

## Objective

Students will...

- Be able to define and identify continuous and discrete functions.
- Be able to differentiate the domain and range of discrete functions from continuous functions.

A discrete unit: is indivisible

What does this mean? Cannot be  
divided freely in all cases.

We count things that are discrete.

A continuous whole: is something that  
contains no breaks in between.

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.

A collection of discrete units will: only  
have certain parts.

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For example: 10 ppl. ; you can take  $\frac{1}{2}$ .

You can take  $\frac{1}{5}$ . But you cannot

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take  $\frac{1}{2}$ .

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

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

*You can divide freely.*

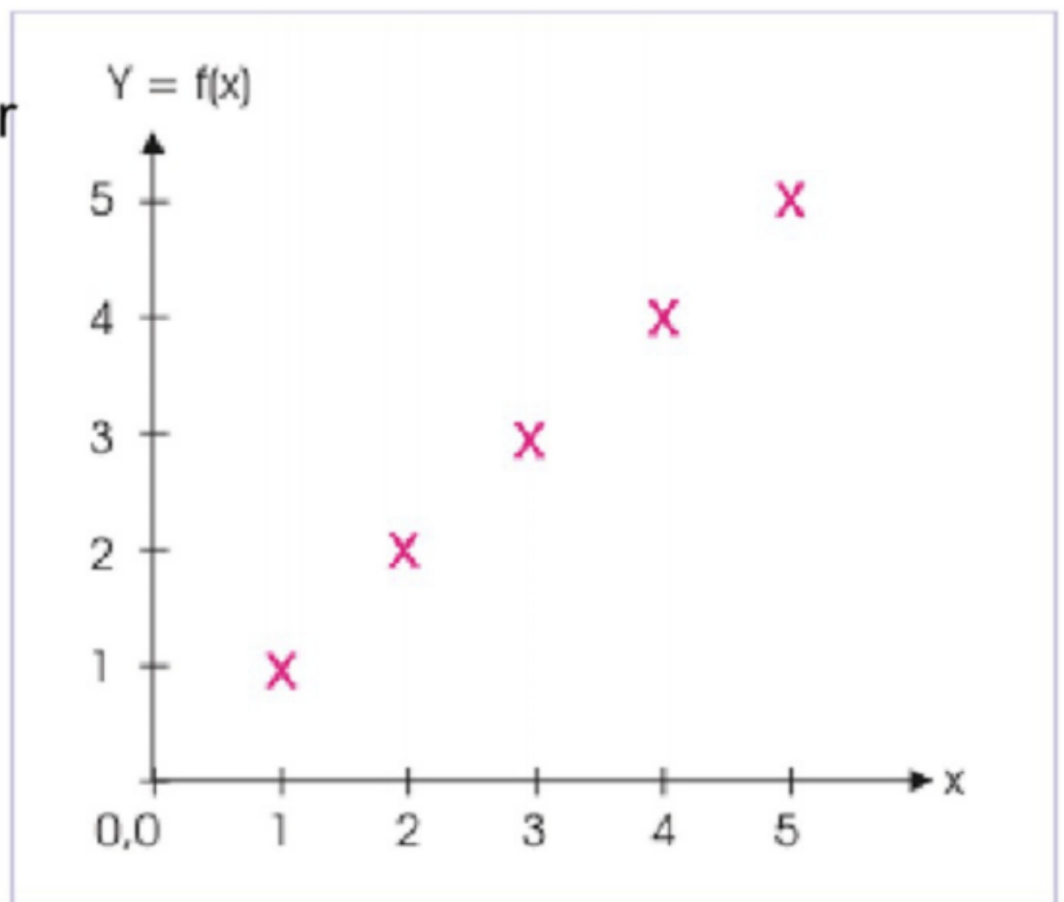
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Therefore, we say that Continuous functions are

for: measurement.

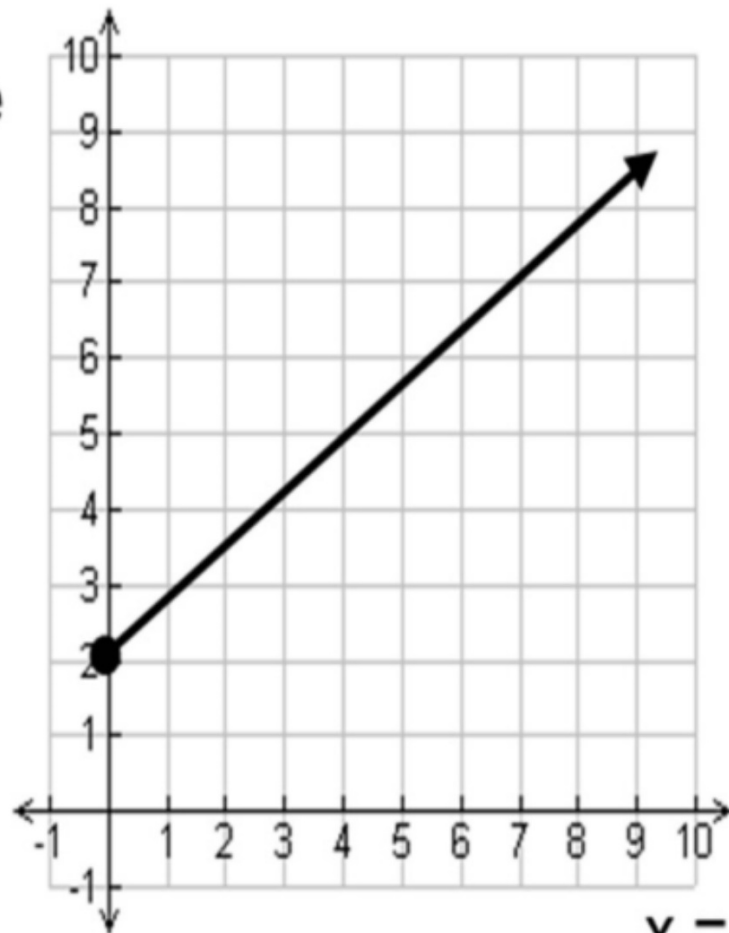
The graph of a Continuous function will be made up of coordinate pairs that do connect together to form a line or curve.

y = number  
of  
runs



x = inning

$y = \text{distance}$



$x = \text{time}$



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

d) A dozen eggs: D

e) 60 minutes: C

f) Pearls on a necklace: D

g) The area of a circle: C

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

a) The volume of a sphere. C

b) A gallon of water. C

c) Molecules of water. D

d) The acceleration of a car as it goes from 0 to 60 mph. C

e) The changing shape of a balloon as it's being inflated. C

f) Sentences. D

g) Thoughts. C

h) The height of corn plants. C

i) The number of ears of corn produced. D

j) The number of green M&M's in a bag. D

k) The time it takes for a car battery to die. C

Homework Due 8/16

**Discrete VS Continuous WKSHT**