

Warm Up

Nov. 6, 2017

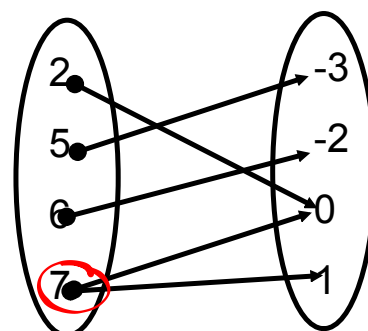
1) Given the following arrow diagram

a) State the domain $\{2, 5, 6, 7\}$

b) State the range $\{-3, -2, 0, 1\}$

c) Is this a function or not? How do you know?

Not a function since $x=7$ is repeated twice



2) Given the following set $\{(1, 3), (2, 6), (-1, 8), (5, 7), (-2, 4)\}$

a) State the domain $\{-2, -1, 1, 2, 5\}$

b) State the range $\{3, 4, 6, 7, 8\}$

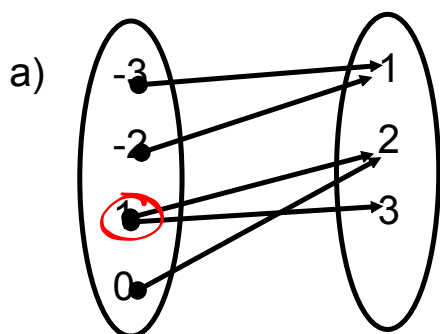
c) Is this a function or not? How do you know?

Function since no 'x' value is repeated

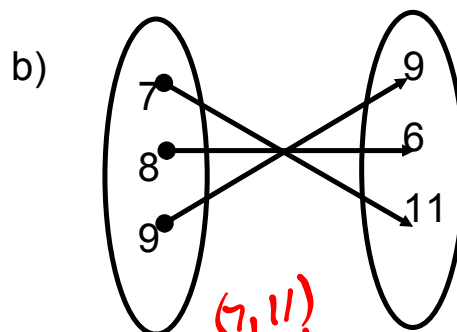
Homework Questions

pg 270 #4,5,8 Pg 294 #4a,b, 7

State which of the following relations are functions. Explain your answers.



Not a function Since
 $x=1$ is repeated



$(7, 11)$
 $(8, 6)$
 $(9, 9)$
No repeats in x
So it is a function

c)

x	y
10	2
11	2
12	2
12	2

Hint -graph it if you are unsure

$x=12$ is repeated
So Not a function

d)

x	y
-5	3
-3	4
1	7
1	8
2	4

$x=1$ is repeated
So Not a function.

Dots → connected Discrete and Continuous Data

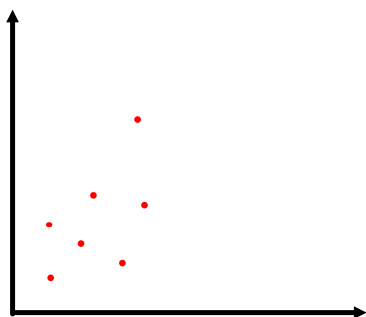
Discrete Data

- points are not joined together with a line on the graph.
- A finite number of values exist between points
- hint ask yourself can you have part of a "x" value. If no then discrete

Continuous Data

- points are joined together with a line on the graph.
- A infinite number of values exist between points
- hint ask yourself can you have part of a "x" value. If yes then continuous {x | — ≤ x ≤ —, x ∈ — }

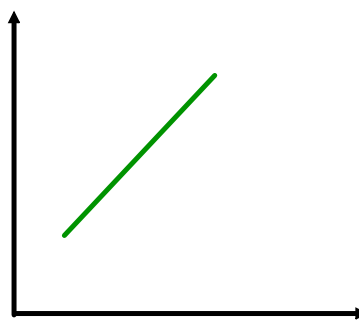
Examples)



Discrete

with dots then

$$\begin{array}{l}
 x \in \mathbb{W} \\
 x \in \mathbb{I} \\
 x \in \mathbb{N}
 \end{array}
 \left\{
 \begin{array}{l}
 y \in \mathbb{W} \\
 y \in \mathbb{I} \\
 y \in \mathbb{N}
 \end{array}
 \right.$$



