

Algebra I

Break-Even Analysis for Small Business

Name: _____
Date: _____
Hour: _____

1) Jesse wants to start a business making and selling toboggans. She will charge \$75 for each one. Her costs will be \$30 per toboggan for materials. She must pay \$500 per month rent (which includes utilities) so that she has a place to make and sell the sled.

- a) Write a rule for her revenue.
a) _____
- b) Write a rule for her costs.
b) _____
- c) Write a rule for her profit.
c) _____
- d) What are her costs, revenue and profit if she sells 6 toboggans in one month?
- e) How many toboggans will she have to sell in order to break-even? Show any mathematical work you do.

Adapted from Holt High School Mathematics Department

2) A hot dog vender has studied his revenue, and costs over the course of a month, each depends on the number of hot-dogs he sells. The following algebraic rules represent these two relationships:

$$R(x) = 1.75x$$

$$C(x) = .45x + 125$$

- a) What can you tell about this situation from the revenue rule?
- b) What can you tell about this situation from the cost rule?
- c) What would be the profit rule? Explain how you arrived at this rule.
- d) How many hot-dogs would he have to sell in order to break even?
- e) What would happen to the revenue rule if the vender decided to sell hot-dogs for \$1.00? Explain how this change would affect the break-even point.

Adapted from Holt High School Mathematics Department

f) What if the vendor knew he could only sell 50 hotdogs? How would this affect the amount he charges the customer?

3) The basketball coach is planning the summer basketball camp. Each participant is charged a fixed amount for the camp. Each participant is given a T-shirt, and he has to pay seven student assistants \$50 each. The camp also gives awards for different skill competitions, so the coach must also purchase nine trophies at \$6 each.

Below are tables representing revenue and cost for x numbers of players attending the camp?

Players	Revenue	Players	Cost
10	\$250	10	\$454
15	\$375	15	\$479
20	\$500	20	\$504
25	\$625	25	\$529

a) Make a table of values for profit.

b) Write rules for revenue, cost, and profit.

c) How much does each player pay to attend the camp?

d) How much does each player's t-shirt cost (assuming that is the only variable cost)?

e) How many players need to attend in order to break-even?