

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 1) CVP stands for Cost-Volume-Profit. 1) _____
- 2) CVP assumes that inventory levels change. 2) _____
- 3) CVP assumes that all costs can be classified as either fixed or variable. 3) _____
- 4) When using the contribution margin ratio, managers project operating income based upon sales units. 4) _____
- 5) A product's contribution margin per unit is the excess value of the selling price per unit over the fixed cost of obtaining and selling each unit. 5) _____
- 6) A product's contribution margin per unit is the excess value of the selling price per unit less the variable cost of obtaining and selling each unit. 6) _____
- 7) The unit contribution margin indicates how much profit each unit provides before fixed costs are considered. 7) _____
- 8) The contribution margin derived from different products can be used to motivate the sales force to increase sales of the most profitable products. 8) _____
- 9) The contribution margin ratio is the unit contribution margin divided by the sales price per unit. 9) _____
- 10) If a unit sells for \$11.40 and has a variable cost of \$3.80, its contribution margin per unit is \$7.60. 10) _____
- 11) Contribution margin on an income statement is equal to sales revenue minus variable expenses. 11) _____
- 12) Contribution margin and gross margin income statements have different operating incomes. 12) _____
- 13) CVP analysis assumes that the only factor that affects costs is a change in volume. 13) _____
- 14) Sales mix of products does not affect CVP analysis. 14) _____
- 15) In cost-volume-profit (CVP) analysis, relevant costs include variable, fixed, and mixed costs. 15) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 16) The unit contribution margin is computed by 16) _____
A) subtracting the variable cost per unit from the sales price per unit.
B) subtracting the sales price per unit from the variable cost per unit.
C) dividing the variable cost per unit by the sales revenue.
D) dividing the sales revenue by variable cost per unit.
- 17) The contribution margin ratio explains the percentage of each sales dollar that contributes towards 17) _____
A) period expenses. B) variable costs.
C) fixed costs and generating a profit. D) sales revenue.
- 18) CVP analysis assumes all of the following except that 18) _____
A) the mix of products will not change.
B) revenues are linear throughout the relevant range.
C) inventory levels will increase.
D) a change in volume is the only factor that affect costs.
- 19) To compute the unit contribution margin, _____ should be subtracted from the sales price per unit. 19) _____
A) all variable costs
B) all fixed costs
C) only variable period costs
D) only variable inventoriable product costs
- 20) Managers can quickly forecast the operating income by multiplying _____ and then subtracting fixed costs. 20) _____
A) projected sales revenue by the unit contribution margin
B) projected sales units by the contribution margin ratio
C) projected sales units by the variable cost ratio
D) projected sales revenue by the contribution margin ratio
- 21) Managers can quickly forecast the total contribution margin by multiplying the projected 21) _____
A) sales units by the contribution margin ratio.
B) sales revenue by the unit contribution margin.
C) sales revenue by the contribution margin ratio.
D) sales units by the variable cost ratio.
- 22) Which of the following represents the excess of the selling price per unit of a product over the variable cost of obtaining and selling each unit? 22) _____
A) Operating income B) Gross margin
C) Net income D) Unit contribution margin

- 23) Contribution margin ratio is computed by dividing _____
 A) contribution margin by operating income.
 B) sales revenue by contribution margin.
 C) operating income by contribution margin.
 D) contribution margin by sales revenue.
- 24) On a contribution margin income statement, to what is contribution margin equal? _____
 A) Fixed expenses minus variable expenses B) Sales revenues minus fixed expenses
 C) Fixed expenses plus variable expenses D) Sales revenues minus variable expenses

Use the information below to answer the following question(s).

Akron Laser Wash sells deluxe car washes for \$15 per customer. Variable costs are \$9 per wash. Fixed costs are \$40,000 per month.

- 25) What is Akron Laser Wash's contribution margin ratio? _____
 A) 60% B) 6% C) 40% D) 250%
- 26) What is Akron Laser Wash's contribution margin per car wash? _____
 A) \$0.40 B) \$6.00 C) \$2.50 D) \$9.00
- 27) Branson Movies sells movie tickets for \$13 per movie patron. Variable costs are \$8 per movie patron and fixed costs are \$60,000 per month. The company's relevant range extends to 35,000 movie patrons per month. What is Branson's projected operating income if 28,000 movie patrons see movies during a month? _____
 A) \$304,000 B) \$80,000 C) \$364,000 D) \$140,000

Use the information below to answer the following question(s).

