Four Situations

1. Sketch a graph to model each of the following situations.
Think about the shape of the graph and whether it should be a continuous line or not.

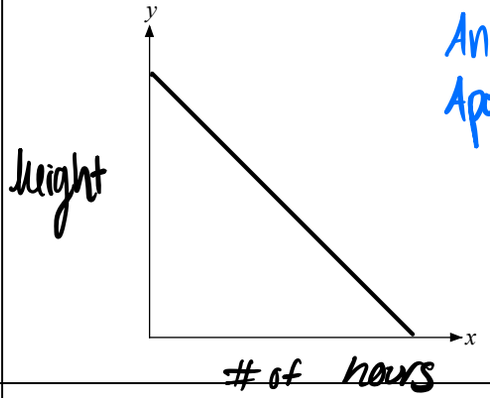
A: Candle

Each hour a candle burns down the same amount.

x = the number of hours that have elapsed.

y = the height of the candle in inches.

continuous



Andrew Apoov

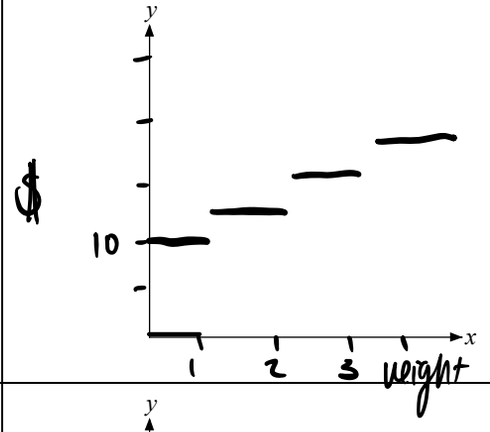
B: Letter

When sending a letter, you pay quite a lot for letters weighing up to an ounce. You then pay a smaller, fixed amount for each additional ounce (or part of an ounce.)

x = the weight of the letter in ounces.

y = the cost of sending the letter in cents.

discrete



C: Bus

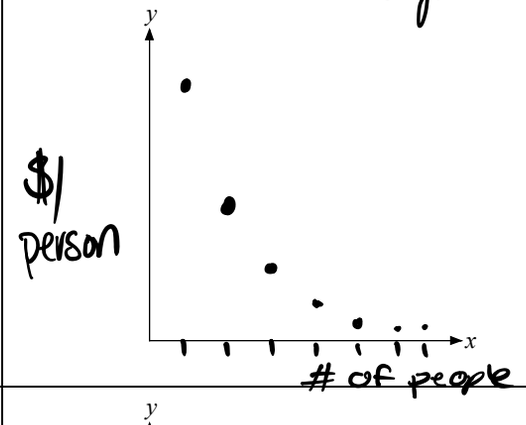
A group of people rent a bus for a day. The total cost of the bus is shared equally among the passengers.

$100

x = the number of passengers.

y = the cost for each passenger in dollars.

$y = \frac{100}{x}$ discrete



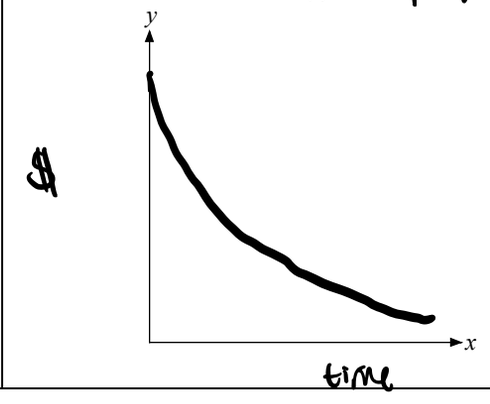
D: Car value

My car loses about half of its value each year.

x = the time that has elapsed in years.

y = the value of my car in dollars.

