

1.2.3 The Family of Linear Functions

1-100) a. Linear

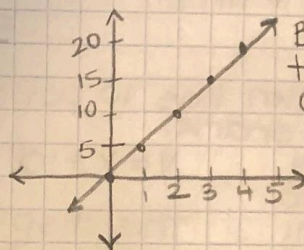
This function is linear

J1:

X	Y
0	0
1	5
2	10
3	15
4	20

The table shows a linear relationship among the y values. As the x increases by 1, y increases by 5.

J2:



By graphing the data we can see it forms a line.

Equation: $y = 5x$

b. Linear

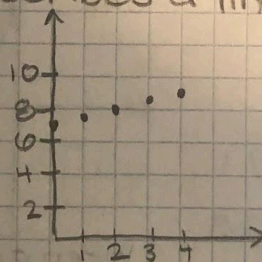
Statement: The description describes a linear relationship

J1:

X	Y
0	7
1	7.5
2	8
3	8.5
4	9

The table shows a linear relationship by increasing by 0.5 for each x value

J2:



By graphing the data we see it forms a line (discrete)

Equation: $y = 0.5x + 7$

c. Linear

Statement: This function is linear

J1: $y = -x + 10$

Data produces an equation in the form $y = mx + b$ which is linear

Equation: $y = -x + 10$

X	Y
10	0
5	5
3	7
2	8
1	9
0	10

J2: Starting at (10, 0), as the x decreases by 1 unit the y increases by 1 unit making it linear

d. Nonlinear. As x goes up, y goes down but not at a constant rate

e. Non linear. The output doubles as the input goes up one

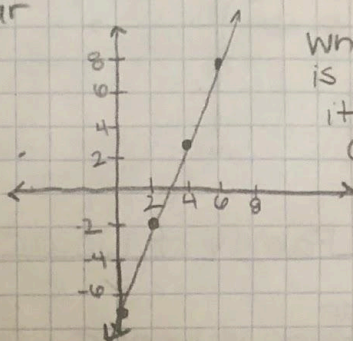
f. Linear

Statement: The function is linear

J1:

X	Y
0	-7
2	-2
4	3
6	8
8	13

J2:



When the data is graphed it produces a line.

As the x increases by 2 the y increases by a constant amount of 5 making it linear.

Equation: $y = 2.5x - 7$

1-101) Ms. Allen has 10 pet sharks. Each year she gets 1 new shark.

X	Y
0	10
1	11
2	12
3	13

$y = x + 10$

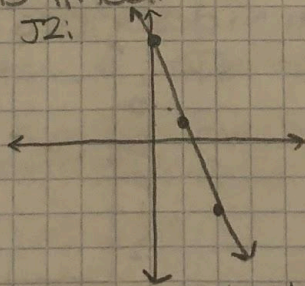
This displays having an initial amount of 10 and increasing by 1 at a constant rate

1-102) This function is linear

J1:

X	Y
1	0.5
4	-7
10	-22
15	-34.5

J2:



J3: $y = -2.5x + 3$

The data produces an equation of the form $y = mx + b$ which is linear

As x goes up by 1 y decreases at a constant rate of 2.5

When graphed the data produces a line