

c. What is the slope?

$-400$

d. What is the y-intercept?

6,000

$y = -400x + 6000$

e. Circle the data table that represents this scenario.

| X | Y |
|---|---|
| 400 | 6,000 |
| 800 | 12,000 |
| 1,200 | 18,000 |

| X | Y |
|---|---|
| 1 | 5,600 |
| 2 | 5,200 |
| 3 | 4,800 |

| X | Y |
|---|---|
| 0 | 6,000 |
| 10 | 2,000 |
| 20 | -2,000 |

4. Bobby pays a $25 membership fee (begin) to join YMCA gym. This gym allows members to attend any exercise class for only $4. The linear equation can be written as T = 4c + 25, where T represents the total cost of classes and the gym membership fee. Let c represent the number of classes Bobby attended.

   a. In the table provided, find the total cost, T, when Bobby went to 2, 4, 8, and 10 classes.
   b. Plot the ordered pairs on the graph provided.

| c | T |
|---|---|
| 2 | 33 |
| 4 | 41 |
| 8 | 57 |
| 10 | 65 |

$T = 4c + 25$

$4(2)+25 = 8+25 = 33$

$4(4)+25 = 16+25 = 41$

$4(8)+25 = 32+25 = 57$

$4(10)+25 = 40+25 = 65$

If Bobby went with Gold's Gym, the membership fee would have been $30 but only $2 per exercise class.

begin slope

c. Fill in the table provided with this new information (as done above).
**d. Plot the ordered pairs on the graph above.**
e. Which of the two gyms would cost more in the long run?

| c | T |
|---|---|
| 2 | |
| 4 | |
| 8 | |
| 10 | |

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# HW: Comparing slope Worksheet