**Teddy Bear Sale**

The pep club is planning to raise money by selling stuffed teddy bears for Valentines Day. They pay $1500 for a shipment of 300 bears, which they plan to sell for $12 each. They hope to make a profit of at least $1000 but they know that if they don’t sell enough bears they may lose money. They want to explore the relationship between the number of bears they sell and their profit or loss.

For example, if they sell only 100 bears, they take in 100 \* $12 = $1200. Their net profit is $1200 minus the $1500 they paid, that is $1200 - $1500 = -$300. This means they would lose $300.

1. What is the independent variable in this situation?
2. What is the dependent variable in this situation?
3. Fill in the headings and complete the following table.

|  |  |
| --- | --- |
|  |  |
| 0 |  |
| 50 |  |
| 100 | –300 |
| 150 |  |
| 200 |  |
| 250 |  |
| 300 |  |

1. As the number of bears sold increases, what happens to the profit: does it increase or decrease?
2. As you increase the number of bears sold by 50, does the profit always change by the same amount? What is this amount?
3. Estimate how many bears the club will need to sell to break even *(neither make money nor lose money)*.
4. Estimate how many bears the club will need to sell to make their goal of at least $1000.
5. a. Make a graph for the data in the table. Let *x* represent the number of bears sold and *y* the profit. Plot the ordered pairs in the table on the graph. Draw a line through the plotted points.



1. Do all the points appear in the first quadrant? If not, what other quadrant is needed?
2. As you move along the line from left to right, does the line increase or decrease?
3. Where does the line intercept the *y*-axis? What does this point tell you about the problem?
4. Where does the line intercept the *x*-axis? What does this point tell you about the problem?
5. Use the graph to make a better estimate of how many bears the club will need to sell to make their goal of at least $1000.
6. The equation $y=12x-1500$ can be used to model this situation where *x* represents the number of bears sold and *y* represents the profit.
	1. Th coefficient of *x* is 12. What is the real-world meaning of this number?
	2. The constant term is -1500. What is the real-world meaning of this number?
	3. Use the equation to find the number of bears the club will need to sell to make their goal of at least $1000.
	4. Use the equation to find the profit if they sell 180 bears.