Continuous

with line

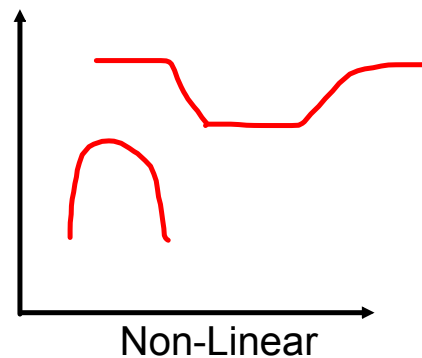
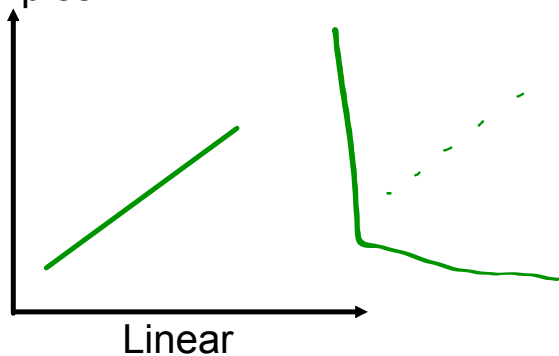
$$\begin{array}{l}
 x \in \mathbb{R} \\
 y \in \mathbb{R}
 \end{array}$$

Linear & Non-Linear

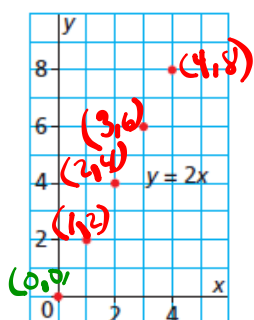
Linear graphs - the data is a straight line
(Doesn't have to be connected)

Non-Linear graphs - the data is NOT a straight line
- It can curve or spread out with no real pattern.

Examples



Using the graph write the domain and range.



Use two ways to represent both (Since it is DOTS)

Method 1

Domain: $\{0, 1, 2, 3, 4\}$

Range: $\{0, 2, 4, 6, 8\}$

x	y
0	0
1	2
2	4
3	6
4	8

Method 2

Domain: $\{x \mid 0 \leq x \leq 4, x \in \mathbb{I}\}$

Range: $\{y \mid 0 \leq y \leq 8, y \in \mathbb{I}\}$

Is this graph linear or non-linear?

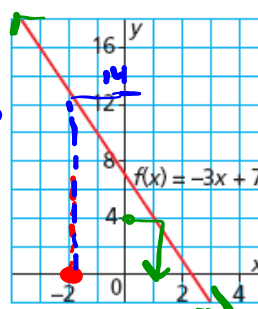
Yes, straight line of dots.

Is this graph continuous or discrete? Discrete

Example 4**Determining Domain Values and Range Values from the Graph of a Function**

Here is a graph of the function $f(x) = -3x + 7$.

- a) Determine the range value when the domain value is -2 . $x = -2$ $y = ?$ 13
- b) Determine the domain value when the range value is 4 . $y = 4 \Rightarrow x = ?$ 1

**SOLUTION**

$$f(x) = -3x + 7$$

let $x = -2$

$$\begin{aligned} & -3(-2) + 7 \\ & \quad \quad \quad 6 + 7 \\ & f(x) = 13 \\ & y = 13 \end{aligned}$$

$$f(x) = -3x + 7$$

$$4 = -3x + 7$$

$$4 - 7 = -3x + 7 - 7$$

$$\frac{-3}{-3} = \frac{-3x}{-3}$$

$$1 = x$$

**CHECK YOUR UNDERSTANDING**



Activate Prior Learning:

Writing Inequalities

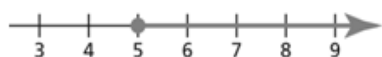
The inequality signs are:

$<$ less than $\leq$ less than or equal to
 $>$ greater than $\geq$ greater than or equal to

To write an inequality that corresponds to a statement, replace the words that represent the inequality with the corresponding sign.

g is greater than or equal to 5:

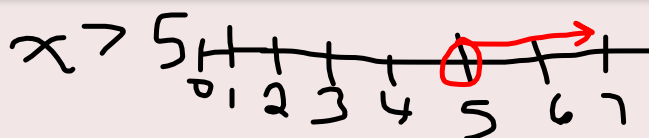
$$g \geq 5$$

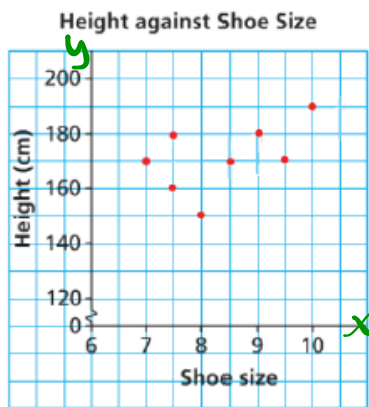


Since 5 is part of the solution, we draw a shaded circle at 5.

(Continues on next page)

5.5 Graphs of Relations and Functions





a) State the domain & range.

Domain $\{7, 7.5, 8.5, 9, 9.5, 10\}$

b) Is this relation a function?

