Functions and Models

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First let's talk about the idea of a function.

A function is actually very simple: you take some kind of Input

and you get some kind of Output.

So the Output is, in fact, a function of the Input.

Think about a soda machine, you put in your money, and you hit a button,

and you get a single can of soda out.

In this way, the soda machine is acting like a function: button press, soda.

But here's an important

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Comprehension Check

1. A national park contains foxes that prey on rabbits. The table below gives the two populations, F and R, over an 11-month period, where t=0 means January, t=1 means February, and so on.

t *Month*	0	1	2	3	4	5	6	7	8	9	10
R *Rabbi*	1,000	750	567	500	567	750	1,000	1,250	1,433	1,500	1,433

Lecture Videos
Comprehension Check due Mar 15, 2016 at 18:00 UTC

R Tutorial Videos

Pre-Lab
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Lab
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Problem Set
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F *Foxes*	150	143	125	100	75	57	50	57	75	100	125

(2/2 points)

1a. Is F a function of t?

- (●) Yes, because for each value of t, there is exactly one value of F. ✔
- ( ) Yes, because the fox population changes over time.
- ( ) No, because the fox population is 75 in both the month of May and the month of September.
- ( ) No, because we cannot predict the fox population from time.

1b. Is R a function of F?

- ( ) Yes, because the rabbit and fox populations vary with each other.
- ( ) Yes, because the table matches one value of R with each value of F.
- ( ) No, because the value R=567 appears twice.
- (●) No, because when F=57, R=750 and R=1250. ✔

2. A mathematical model is

(1/1 point)

- ( ) a data table or a graph of data.
- (●) a function used to describe how data is behaving in an actual situation. ✔

a line that connects the dots when real data is plotted on a scatterplot.

3. The table below shows the number of female senators at the beginning of seven sessions of Congress.

C *Congress*	96	98	100	102	104	106	108
S *Female Senators*	1	2	2	2	8	9	14

(2/2 points)

3a. Is the number of female senators, S, a function of the session of Congress, C?

Yes, because for each session of Congress, there is exactly one number of female senators. ✔

Yes, because the number of senators is independent from year to year.

No, because there were the same number of female senators in sessions 98, 100 and 102.

No, but Congress is a function of the number of female senators.

3b. Let f(C) represent the number of female senators serving in the Cth Congress. What does the statement **f(108)=14** mean?

There will be 108 female senators when 14 years have passed.

In the 108th Congress, there were 14 female senators. ✔

The average rate of change in female membership is 108 over 14 years.