![MCj04242240000[1]]()

**Chapter 6.2 – Quadratic Graphs**

**Applications**

Restore all your default calculator settings. Turn your calculator [ ON ], then:

PRESS: [2nd] [ + ] [ 7 or 5 ] [ 1 ] [ 2 ]

**Exercise 1**

Step 1: The following table represent the revenue made from ticket sales at a hockey game,

|  |  |
| --- | --- |
| Ticket Prices ($) | Revenue ($) |
| 10 | 16000 |
| 15 | 19500 |
| 20 | 20300 |
| 25 | 14750 |

 PRESS: [ STAT ] [ ENTER ] and enter the data into column L1 and L2.

Step 2: Make the following changes to the window scales

PRESS: [ WINDOW ]. Make the following changes:

🡪 Xmin = 0

 🡪 Xmax = 30

 🡪 Xscl = 2

 🡪 Ymin = 0

 🡪 Ymax = 26000

 🡪 Yscl = 2000

Step 3: Let’s look at the scatterplot:

 PRESS: [2nd] [ Y= ] [ ENTER ] [ ENTER ] [ GRAPH ]

 What kind of function does the scatterplot produce? Linear, Exponential, Quadratic?

Step 4: It is determined that the scatterplot looks like a quadratic function. Therefore, let’s figure out the

 equation of this function:

PRESS: [ STAT ] [→] [ 5 ] [ ENTER]

Step 5: Let’s draw a regression line.

 PRESS: [ Y= ] [ VARS ] [ 5 ] [→] [→] [ 1 ] [ GRAPH ]

 Draw a sketch of the graph.

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 Revenue ($)

 Ticket Price ($)

Step 5: Let’s answer some questions using our regression line. First turn off the scatterplot.

PRESS: [2nd] [ Y= ] [ ENTER ] [→] [ ENTER ] [GRAPH]

Step 6: What ticket price would produce the maximum revenue? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \*The maximum revenue corresponds to the maximum point on the graph.

 PRESS: [2nd] [TRACE] [4]

 PRESS: Use the [←] and [→] keys to move the cursor anywhere to the left of the vertex, then

 press [ENTER]

PRESS: Use the [←] and [→] keys to move the cursor anywhere to the right of the vertex, then

 press [ENTER]

 PRESS: The calculator can make an educated “guess” now. PRESS: [ENTER] again.

**Question**

At what ticket price (x) would the most profit be made? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How much revenue (y) would be made at this price? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_