Express Bus Company operates a bus route that takes passengers from Cleveland to Chicago every day. Assume the bus ticket is for \$50 per rider; the bus line's variable costs are \$35 per rider; and its fixed costs are \$75,000 each month.

- 28) What is the contribution margin per rider at Express Bus Company? _____
 A) \$3.33 B) \$0.30 C) \$15.00 D) \$35.00
- 29) What is the contribution margin ratio at Express Bus Company? _____
 A) 15% B) 333% C) 30% D) 70%

Use the information below to answer the following question(s).

The Burr Mystery Dinner Theatre sells tickets for dinner and a show for \$50 each. The cost of providing dinner is \$30 per ticket. The fixed cost of operating the theater is \$100,000 per month. The company can accommodate 15,000 patrons each month.

- 30) What is the contribution margin per passenger at the Burr Mystery Dinner Theatre? _____
 A) \$0.40 B) \$30.00 C) \$20.00 D) \$2.50

- 31) What is the contribution margin ratio at the Burr Mystery Dinner Theatre? 31) _____
 A) 60% B) 40% C) 250% D) 20%
- 32) What is the projected monthly income if 12,000 patrons visit the theatre each month? 32) _____
 A) \$140,000 B) \$200,000 C) \$340,000 D) \$240,000

Use the information below to answer the following question(s).

Fixed costs:	
Manufacturing	\$125,000
Marketing	48,000
Administrative	25,000
Variable costs:	
Manufacturing	\$120,000
Marketing	32,000
Administrative	38,000

During the year, Cornell produced and sold 60,000 units of product at a sale price of \$8.00 per unit. There was no beginning inventory of product at the start of the year.

- 33) What is the contribution margin for the year at Cornell Corporation? 33) _____
 A) \$92,000 B) \$282,000 C) \$290,000 D) \$480,000
- 34) What is the operating income (loss) for the year at Cornell Corporation? 34) _____
 A) \$480,000 B) \$92,000 C) \$282,000 D) \$290,000
- 35) The Sage Group produces a single product selling for \$60 per unit. Variable costs are \$12 per unit and total fixed costs are \$6,000. What is the contribution margin ratio? 35) _____
 A) 0.20 B) 1.25 C) 0.48 D) 0.80

Use the information below to answer the following question(s).

The following selected data relates to Lazarus Corporation:

Total fixed costs	\$22,000
Sale price per unit	\$25
Variable costs per unit	\$18

- 36) Assuming 8,000 units are sold, what is the contribution margin at the Lazarus Corporation? 36) _____
 A) \$344,000 B) \$56,000 C) \$34,000 D) \$78,000
- 37) If sales revenue per unit increases to \$27 and 8,000 units are sold, what is the contribution margin at the Lazarus Corporation? 37) _____
 A) \$56,000 B) \$72,000 C) \$360,000 D) \$50,000

38) Izzy Creations provides the following information about its single product:

38) _____

Targeted operating income	\$40,000
Selling price per unit	\$20
Variable cost per unit	\$12
Total fixed cost	\$80,000

What is the contribution margin ratio?

A) 2.50

B) 0.60

C) 0.40

D) 0.08

39) First Robotics Company sells basic kits to build robots for \$112 each. The variable costs for each kit are \$72. The total contribution margin for 20 kits is

39) _____

A) \$1,440.

B) \$800.

C) \$2,240.

D) \$3,680.

40) Gibbs Company has a product which sells for \$100 and has a unit contribution margin of \$45. It has fixed costs of \$30/unit at the current production volume. Gibbs Company's contribution margin ratio is

40) _____

A) 85%.

B) 30%.

C) 45%.

D) 75%.

41) Mario's Pizza sells pizzas for \$10. The variable costs for each pizza are \$4, while the total fixed costs are \$1,500. The contribution margin for 1,000 pizzas is

41) _____

A) \$10,000.

