

SECTION 1.3  
PROBLEM SOLVING INVOLVING  
MAX AND MIN

- i) Revenue problems
- ii) Maximum area
- iii) Minimum for sums of two squares

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D) BASICS IN OPERATING A BUSINESS!

○ When we increase the price of an merchandise, →

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○ In this lesson, we will learn to

Ex#1) An ice-cream shop sells 300 cones a day at \$3.50 each.  
For every \$0.50 increase, he loses 20 sales.

Q:How does the price affect quantity?

Q:How can the price be changed to generate the maximum revenue?

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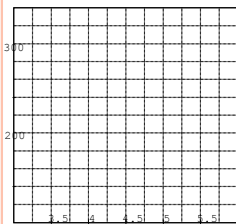
ANALYZE THE QUESTION: PRICE VS QUANTITY

Initial Quantity:

Initial Price:

Change in Quantity:

Change in Price:



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A) HOW DOES THE PRICE AFFECT QUANTITY?

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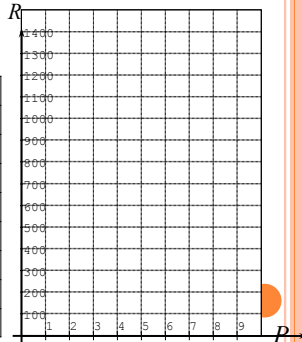
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B) WHAT PRICE WILL GENERATE MAXIMUM REVENUE?

Revenue = Quantity x Price

Price	Quantity	Revenue
\$1.00		
\$2.00		
\$3.00		
\$5.00		
\$6.00		
\$8.00		
\$9.00		
\$10.00		



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### FINDING THE MAXIMUM REVENUE

- We can find the maximum revenue by
- The vertex of the revenue equation indicates the

$$R = P \times Q$$

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Ex#2) A BROADWAY MUSICAL SELLS 3500 TICKETS A WEEK AT \$25 PER TICKET. FOR EVERY \$1.25 DECREASE, 400 EXTRA TICKETS WILL BE SOLD.

- Write "Q" as a function of "p"
- Write "P" as a function of "Q"
- Write "R" as a function of "p"
- What price will generate the maximum revenue?
- What Price will generate a Revenue greater than \$80,000

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- Write "P" as a function of "Q" (Isolate "P")
  
  
  
  
  
  
  
  
  
  
- Write "P" as a function of "R" and find the maximum revenue

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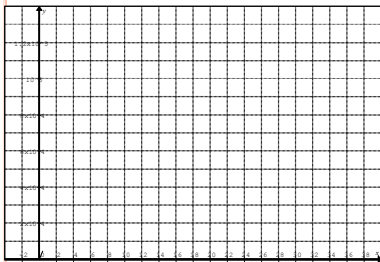
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WHAT PRICE WILL YIELD A REVENUE GREATER THAN \$80,000?



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$$y_1 = (P - )^2 +$$

$$y_2 = \$80,000$$

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## II) MAX/MIN FOR NUMBER PROBLEMS

- Use the information given to create a
- Use CTS or XAV to find the vertex
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Ex: The sum of two numbers is 80. Their product is a maximum. Find the numbers

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Find the vertex because the vertex is the maximum

1. Complete the square
2. Xavier

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Ex: The difference of two numbers is 10. The sum of their squares is a minimum. Find the numbers



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Ex#3) A FARMER WANTS TO BUILD A RECTANGULAR BARN USING 100 METERS OF FENCING FOR HIS COWS AND CHICKENS. HOWEVER, HE NEEDS TO SEPARATE THE TWO GROUPS OF ANIMALS AND NEEDS TO MAKE THE LARGEST POSSIBLE AREA. DETERMINE THE DIMENSIONS FOR THE BARN.



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