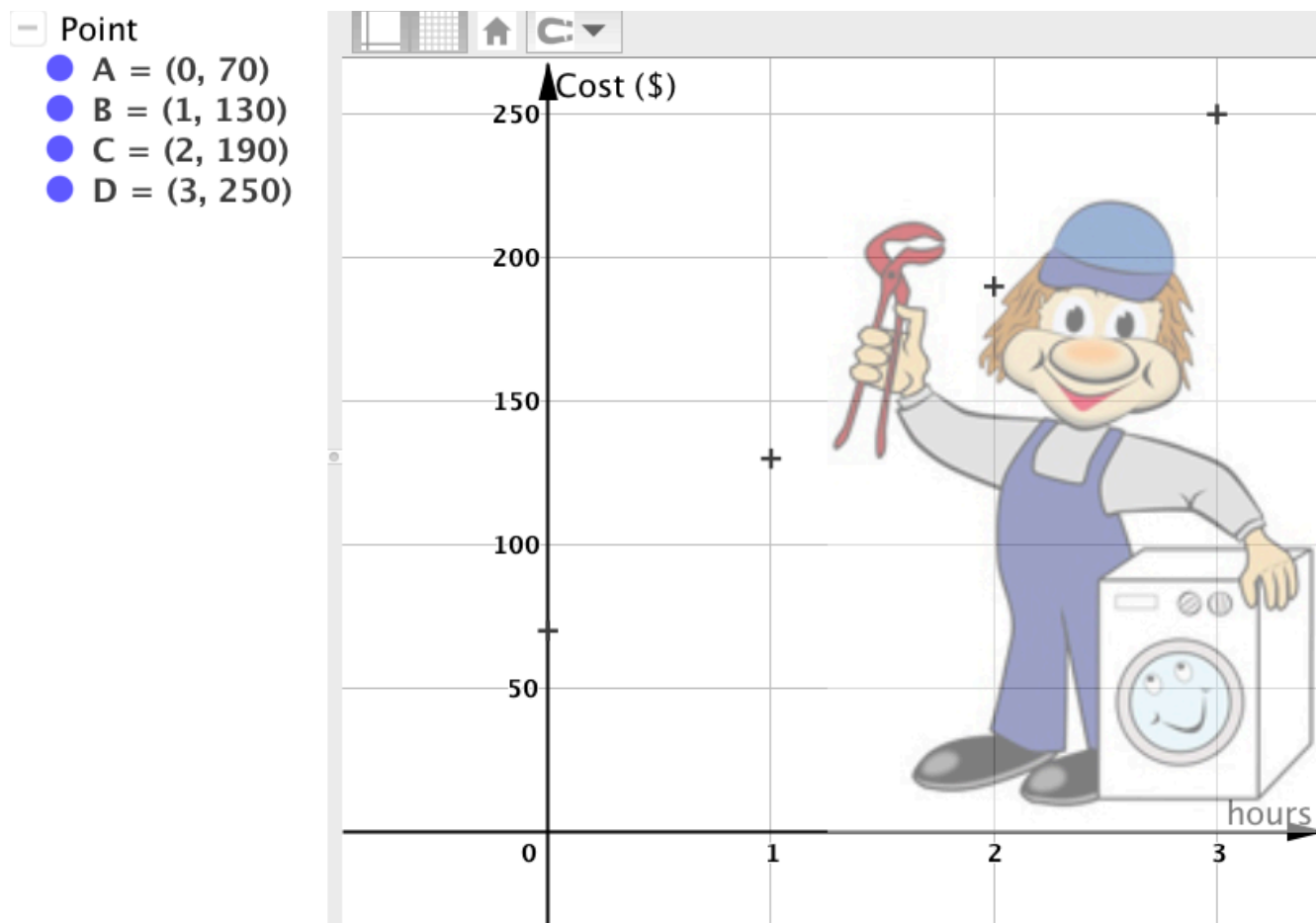


Linear Relations: Rate of Change, Initial Value

Appliance Repair

Here is a set of points showing the relationship between how long an appliance repair technician works in a home and how much their visit costs.



(a) How much does it cost to have the technician arrive at your house?

(b) How much does the fee increase for each hour?

A rate of change is the increase of the dependent variable (vertical increment) for every one unit of increase of the independent (horizontal increment) variable.

(c) Complete the rate of change:

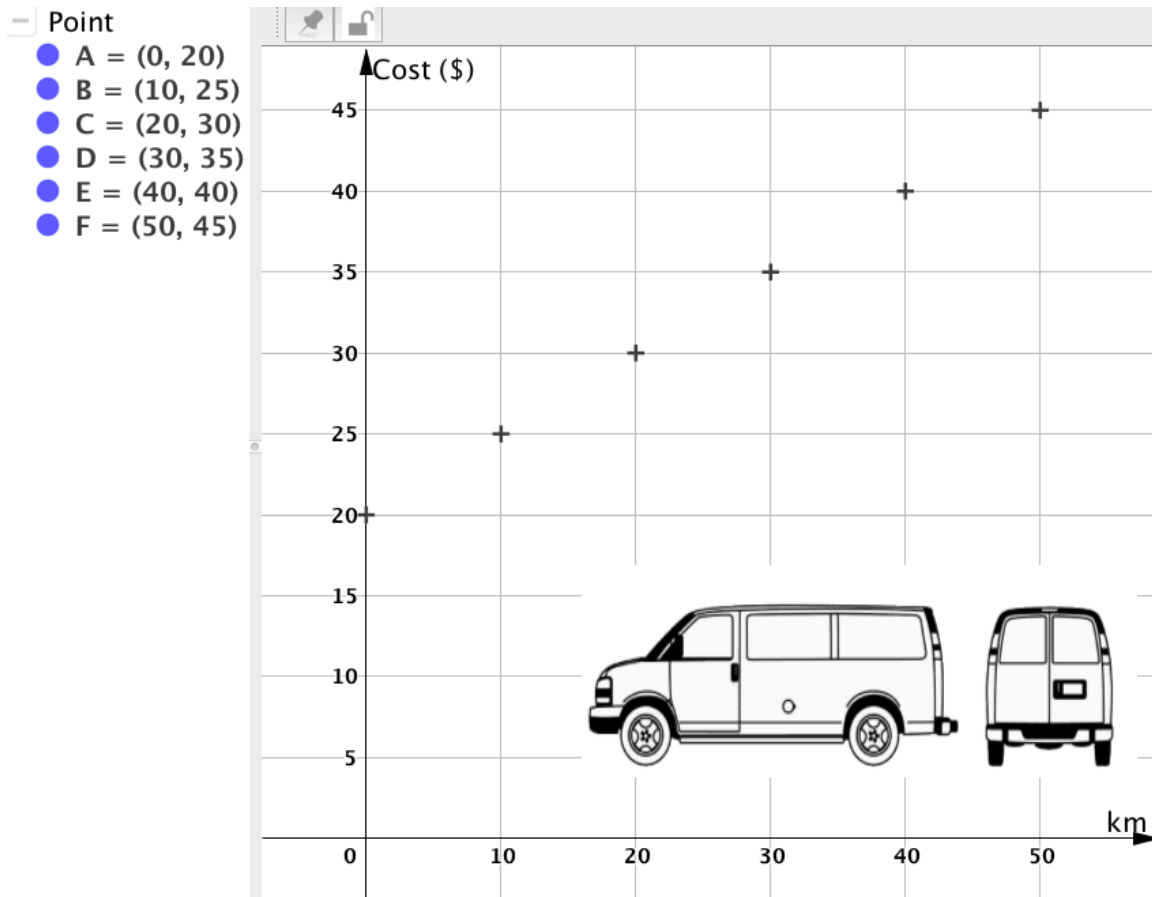
the cost of the technician's time increases by dollars for every one hour spent working.

(d) If you were to write this relationship in the form (a, \square) what is the second element of the ordered pair in terms of a ?

(e) What equation can you write for y in terms of x that goes through these points?

Truck Rental

Here is a set of points showing the relationship between the how far a cargo truck is driven and how much it costs to rent it.



(a) How much does it cost to rent the truck and to not drive it anywhere?

(b) How much does the price increase every 10 km driven?

(c) How much does the price increase for every 1 km driven?

A rate of change is the increase of the dependent variable (vertical increment) for every one unit of increase of the independent (horizontal increment) variable.

(d) Complete the rate of change:

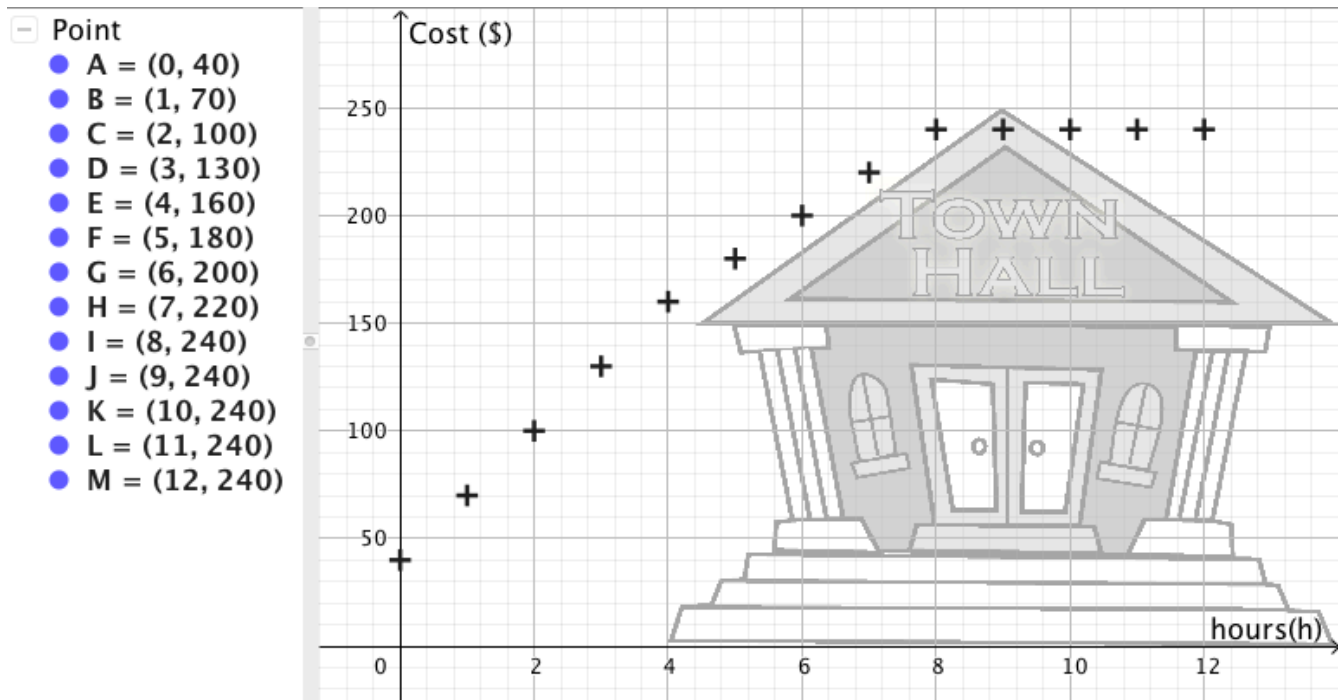
the cost of renting increases by dollars for every one km driven.

(e) If you were to write this relationship in the form (a, \square) what is the second element of the ordered pair be in terms of a ?

(f) What equation can you write for y in terms of x that goes through these points?

Hall Rental

Here is a set of points representing how much it costs to rent a town hall for a private function. To rent the hall, you pay a set fee for cleaning and then you pay for the number of hours you use the hall. If you hourly rate is reduced the longer you rent the hall.



- (a) How much does it cost to rent the hall for 2 hours?
- (b) What is the set cleaning fee?
- (c) What is the hourly rate, for the first four hours?
- (d) How much does the cost increase per hour after that?
- (e) Complete the following three functions:

$$C(h) = \begin{cases} & 0 \leq h \leq 4 \\ & 4 < h \leq 8 \\ & 8 < h \leq 12 \end{cases}$$

- (f) Use the function command, with the variable 'x' to type in these functions on the applet:

Input: `Function(<Function>, <Start x-Value>, <End x-Value>)`

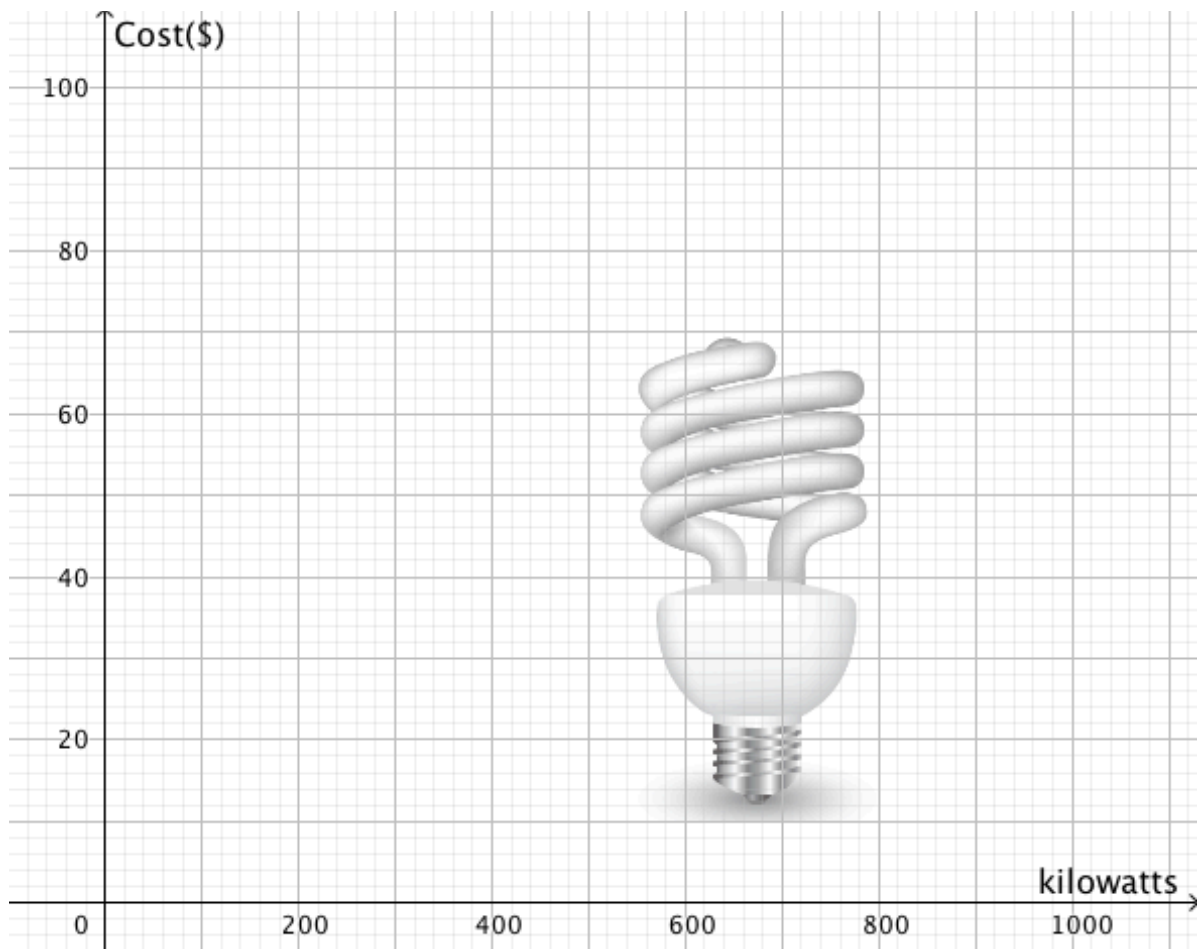
Electricity Bill

An electricity bill for a 30 day period is made up of three components, before tax

1. A fixed cost of services such as billing etc, \$5.87 total for 30 days.
2. \$0.0884 per kilowatt up to 660 kilowatts
3. \$0.1326 per kilowatt for any kilowatts over 660.

(a) Calculate the following costs and plot the points:

KWatts	0	200	400	600	660	800	1000
Cost							



(b) Complete the following two functions:

$$C(k) = \begin{cases} & 0 \leq k \leq 660 \\ & k > 660 \end{cases}$$

(c) Use the function command, with the variable x to type in these functions on the applet.

