M10 - 6.1 - Linear/Continuous Notes

Table of Values (Linear/Non-Linear)

x	y	
-4	0	
-2	3	Δx $+2$, Δx $+2$
0	6	$+3$, $+3$
4	12	Δx $+4$, Δx $+4$
8	18	$+6$, $+6$
		Δy, Δy, Δy, Δy

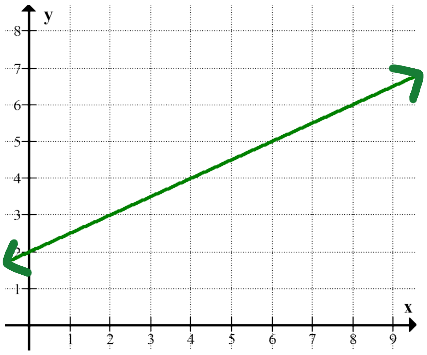
$If\ the\ fraction\ \frac{\Delta y}{\Delta x} = \frac{\Delta y}{\Delta x}, it\ is\ \boxed{Linear.}$

$\frac{3}{2} = \frac{3}{2}\ \boxed{Linear}$ ✓

$\frac{3}{2} = \frac{6}{4}$

$\frac{3}{2} = \frac{3}{2}\ \boxed{Linear}$ ✓

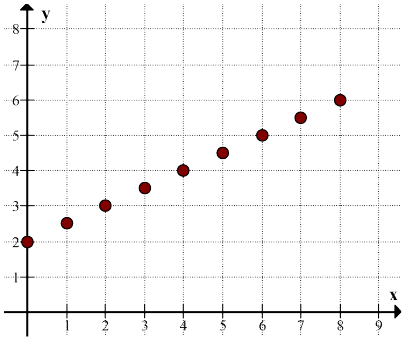
Graph (Linear/Non-Linear)(Continuous/Discrete)



Linear

If the line is straight, the relation is linear

Continuous

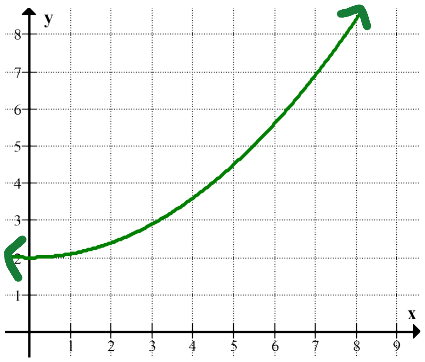


Linear

If the points are in a straight line, the relation is linear

Discrete

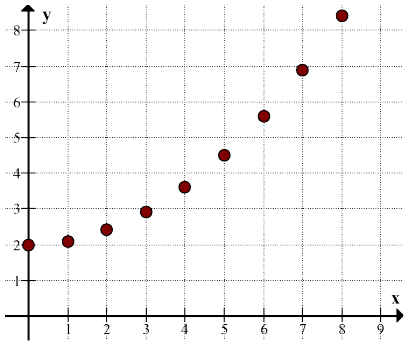
Continuous: Points are connected



Non-Linear

Continuous

If the points are/can be connected



Non-Linear

Discrete

If the points are not/cannot be connected

Information: (Continuous/Discrete)

Continuous

Walking to school
Filling a cup with water

The points can be connected because you are at each point throughout time.

Discrete

Counting the weight of apples
Counting number of Humans

The point not connected because you cannot have half an apple* or half a human.

Linear/Non-Linear Make a table of values or graph information and see.

Equations (Linear/Non-Linear)

Linear

If the equation is degree/exponents 0 or 1

$y = 3x + 1$ $2y + 3x - 4 = 0$

Non-Linear

$y = x^2$ $y^2 + x^2 = 1$ $y = x^3 - 2x + 4$