**Day 3 Word Problems**

Ex. 1 **“How can Shelley maximize sales?”**

Shelley runs her own store, Shelley’s Shirts. A t-shirt sells for $10, she sells about 30 shirts a week. Research shows that by increasing the price by $2.00, she will decrease sales by **3** shirts per week.



**“How can Shelley maximize sales?”**



First,



|  |
| --- |
| **Revenue = ( )( )** |



1. Create a table to help **develop the equation** (Hint: watch for things that change (variable) and things that don’t)

|  |  |  |  |
| --- | --- | --- | --- |
| # of Increases in Price | Price of shirt | # of shirts | Revenue |
| 0 |  |  |  |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
|  |  |  |  |



|  |
| --- |
|  |

Remember to define your variable:



1. Find the zeros



|  |
| --- |
| When the price changes by \_\_\_\_\_\_  When the price changes by \_\_\_\_\_\_\_\_\_\_  In either case \_\_\_\_\_\_\_\_\_\_ |



1. The maximum will occur at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. Find the axis of symmetry



1. Find the y of the vertex



|  |
| --- |
| 1. Therefore, |



**Day 3 Word Problems**

Ex.2 **“What dimensions maximize the area of the pen?”**

A 3-sided dog kennel is being built against the side of a barn using 80m of fencing. Use the following steps to determine **“What dimensions maximize the area of the pen?”**



1. Draw kennels with a width of 1m through 6m (ie. 6 kennels) and calculate the area of each.



1. Does this situation represent a quadratic? (Create a table when x represents the width of the kennel, and y represents the Area.



|  |  |
| --- | --- |
| x | y |
| 1  2  3  4  5  6 |  |



1. Represent the situation with an equation.



y = (80-2x)x

1. What are the zeros? What do they represent?
2. Find the axis of symmetry
3. Find the vertex
4. Sketch
5. Answer the question **“What dimensions maximize the area of the pen?”**