**Cost Volume Profit Analysis**

1. Eric is planning to set up a business to make and sell wooden birdhouses. He had been offered the use of a workshop for only $400 a month. For supplies and materials, Eric estimated that he would have to spend $10 to make each birdhouse. He also estimated that he could sell each of

them for $30. If he worked hard, he could make 500 birdhouses in a month.

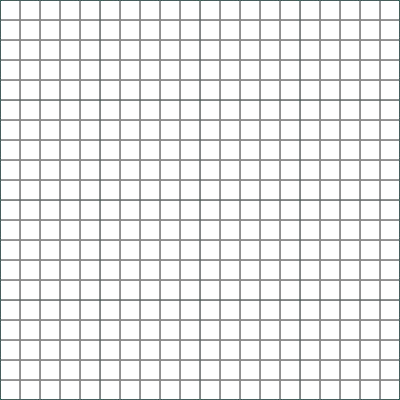
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Number of bird  houses | 0 | 100 | 200 | 300 | 400 | 500 |
| Revenue |  |  |  |  |  |  |
| Material and supplies |  |  |  |  |  |  |
| Workshop cost |  |  |  |  |  |  |
| Total Cost |  |  |  |  |  |  |
| Net  Income |  |  |  |  |  |  |

For Eric’s birdhouse business, graph the following cost­volume­profit relationships and determine the break­even point:

(i) revenue function; (ii) cost function;

(iii) break­even chart

Break­Even Chart for Eric’s Birdhouse Data



Computing Break­Even using Formulas

***Total Revenue=Selling Price ×Volume (in units)***

***TR=SP×X X ­ represents the number of units***

***Total Variable Cost=Variable Cost per Unit ×Volume (in units***

***TVC=VC×X X ­ represents the number of units***

***Profit = SP×X ­ Fixed Cost ­ Variable cost per unit ×X***

2. Janet sells a product for $6.25. The variable costs are $3.75. Janet's break­even units are

35,000. What is the amount of fixed costs? ( Ans 87 500)

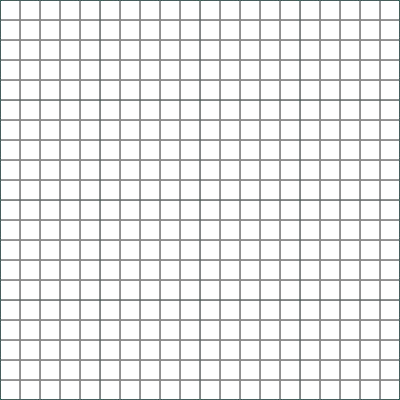
3. Priest and Sons, a local manufacturer of a product that sells for $13.50 per unit. Variable cost per unit is $7.85 and fixed cost per period is $1 220. Capacity per period is 1100 units.

Perform a break­even analysis showing a) An algebraic statement of

(i) the revenue function (ii) the cost function; (iii) calculate the break­even point in units.

(iv) As % of capacity

b) a detailed break­even chart.



Answer 1. a) TC=400 + 10x , TR= 30x, Break even = 20 units or $600

2.. 87 500 3. TR = 13.5*x,* TC= 1220 + 7.85, 216 units (rounded ) , 20% ofcapacity

**Contribution Margin**

**Contribution margin**, or **dollar contribution per unit**, is the selling price per unit minus the variable cost per unit. It does take in account fixed costs. In other words, the contribution margin reveals how much of a company's revenues will be contributing (after covering the variable expenses) to the fixed expenses and net income.

***Contribution Margin = Selling Price ­ Variable Cost***

It is easy to calculate break-even using Contribution Margin. Breakeven is reached when the accumulated contribution margin of a number of units covers the fixed costs

***Breakeven ( in Units ) = Fixed Cost / contribution Margin***

Contribution rate is is expressed in percent. It represents “ What percentage of sales is contributing towards fixed cost.”

***Contribution Rate = Contribution Margin / Selling Price \* 100***

1. Rubber and Steel Company is planning to manufacture a new product. The variable cost will be $61 per unit and the fixed costs are estimated to be $5904. To be competitive, the selling price of the product is to be $150 per unit. Variable selling price is expected to be

$ 17 per unit. Perform the Break ­even analysis showing computation of

a. Contribution margin b. Contribution rate

c. break­ even points per units and in sales dollars.

2. The following data pertains to the operating budget of Jones Tent Manufacturing

Calculate Contribution Margin, Contribution Rate and break even point in dollars

|  |  |  |
| --- | --- | --- |
| Sales |  | $ 1 020 000 |
| Fixed Cost | $ 160 000 |  |
| Total Variable cost | $581 400 |  |
| Total cost |  | $ 741 400 |
| Net Income |  | $ 278 600 |

3. A watchmaker charges $ 19.99 to replace the battery and cleans watches. Variable cost includes the battery and cost $7. Specialist tools costing $346 has to be purchases. How many watches must be cleaned for break even.

Answers

1. $72 , 48%, 82 units, $ 12 300

2. $ 438 600 , 43%, 372 094

3. 27 units (rounded)