

Math Q114 Functions: Work with your partners on # 1-10

Two ways of defining a function mathematically:

- An output y is a function of an input x if each value of x determines exactly one value of y
- An dependent variable y is a function of an independent variable x if each value of x determines exactly one value of y

State whether each relationship represents a mathematical function and explain why or why not:

1. Each state has two senators, for example Massachusetts' senators are John Kerry and Ted Kennedy. We could write ordered pairs (MA, Kerry) and (MA, Kennedy). Are senators a function of the state they represent?

2. Are children a function of their mother?

3. If $y = 3x - 5$, is y a function of x ?

4. Is weight a function of age?

Age (months)	1	2	3	3
Weight (lbs.)	10	6	9	8

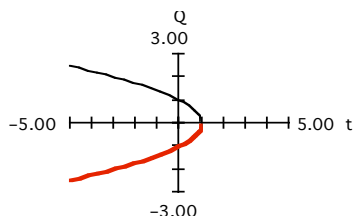
5. Is height a function of age?

Age (months)	1	2	3	4
Height (inches)	20	18	18	21

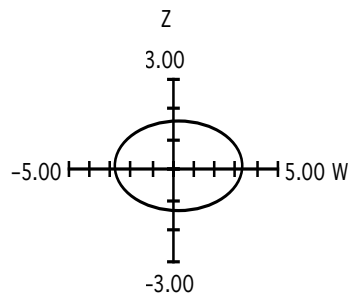
6. Solve for y and determine whether $y = f(x)$: $3(2x - y) = 12$

7. If $y = x^2 - 2x + 1$, is y a function of x ?

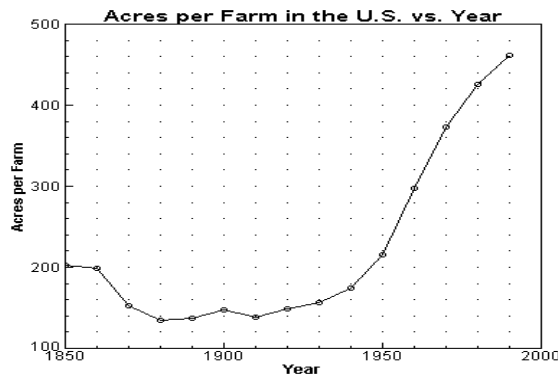
8. Does the graph below, represent a functional relationship between the horizontal and vertical axis; i.e., is $Q = f(T)$?



9. Does the graph below, represent a functional relationship between the horizontal and vertical axis; i.e., is $Z = f(W)$?



10. Does the graph below, represent a functional relationship; i.e., is Acres = $f(\text{Year})$? Is Year = $f(\text{Acres})$?



11. If $12x - 4y = 8$:

a. Solve for y and then write y as a function of x : $y = f(x)$,

12. Children's ear infections are commonly treated with the antibiotic Ampicillin. The prescribed dosage for children who weigh less than 10 kilograms (about 22 lbs.) is 50 milligrams of medication for each kilogram of weight. Let D = dosage in milligrams and W = weight in kilograms.

a. What is the independent variable? What is the dependent variable?

b. Complete the chart:

W (kg)	1	2	3	4	5	6	7	8	9
D (mg)									

c. Write an equation for the relationship between dosage D and weight W .

d. Graph your results: