

Quadratic Models

1. Determine whether the data presented in each table is linear, quadratic or neither.

a)

x	y
0	-1
2	5
4	11
6	17
8	23

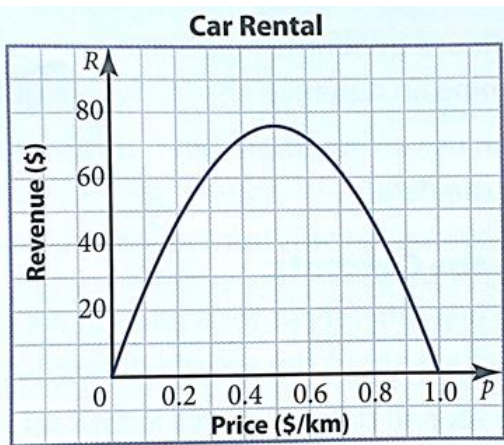
b)

x	y
0	1
1	2
2	5
3	10
4	17

c)

x	y
0	0
1	5
2	6
3	4
4	7

2. The Canada Wide Car Rental Company charges 20 cents for every kilometre driven. The average renter drives the car 250 km. If the price is increased, renters will drive shorter distances. The graph represents data collected by market research.



a. Describe the relationship between price per kilometre and revenue.

b. Use the graph to estimate the revenue when the company charges 20 cents per kilometer and 40 cents per kilometre.

c. If the price doubles, will the revenue also double? Support your answer.

d. What are appropriate units for the rate of change in this situation?

e. Is the rate of change of revenue with respect to price increasing, constant, or decreasing? Give a reason for your answer.

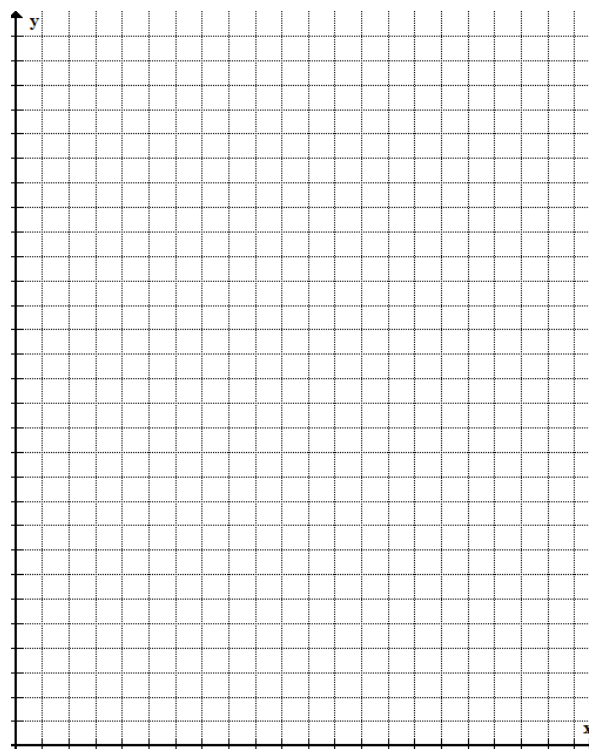
3. The following table shows the relationship between the power setting and the distance travelled (range) by a single engine aircraft.

Power Setting (rpm)	Range (km)
1500	649
1600	695
1700	733
1800	762
1900	783

a. Does the Power Setting column show equal intervals?

b. Does the Range column imply a linear relation? Explain.

c. Determine the first differences of the table. Do the first differences imply an increasing, decreasing or constant rate of change with respect to power setting?



d. Determine the second differences of the table. Do the second differences imply a quadratic model? Explain.

e. Sketch a graph with power setting on the horizontal axis and range on the vertical axis. Does the graph imply a linear or a non-linear relation? Justify your answer.