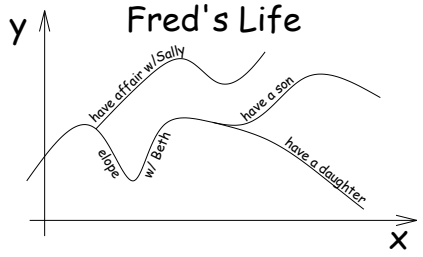
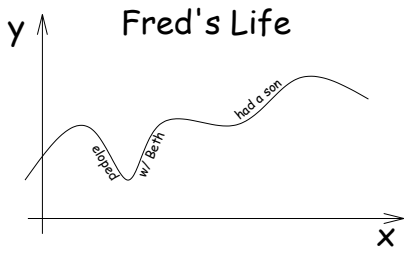
Introduction to Functions *Franz Helfenstein* Name

Understanding functions and function notation is crucial to understanding much of mathematics. This activity should help you with an initial understanding of functions.

1) Explain how one of these could represent a function while the other would not. Be explicit.





2) Which of these represent a function and which do not. Explain your answer. Be explicit.

ID# (x)	DOB (Y_1)	Allergies (Y_2)	SSN (Y_3)	Meds (Y_4)
101	Fcn: Yes No	Fcn: Yes No	Fcn: Yes No	Fcn: Yes No
102				
103				
104				
105				
106				

3) Which of these represent a function and which do not. Explain your answer. Be explicit.

$y = mx + b$	$x^2 + y^2 = 1$	$y = ax^2 + bx + c$	$y = 2 \pm \sqrt{3x}$
Fcn: Yes No	Fcn: Yes No	Fcn: Yes No	Fcn: Yes No

4) Which of these represent a function and which do not.

x: race time y: Bib #	x: Bib # y: race time	x: gross income y: Fed tax in 2010	x: age y: hair color
Fcn: Yes No	Fcn: Yes No	Fcn: Yes No	Fcn: Yes No
x: MD's age y: office wait time	x: Name y: DOB	x: DOB y: age 1/1/2012	x: Fed tax paid y: Gross Income
Fcn: Yes No	Fcn: Yes No	Fcn: Yes No	Fcn: Yes No

5) (a) $f(-3) =$ (b) $f(2) =$

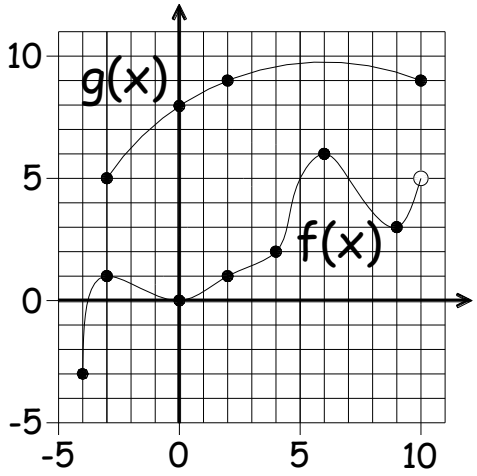
(c) $f(10) =$ (d) $(f + g)(2) =$

(e) $(f + g)(10) =$ (f) $f(6)\, g(10) =$

(g) $(f/g)(0) =$ (h) $2\, f(4) + 5 =$

Domain of f(x):

Range of f(x):



6) $f(x) = 3x^2 - 2$ $g(x) = x + 1$ $p(x) = \frac{x+1}{x}$

(a) $f(-2) =$ (b) $f(0) =$ (c) $p(0) =$

(d) $(f + g)(5) =$ (e) $f(t) =$ (f) $g(a + b) =$

(g) $p(x - 1) =$ (h) $f(x) + 2 =$ (i) $g^2(x) =$

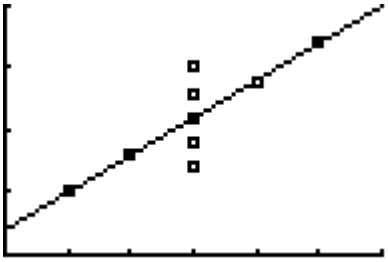
7) You are tasked with collecting and organizing data then finding a function that corresponds to that data. First you must organize the data into independent vs dependent (x vs y). Fill in the indicated variables. Write 'unrelated' if the variables are unrelated.

Elevation & 10K Race Time x-var: _____ y-var: _____

Age & 10K Race Time x-var: _____ y-var: _____

Hair Color & 10K Race Time x-var: _____ y-var: _____

8) Consider this data set:



x	1	2	3	4	5
y	5	8	7,9,11,13,15	14	17

Run Linear Regression.

What do you get? _____

Do you think your regression equation is a good descriptor for this data? Why/whynot?