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10B

<p style="text-align:center">How Do we Use Quadratic Functions In Our Daily Life?</p>

Background:

Wherever there is learning there is always applying. This application usually relates to use the things you have learned in real life. In this project, we were assigned to maximize a product's revenue and finding key components on how to do so. Throughout this, we will be using notions like quadratic equations, quadratic functions, F.O.I.L. etc. These concepts can be used anytime in life. In this scenario, we just got hired to a company. We have to conduct research on a certain product and its regards to customer needs. Furthermore, we needed to use the knowledge of quadratics to complete this job. We cannot increase the price or drop the price with no reasoning. We had to conduct and find the exact amount of increase/decrease necessary to create more revenue. Our goal with this product is to "increase the amount of revenue and show evidence through a quadratic equation." When we create such a plan, we will need to follow the equation $y = ax^2 + bx + c$. Through this project, each concept learned in class will be scrutinized thoroughly and fully. The products data can vary, but this is what we have found on how to maximize revenue.

Product: Samsung Galaxy S III

Why are we conducting this survey: To figure out how to maximize the revenue from the sales of the Samsung Galaxy S III.

What we hope to learn from asking these questions: To find out what can be done to make customers buy more of this product.

What Actions Company must take to increase revenue:

- Lower the products price
- Have a more sleeker design
- Any types of upgrades
- Include more features
- Update to a better software
- Built-in stylus
- Bigger/smaller screen
- Have more memory
- Incorporate more battery life
- Upgrade to a better processor
- Include more of a variety of colors

QUESTIONS TO AVOID

- Does the bad battery life affect you at all?
- Does the weak processor affect your processes?
- Does the small screen affect your visuals?

Available Information of the Samsung Galaxy S III

Product selling currently:

Sells for: $799

Day: 190,000 products sold ($151,810,000)

Week: 1,330,000 products sold ($1,062,670,000)

Month: 5,700,000 products sold ($4,554,300,000)

Year: 68,400,000 products sold ($54,651,600,000)

Professions:

1. Teacher
2. Engineer
3. Doctor
4. Lawyer
5. Business Man

Survey: Consists of 10 questions that will help pinpoint how to increase the profits of the Samsung Galaxy S III

1. What is your age and profession?
2. What is the amount of income you make?
3. What price do you think is fair to buy a Samsung Galaxy S III?
4. What features would you like to be added into Samsung Galaxy S III?
5. What additional colors that you wish the Samsung Galaxy S III came in?
6. What is the amount of memory would you need?
7. Would you like to have a built in stylus?
8. What do you think of the battery life?
9. What do you think of the processors?
10. What other upgrades would you like?

Survey 1:

1. Age: 30 Profession: Teacher (Zaidi's 5th Grade Teacher: Mr. Raftery)
2. $30,000
3. $599
4. Have a more sleek design
5. Better voice command
6. 16 GB
7. Yes
8. It is sufficient
9. Good
10. None

Survey 2:

1. Age: 40 Profession: Engineer
2. $50,000
3. $699
4. Thinner design

5. SIRI like program
6. 32 GB
7. Yes
8. Can be better
9. Fine
10. None

Survey 3:

1. Age: 37 Profession: Doctor (Zach's physician: Dr. Frol)
2. $120,000
3. $799
4. Lighter
5. Text command
6. 32 GB
7. Yes
8. Perfect
9. Can improve
10. Better software

Survey 4:

1. Age: 45 Profession: Lawyer
2. $150,000
3. $699
4. Durability
5. File manager
6. 64 GB
7. Yes
8. Must be improved
9. Quad-Core
10. Need a better software

Survey 5:

1. Age: 48 Profession: Business Man
2. $200,000
3. $899
4. Smaller phone
5. Conference calls
6. 128 GB
7. Yes
8. MUST BE IMPROVED

9. i7 processor
10. Must be able to handle multiple calls

AVERAGE:

1. $749 (Rounded to a better price: $699)
2. Conference Call, Better Voice Command
3. A better battery life
4. Upgrade to a quad-core processor

WORD PROBLEM

Samsung sells 190000 Galaxy S III's a day at $799 w/o a contract. According to these statistics, Samsung is making on average, $151,810,000 a day. The company has hired you to maximize the revenue. Statistics show that if you decrease the price by $100, 20% (38000) more people will buy this product daily. What decrease/increase in price would maximize revenue?

