

- If you have any difficulty with these solutions, please contact your teacher before continuing.

Page 304, Question 8

- a. Because a positive correlation occurs, as family size increases, the number of cellphones increases. ✓
- b. $L1 = x\text{-values} = \text{Family Size}$ ✓
 $L2 = y\text{-values} = \text{Number of Cellphones}$ ✓

WINDOW

Xmin= -1 ✓

Xmax= 9 ✓

Xscl= 1 ✓

Ymin= -2

Ymax= 6

Yscl= 1

Xres= 1

LinReg ✓

$y = ax + b$

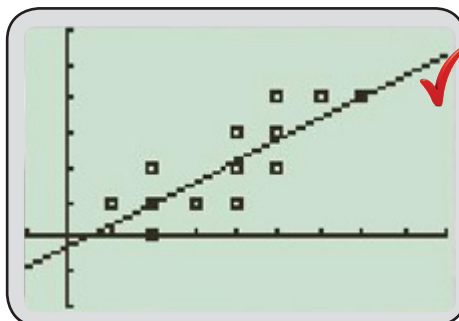
$a = 0.6138643861$

$b = -0.2596259626$

$c = N/A$

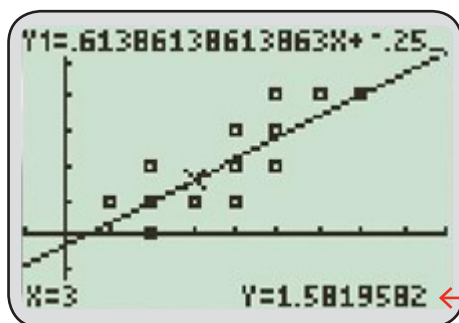
$d = N/A$

$R^2 = 0.6850693069$



Regression Equation (rounded to three decimal places): $y = 0.6139x - 0.2596$ ✓

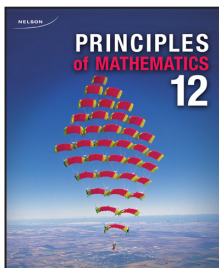
c.



Find y when $x = 3$

The calculator shows $y = 1.58$. ✓

I cannot have part of a cellphone so, round the y -value. I would expect a family of three to have two cellphones. ✓



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Page 314, *Question 6*

Quadratic Regression Equation (rounded to 4 decimal places): $y = -0.7467x^2 + 2.3034x - 0.3645$

The maximum height of the dolphin is 1.4 metres.

Page 315, *Question 8*

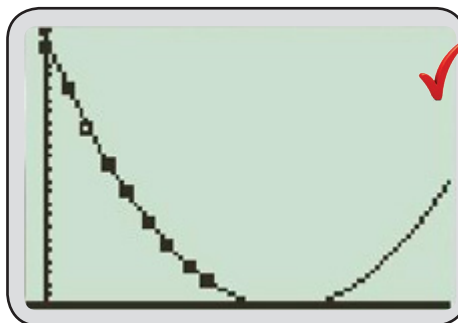
- a. As time increases, the volume decreases.

WINDOW

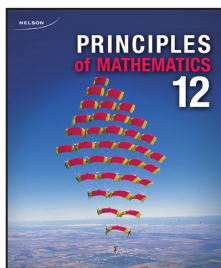
Xmin= -5
Xmax= 100
Xscl= 1
Ymin= 0
Ymax= 240
Yscl= 10
Xres= 1

QuadReg

$y = ax^2 + bx + c$
a= 0.0649350649
b= -7.650735931
c= 224.8848485
d= N/A
 $R^2 = 0.9996921636$



- b. Quadratic Regression Equation (rounded to thousandths): $y = 0.065x^2 - 7.651x + 224.885$
- c. The tank has a capacity of 225L. Therefore, it is half full when the volume is half of 225. This means find to x when $y = 112.5$. The answer is 17.2 seconds.
- d. The tank will be empty when the volume of water is zero. This means to find x when $y = 0$.
The answer is 56.2 seconds.



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Page 329, Question 17

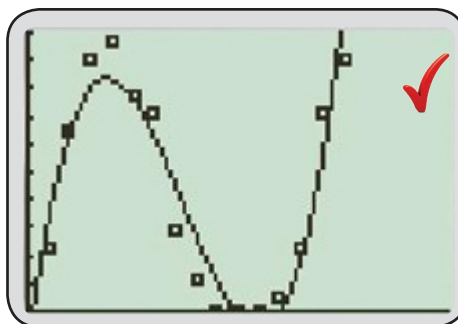
- a. $L1 = x\text{-values} = \text{Month}$
 $L2 = y\text{-values} = \text{Energy Consumed (degree days)}$

WINDOW

Xmin= 0
 Xmax= 20
 Xscl= 1
 Ymin= 0
 Ymax= 1000
 Yscl= 100
 Xres= 1

CubicReg

$y = ax^3 + bx^2 + cx + d$
 $a = 4.808718787$
 $b = -106.4124021$
 $c = 597.473934$
 $d = -163.8029304$
 $R^2 = 0.9084521692$



Cubic Regression Equation (rounded to tenths): $y = 4.8x^3 - 106.4x^2 + 597.5x - 163.8$

- b. Graph $Y_2 = 150$; then, graph the regression equation and Y_2 . There will be two intersection points (8.68, 150) and (12.87, 150). The x -values of these points represent the endpoints (in months) of the time period you are looking for because 8.68 is about the middle of the eighth month, and 12.87 is close to the end of the twelfth month. So the answer is, the energy consumed is less than 150 degree days from the middle of the eighth month to end of the twelfth month.
- c. For the middle of the seventh month find y when $x = 7.5$ and the answer is 360.2 degree days.

For the middle of the eighth month, find y when $x = 8.5$. The answer is 179.6 degree days.