**Cost-Volume-Profit Handout**

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Fixed is red

Vin Diesel owns the Fredonia Barber Shop. He employs four barbers and pays each a base rate of $1,250 per month. One of the barbers serves as the manager and receives an extra $500 per month. In addition to the base rate, each barber also receives a commission of $4.50 per haircut. 1250 x 4 = fixed cost

Other costs are as follows.

|  |  |
| --- | --- |
| Advertising | $200 per month FC |
| Rent | $1,100 per month FC |
| Barber supplies | $0.30 per haircut VC |
| Utilities | $175 per month plus $0.20 per haircut VC |
| Magazines | $25 per month FC |

Vin currently charges $10 per haircut.

(a) VC $5

###### *Instructions*

1. Determine the variable costs per haircut and the total monthly fixed costs.

Variable cost per haircut Fixed cost per month

Barbers commission $4.50 Barbers salaries$5,000

Barbers supplies .30 Managers extra salary $500

Utilities .20 Advertising $200

Rent $1,100

Utilities $175

Magazines $25

1. Compute the break-even point in units and dollars.

SP\*(Quantity\_Sold) = VC \* (Quantity\_Sold) + FC

In unites = $10x = $5.00x + $7,000

-5x -5x

5x = 7000

X = 1,400 haircuts

Sp $10 break-even:

1,400\* $10/unit = $14,000

-VC -$5

CM $5

TFC/CM = $7,000/5CM = 1,400

1. Prepare a CVP graph, assuming a maximum of 1,800 haircuts in a month. Use increments of 300 haircuts on the horizontal axis and $3,000 on the vertical axis.

**GRAPH ON PHOTOS CH.11 HANDOUT**

1. Determine net income, assuming 1,600 haircuts are given in a month.

**Below is SP TVC TFC**

**Net Income = ($10/haircut \*1600) – ($5 \*1600) – 7000**

**=$1000**

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Jorge Company bottles and distributes B-Lite, a diet soft drink. The beverage is sold for 50 cents per 16-ounce bottle to retailers, who charge customers 75 cents per bottle. For the year 2017, management estimates the following revenues and costs.

|  |  |  |  |
| --- | --- | --- | --- |
| Sales | $1,800,000 | Selling expenses—variable | $70,000 |
| Direct materials | 430,000 | Selling expenses—fixed | 65,000 |
| Direct labor | 360,000 | Administrative expenses—variable | 20,000 |
| Manufacturing overhead—variable | 380,000 | Administrative expenses—fixed | 60,000 |
| Manufacturing overhead—fixed | 280,000 |  |  |

###### *Instructions*

1. Prepare a CVP income statement for 2017 based on management’s estimates. (Show column for total amounts only.)

|  |  |  |
| --- | --- | --- |
| CVP Income Statement in Total | | |
| Sales |  | 1,800,000 (100%)-ratio |
| Variable expenses |  |  |
| COGS Variable 430+360+380 | $1,170,000 |  |
| Selling | 70,000 |  |
| admin | 20,000 |  |
| Total variable expenses |  | -1,260,000 (70%)-ratio |
| Contribution margin |  | =$540,000 (30%)-ratio |
| Fixed expenses |  |  |
| COGS Fixed | 280,000 |  |
| Selling | 65,000 |  |
| Admin | 60,000 |  |
| Total fixed expenses |  | 405,000 |
| Net Income |  | 135,000 |

1. Compute the break-even point in (1) units and (2) dollars.

(b)(1) 2,700,000 units

TVC/TotalSales = $1,260,000/1,800,000 = 0.7

.7 \* .5 = 35cents

50 – 35 = 15cents for the contribution margin

SP/unit = $0.50/unit

-VC/unit = $0.35/unit

CM/unit = $0.15x

TFC = $405,000/$0.15 == 2,700,000 units sold to **break even**

**In dollars:**

**2,700,000 units \*$0.15 = $1,350,000**

1. Compute the contribution margin ratio and the margin of safety ratio. (Round to nearest full percent.)

(c) CM ratio 30%

SP $0.50

-VC $0.35

CM $0.15

CM/SP = 0.15/0.50 = 30%

Margin of Safety = 1,800,000 – 1,350,000 = **$450,000**

Margin of safety ratio = $450,000/1,800,000 = **25%**

1. Determine the sales dollars required to earn net income of $180,000.

TFC Profit

X = ($405,000 + 180,000)/.30 = **$1,950,000**

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Mary Willis is the advertising manager for Bargain Shoe Store. She is currently working on a major promotional campaign. Her ideas include the installation of a new lighting system and increased display space that will add $24,000 in fixed costs to the $270,000 currently spent. In addition, Mary is proposing that a 5% price decrease ($40 to $38) will produce a 20% increase in sales volume (20,000 to 24,000). Variable costs will remain at $24 per pair of shoes. Management is impressed with Mary’s ideas but concerned about the effects that these changes will have on the break-even point and the margin of safety.

(b) Current margin of safety ratio 16%

###### *Instructions*

1. Compute the current break-even point in units, and compare it to the break-even point in units if Mary’s ideas are used.
2. Compute the margin of safety ratio for current operations and after Mary’s changes are introduced. (Round to nearest full percent.)
3. Prepare a CVP income statement for current operations and after Mary’s changes are introduced. (Show column for total amounts only.) Would you make the changes suggested?

|  |  |  |
| --- | --- | --- |
|  | | |
|  | **Current** | **New** |
|  |  |  |
|  |  |  |
| Contribution Margin |  |  |
|  |  |  |
| Net Income |  |  |

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Kaiser Industries carries no inventories. Its product is manufactured only when a customer’s order is received. It is then shipped immediately after it is made. For its fiscal year ended October 31, 2017, Kaiser’s break-even point was $1.3 million. On sales of $1.2 million, its income statement showed a gross profit of $180,000, direct materials cost of $400,000, and direct labor costs of $500,000. The contribution margin was $180,000, and variable manufacturing overhead was $50,000.

(a)(2) $70,000

###### *Instructions*

1. Calculate the following:
   1. Variable selling and administrative expenses.
   2. Fixed manufacturing overhead.
   3. Fixed selling and administrative expenses.
2. Ignoring your answer to part (a), assume that fixed manufacturing overhead was $100,000 and the fixed selling and administrative expenses were $80,000. The marketing vice president feels that if the company increased its advertising, sales could be increased by 25%. What is the maximum increased advertising cost the company can incur and still report the same income as before the advertising expenditure?