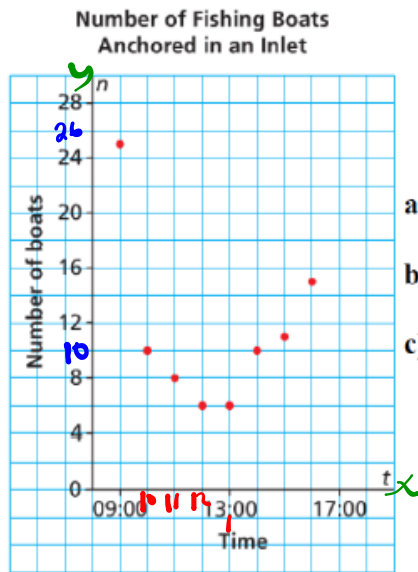
Range $\{160, 170, 180, 190\}$

c) Why are the points not connected? Explain.

Not a function since $x = 7.5$ is repeated twice

↓ No because we cannot have $7\frac{1}{4}$ shoe size.

x Shoe size	y height
7	170
7.5	160
7.5	180
8.5	170
8.5	160
9	180
9.5	170
10	190



domain $\{9, 10, 11, 12, 13, 14, 15, 16\}$
 range $\{6, 8, 10, 11, 15, 25\}$

a) State the domain & range.

b) Is this relation a function Yes no repeated x

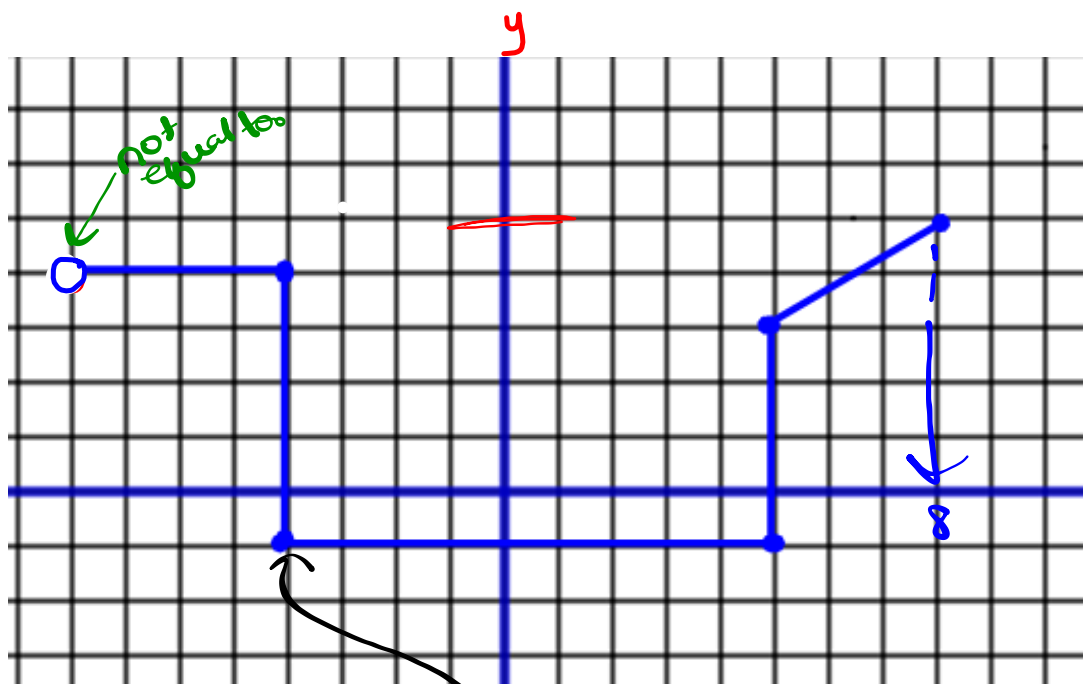
c) Why are the points not connected? Explain

Not connected
 Since you cannot have part of Boat docked.

x Time	y # of Boats
9	25
10	10
11	8
12	6
13	6
14	10
15	11
16	15

1 ←

2 ←



Discrete/ Continuous:

Function/ Non-Functions *fails*

Domain & Range

Linear or Non-linear

$$\{x \mid -8 < x \leq 8, x \in \mathbb{R}\}$$

$$\{y \mid -1 \leq y \leq 8, y \in \mathbb{R}\}$$

Class/Homework

Page 294 - 296:

Questions: 6, ~~7~~, 8, 9

PAGE 299:
QUESTIONS: ~~3~~

$$\{x \mid _ \leq x \leq _, x \in _ \}$$

$$\{y \mid _ \leq y \leq _, y \in _ \}$$

