Name:_____ Period: _____ Class Number:_____

Discrete vs. Continuous

A discrete unit: _____

What does this mean? _____

_____

_____

We _____ things that are discrete.

A collection of discrete units will: _____

_____

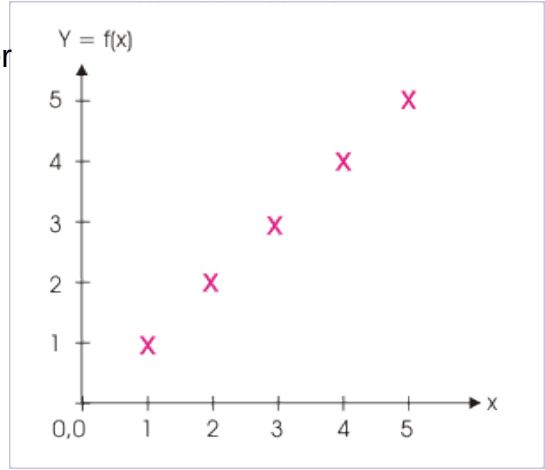
For example: _____

_____

_____

The graph of a Discrete function will be made up of coordinate pairs that do not connect together.

y = number of runs



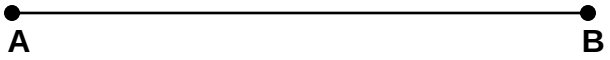
x = inning

A continuous whole: _____

_____

_____

Consider the distance from A and B.



There is nothing to _____. As we go from A to B, the line _____ without a break.

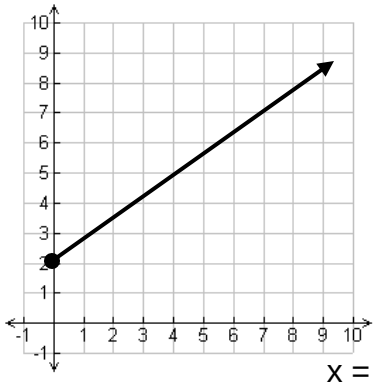
Since the length from A to B is continuous, we could take any part we please, for example:

_____

Therefore, we say that Continuous functions are for: _____

The graph of a Continuous function will be made up of coordinate pairs that do connect together to form a line or curve.

y = distance



x = time

Which of these are continuous (C) and which are discrete (D)?

a) A stack of coins: _____

b) The distance from here to the Moon: _____

c) A bag of apples: _____

d) Applesauce: _____

d) A dozen eggs: _____

e) 60 minutes: _____

f) Pearls on a necklace: _____

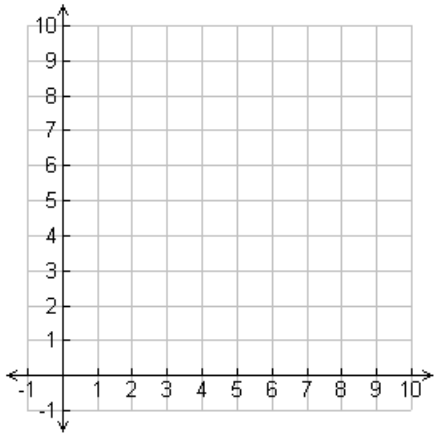
g) The area of a circle: _____

1. In your own words describe the difference between discrete and continuous functions:

2. Which of these are continuous (C) and which are discrete (D)?
   a) The volume of a sphere. _____
   b) A gallon of water. _____
   c) Molecules of water. _____
   d) The acceleration of a car as it goes from 0 to 60 mph. _____
   e) The changing shape of a balloon as it's being inflated. _____
   f) Sentences. _____
   g) Thoughts. _____
   h) The height of corn plants. _____
   i) The number of ears of corn produced. _____
   j) The number of green M&M's in a bag. _____
   k) The time it takes for a car battery to die. _____

3. For the function $f(x) = \frac{1}{2}x$ that measures the height of a plant in inches after a number of days:
   a) Make a table of values and graph the function:

x	y



   b) True or False: The plant's height can be measured in parts of an inch? _____
   c) Is this function Discrete or Continuous? _____

Name:_____ Period: _____ Date:_____

Ticket out the Door – Discrete vs. Continuous

You are traveling over winter break on a plane from Austin Intercontinental Airport (AUS) to Los Angeles, California (LAX), describe 3 discrete and 3 continuous data examples you might encounter during your trip:

Discrete Examples	Continuous Examples
1.	1.
2.	2.
3.	3.

Name:_____ Period: _____ Date:_____

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Discrete Examples	Continuous Examples
1.	1.
2.	2.
3.	3.

Discrete vs. Continuous *(Teacher Notes)*

A discrete unit: __is indivisible_____

What does this mean? _If it is divided then what results will not exist. For example: half a ___ person is not a person._____

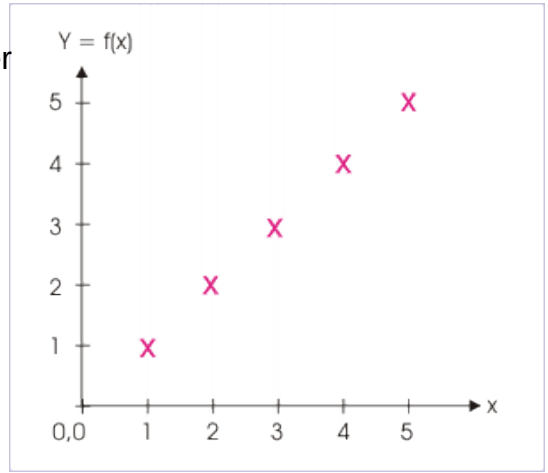
We ___count_____ things that are discrete.

A collection of discrete units will: _have only _certain parts._____

For example: _10 people can only be divided _into halves, fifths, and tenths. You cannot_ _take a 1/3 of them._____

The graph of a Discrete function will be made up of coordinate pairs that do not connect together.

y = number of runs

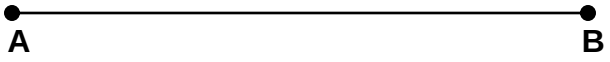


x = inning

A continuous whole: _means that we go from__ _one point to another without a break._____

_____

Consider the distance from A and B.



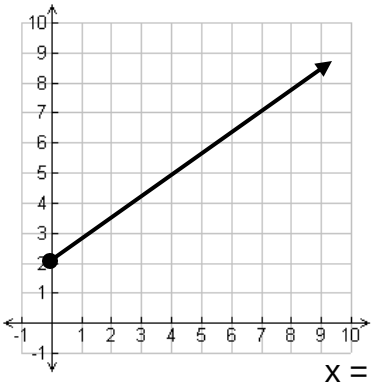
There is nothing to _COUNT_____. As we go from A to B, the line _Continues_____ without a break.

Since the length from A to B is continuous, we could take any part we please, for example: _1/2, 1/3, ¼, 1/5, 1/10, 1/20, etc._____

Therefore, we say that Continuous functions are for: _measuring things_(Measurement)_____

The graph of a Continuous function will be made up of coordinate pairs that do connect together to form a line or curve.

y = distance



x = time

Which of these are continuous (C) and which are discrete (D)?

a) A stack of coins: ___D_

b) The distance from here to the Moon: __C___

c) A bag of apples: __D__

d) Applesauce: __C___

e) A dozen eggs: ____D__

f)) 60 minutes: __C____

g) Pearls on a necklace: __D____

h) The area of a circle: __C____