EQUATION

(190,000+38000x) (799-100x)

$Y = -3800000x^2 + 11362000x + 151810000$

Analyze:

Our equation:

Y = (190,000+38000x) (799-100x)

Work:

$-3800000x^2 + 11362000x + 151810000$

Now we will find x.

(-b/2a)

X = -11362000/-7600000

X = 1.495

Now we plug x in to find out y.

Y = -8493095 + 16986190 + 151810000

Y = 160303095

(190000+38000(1.495))(799-100(1.495))

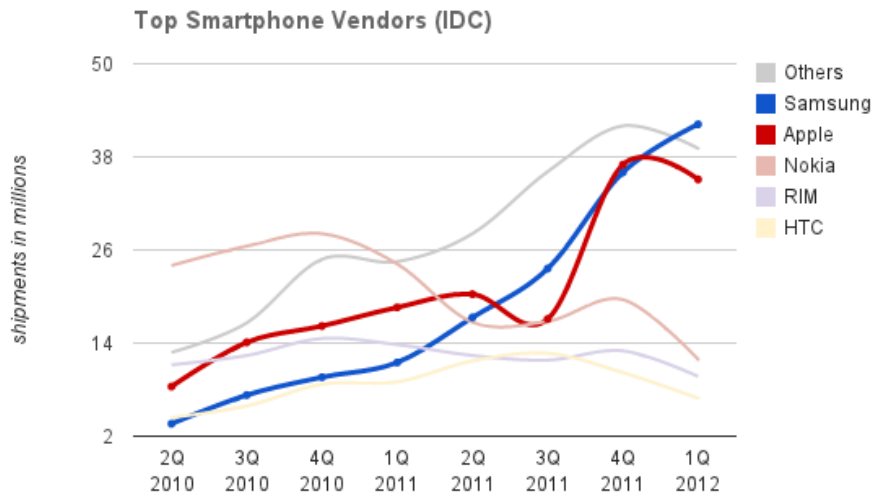X the amount money that has to be changed/decrease/increase to maximize the revenue(Y)

Graph:

Top Smartphone Vendors (IDC)

Table:

People	Cost (-1.495)	Revenue
114000	801.99	113886000
152000	800.49	136648000
190000	**799**	**151810000**
228000	*797.50*	*160303095*
246810	796.01	159372000
266000	794.51	159334000
304000	793.02	151690000
342000	791.52	136458000
380000	790.03	113620000

This table is the domino effect of our solutions if the price is decreased or increased

Results:

If you go by the simple plugging in of numbers to see how what number of decreases in price would by most efficient, this is how it would look(remember, for every 1.495 drop in price, there is a 38000 increase in people):

People	Cost (-1.495)	Revenue
114000	801.99	113886000
152000	800.49	136648000
190000	**799**	**151810000**
228000	***797.50***	***160303095***
246810	796.01	159372000
266000	794.51	159334000
304000	793.02	151690000
342000	791.52	136458000
380000	790.03	113620000

As you can see, once you go under or above $797.50 in price, the overall revenue becomes lower and lower. So it works out that to maximize revenue, we should lower the price by 1.495.

<u>Conclusion</u>

Throughout this project, we had calculated using the equation: $y = ax^2 + bx + c$. This had helped to pin point the exact plan that would maximize the Samsung Galaxy S III. This project was a good way of including real life examples and factors into a scenario in which we were a part of a company. These days, price is a very big factor when buying technology. So we used the method of decreasing price to increase customers. We also tried to go above and beyond assimilating statistics and real life possibilities. Regardless of the project, many people use computerized graphs to prove their point. We had also tried to do that. This is a very interesting way to include quadratic functions in a modern way.

Mr. Uddin has again created such an overwhelming project showing a motivating way to relate this topic with quadratics. With every project come critiques about what you would do if you had another chance. Personally, we wish we could have more time to do it. Though we were introduced to the project for about a few weeks ago, many people were confused but learned towards the end. Other than time, we should also stop procrastinating. It's a habit that won't get you anywhere in life. We have also done it with almost all my projects. Truly, we should have done time management.

So, if we were to do this project again this time choosing a different company. This would help us understand more about our unit. We should've also browsed more statistics and made our project more superior. To make this project better, we should've added more factors that would help and assist a real life scenario. Overall, we did marvelous about the realism of this project as well as the information behind it. Still, thank you Mr. Uddin for this project and the blessed knowledge that you have taught us!

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