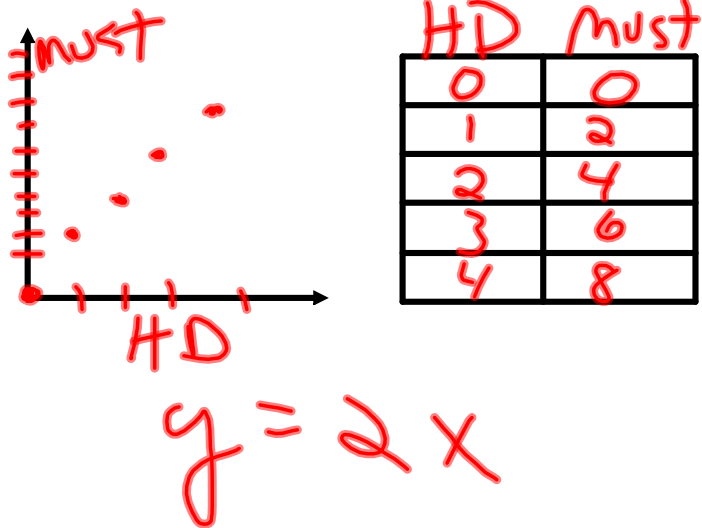


4-3: Patterns & Non-Linear Functions

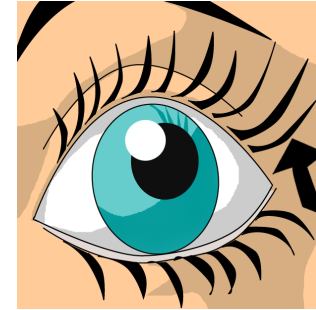
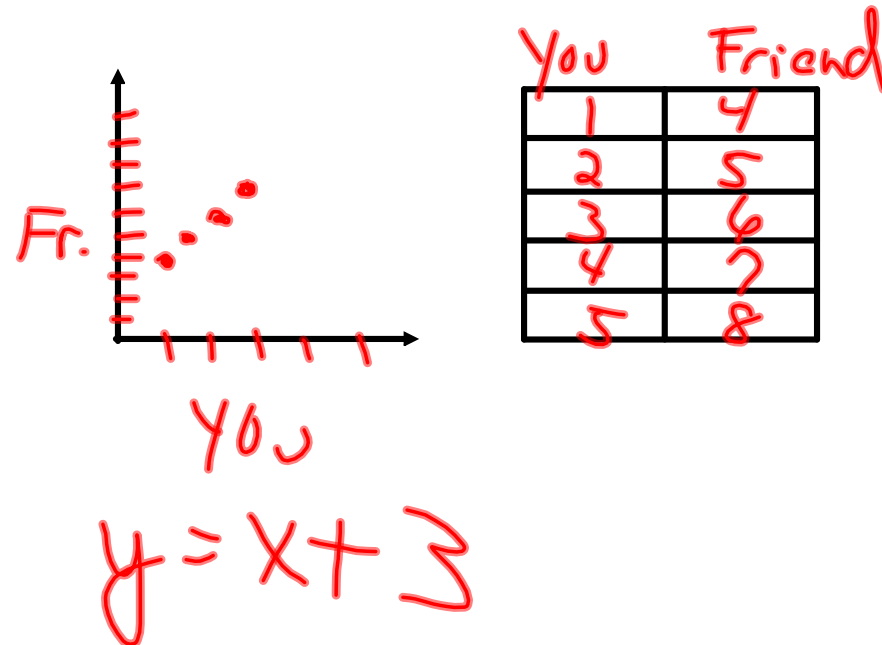
Eye Opener

Use a table, an equation, and a graph to represent each relationship:

The number of mustard packets used is 2 times the number of hot dogs sold.



You are three places ahead of your friend while waiting in line.



Essential Understandings

A **non-linear function** is a function whose graph is not a line or a part of a line

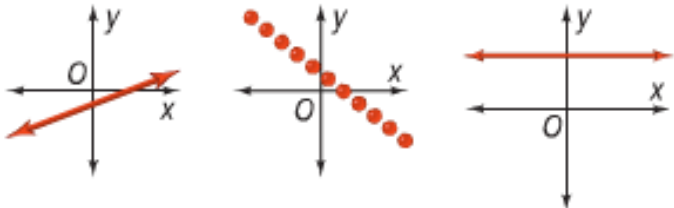
Non-linear functions can be represented using words, tables, equations, sets of ordered pairs, and graphs.




take note

Concept Summary Linear and Nonlinear Functions

Linear Function
A linear function is a function whose graph is a nonvertical line or part of a nonvertical line.



Nonlinear Function
A nonlinear function is a function whose graph is not a line or part of a line.



Go to online lessons

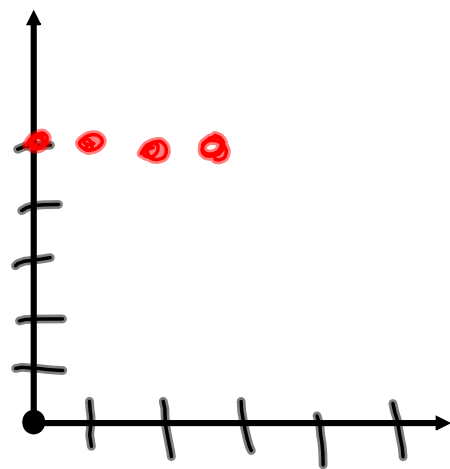
<http://www.pearsonsuccessnet.com/snpapp/learn/navigateIDP.do?method=vlo&internalId=13091110000052#>



Graph the function shown by each table. Tell whether the function is linear or nonlinear

x	y
0	5
1	5
2	5
3	5

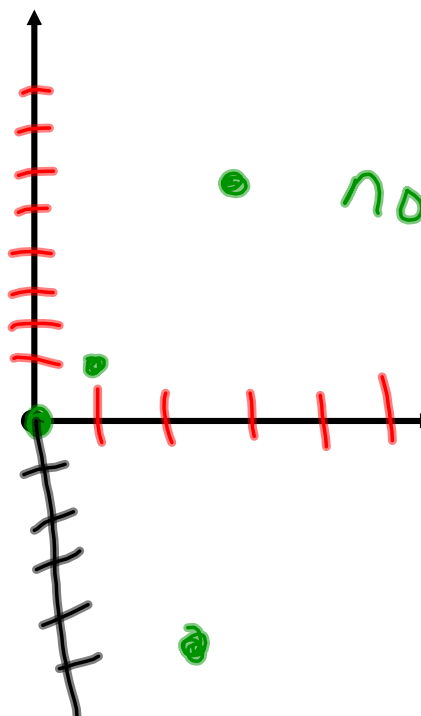
Handwritten red annotations: A vertical brace on the left groups the x-values (0, 1, 2, 3) with the number '1'. A horizontal brace on the right groups the y-values (5, 5, 5, 5) with the number '0'.



linear

x	y
0	0
1	1
2	-5
3	8

Handwritten green annotations: A vertical brace on the left groups the x-values (0, 1, 2, 3) with the number '1'. Horizontal braces on the right group the y-values (0, 1, -5, 8) with the numbers '1', '-6', and '13' respectively.



non-linear

Fountain A designer wants to make a circular fountain inside a square of grass as shown at the right. What is a rule for the area A of the grass as a function of r ?

$$A_{\text{circle}} = \pi r^2$$

$$A_{\text{square}} = s^2$$

$$\text{Green} = s^2 - \pi r^2$$

