

Algebra I

Theatre Problem

Name: _____

Date: _____

Hour: _____

Holt High School wants to put on a production of Taming of the Shrew this spring. They would like to at least cover the costs of putting on the show and ideally; they would like to make a profit so that they can put on a more elaborate show next spring.

The students involved decide to do a revenue-cost-profit analysis. To compute the money the play will take in (revenue or R), they must multiply the number of people, (attendance or A), and the amount they charge per person, (ticket price or T); so,
 $R = A \cdot T$.

After looking over the receipts from the last few plays, they notice that the more they charge, the fewer people come. They conduct a poll of several classes and estimate that they will lose 20 people for every \$.25 they raise the price. They know from past experience that the show will attract 1200 people if they charge \$4 for a ticket. (for our assignment we will let all the people be kids)

- 1.) Let x represent the number of times the price is changed, A represent the attendance, T represent the ticket price, and R represent the revenue for a given value of x . Fill in the table showing attendance, ticket price, and revenue for x values from -4 to 4.

X	-4	-3	-2	-1	0	1	2	3	4
A					1200				
T					\$4				
R									

- 2.) Write a rule for the attendance versus number of price changes (A in terms of x).
- 3.) Write a rule for the ticket price versus number of price changes (T in terms of x).
- 4.) Write a rule for the revenue versus number of price changes (R in terms of x). Remember that $R = A \cdot T$.
- 5.) Now use your table and rules to try to find out the best price to charge. Remember that x represents the number of price changes that occur, not dollars or people.
- A.) What is the best possible revenue?
- B.) What should the ticket price be?
- C.) How many people will come?
- 6.) Explain how you arrived at your answers to 5.).