Algebra 1

Break-Even Analysis for Small Business

A hot dog vendor has studied the revenue and counts over the course of a month, each day.

X = $4x + 125
R(x) = 1.75x

(a) Write a rule for the vendor's revenue.

(b) Write a rule for her costs.

(c) Write a rule for her profit.

(d) Write a rule for her profit (which includes utilities) so that she knows how much to make and sell to break even.

(e) How many hot dogs would she have to sell in order to break-even? Show any work.

(f) How many hot dogs would she have to sell in order to break even? Show any work.

These two equations represent the following algebraic rule: how many hot dogs the vendor must sell to make a profit.

A hot dog vendor has studied the revenue and costs over the course of a month, each day.

For each day, her costs will be $50 per hot dog for materials. She must pay $0.50 per hot dog for rent (which includes utilities) so that she knows how much to make and sell to break even.

Each hot dog he sells will be sold for $2.50 per hot dog.

(a) Write a rule for the vendor's revenue.

(b) Write a rule for her costs.

(c) Write a rule for her profit.

(d) Write a rule for her profit (which includes utilities) so that she knows how much to make and sell to break even.

(e) How many hot dogs would she have to sell in order to break-even? Show any work.

(f) How many hot dogs would she have to sell in order to break even? Show any work.

These two equations represent the following algebraic rule: how many hot dogs the vendor must sell to make a profit.
f) What if the vendor knew he could only sell 50 hotdogs? How would this affect the amount he charges the customer?

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?

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 $8 each.

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

<table>
<thead>
<tr>
<th>Players</th>
<th>Revenue</th>
<th>Players</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>$250</td>
<td>10</td>
<td>$454</td>
</tr>
<tr>
<td>15</td>
<td>$375</td>
<td>15</td>
<td>$479</td>
</tr>
<tr>
<td>20</td>
<td>$500</td>
<td>20</td>
<td>$504</td>
</tr>
<tr>
<td>25</td>
<td>$625</td>
<td>25</td>
<td>$529</td>
</tr>
</tbody>
</table>

a) Make a table of values for profit.

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