$y = 1000(0.5)^x$ continuous

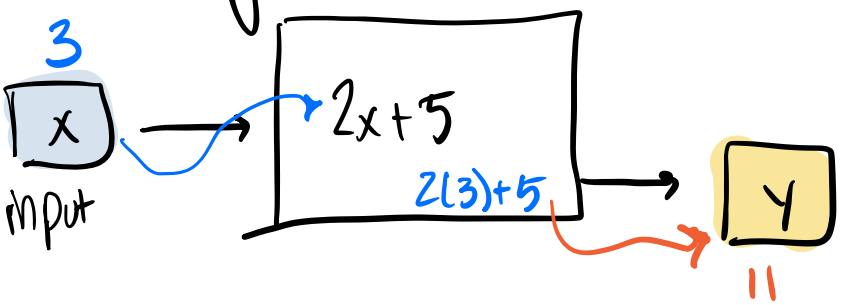


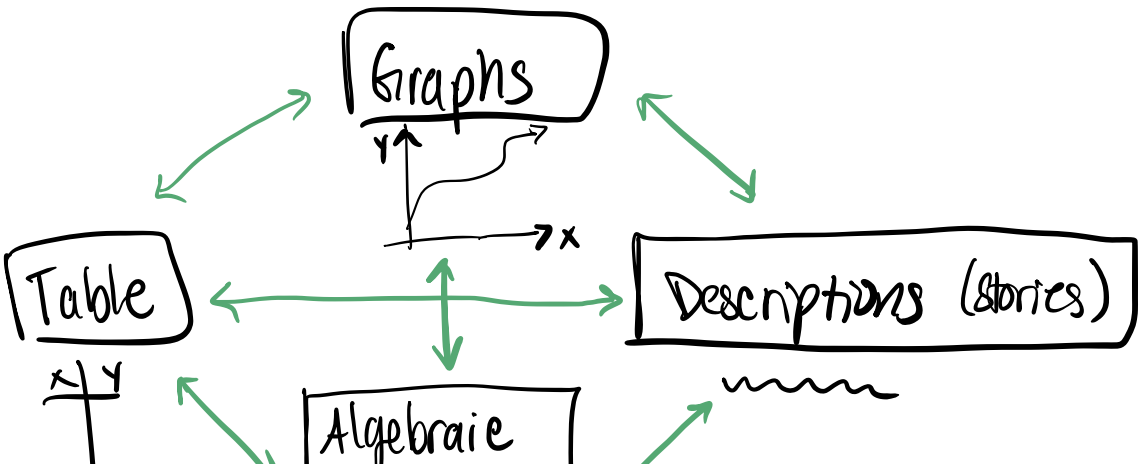
Function

- coordinates (7, 5)
- changes
- rules x → y
- relationship btw variables
- maybe graph
- graph
- instructions for repeated task
- input + function = output
- connection between coordinates
- independent + dependent variable

D. A function is a relation where every input has one output.

$y = f(x)$



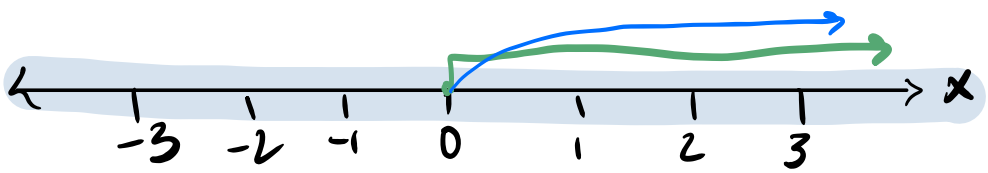


Equations

$g = 2x + 5$

Features of functions

D2 the domain of a function is the set of all allowable values for the functions input.

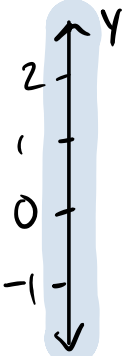


D. $(-\infty, \infty)$

C. $[0, \infty)$

$(0, \infty)$

D3 the range of a function is the set of allowable/attainable y values/outputs of a function.



$(-\infty, \infty)$

$[0, \infty)$

$(-\infty, 0) \cup [0, \infty)$

D4 the y-intercept is where our function crosses the y-axis, when $x=0$

$(0, b)$

D5 the x-intercept(s) are where our function crosses the x-axis, when $y=0$

$(r, 0)$