B) \$4,500.

C) \$6,000.

D) \$8,500.

Use the information below to answer the following question(s).

Anthony Office Supplies sells refills on printer ink cartridges for \$16 per refill. Variable costs are \$4 per refill. Fixed costs are \$ month.

42) What is the contribution margin ratio for the printer ink cartridge refills at Anthony Office Supplies?

42) _____

A) 75%

B) 12%

C) 133%

D) 25%

43) What is the contribution margin per refill at Anthony Office Supplies?

43) _____

A) \$4.00

B) \$1.33

C) \$0.75

D) \$12.00

Use the information below to answer the following question(s).

The following information for the past year for the Lambert Company has been provided:

Fixed costs:	
Manufacturing	\$150,000
Marketing	28,000
Administrative	21,000
Variable costs:	
Manufacturing	\$132,000
Marketing	32,000
Administrative	43,000

During the year, the Lambert Company produced and sold 50,000 units of product at a sale price of \$10.00 per unit. There was no beginning inventory of product at the beginning of the year.

- 44) What is the contribution margin for the year at the Lambert Company? 44) _____
 A) \$293,000 B) \$301,000 C) \$500,000 D) \$94,000
- 45) What is the operating income (loss) for the year at the Lambert Company? 45) _____
 A) \$500,000 B) \$94,000 C) \$301,000 D) \$293,000

Use the information below to answer the following question(s).

Bernard Corporation gathered the following information for the year just ended:

Fixed costs:	
Manufacturing	\$120,000
Marketing	42,000
Administrative	22,000
Variable costs:	
Manufacturing	\$80,000
Marketing	22,000
Administrative	38,000

During the year, Bernard produced and sold 50,000 units of product at a selling price of \$9.00 per unit. There was no beginning inventory of product at the start of the year.

- 46) What is the contribution margin for the year at Bernard Corporation? 46) _____
 A) \$310,000 B) \$266,000 C) \$126,000 D) \$450,000
- 47) What is the operating income (loss) for the year at Bernard Corporation? 47) _____
 A) \$310,000 B) \$126,000 C) \$450,000 D) \$266,000

Use the information below to answer the following question(s).

Fixed costs:	
Manufacturing	\$125,000
Marketing	23,000
Administrative	21,000
Variable costs:	
Manufacturing	\$115,000
Marketing	30,000
Administrative	43,000

During the year, the company produced and sold 30,000 units of product at a selling price of \$15.00 per unit. There was no beginning inventory of product at the beginning of the year.

- 48) What is the contribution margin for the year at Blaine Corporation? 48) _____
A) \$262,000 B) \$281,000 C) \$93,000 D) \$450,000
- 49) What is the operating income (loss) for the year at Blaine Corporation? 49) _____
A) \$450,000 B) \$262,000 C) \$93,000 D) \$281,000
- 50) Wiser Group sells a single product for \$30 per unit. The variable costs for each unit are \$7.50, while the total fixed costs are \$4,500. What is the Contribution Margin Ratio? 50) _____
A) 25.0% B) 72.5% C) 75.0% D) 65.0%
- 51) Wiser Group sells a single product for \$30 per unit. The variable costs for each unit are \$7.50, while the total fixed costs are \$4,500. If a 10% sales commission is introduced what is the new Contribution Margin Ratio? 51) _____
A) 75% B) 65% C) 72.5% D) No Change
- 52) Roller Corp sells wagon wheels for \$150. The variable costs for each wheel are \$85, while the total fixed costs are \$60,000. The contribution margin for 500 wheels is 52) _____
A) \$32,500. B) \$42,500. C) \$10,000. D) \$75,000.
- 53) Roller Corp sells wagon wheels for \$150. The variable costs for each wheel are \$85, while the total fixed costs are \$60,000. The operating income (loss) on 500 wheels is 53) _____
A) (\$60,000). B) (\$32,500). C) \$32,500. D) (\$27,500).
- 54) Hickory Point Amusement Park sells admission tickets for \$50 per person for one visit. Variable costs are \$15 per visitor and fixed costs are \$60,000,000 per month. The company's relevant range extends to 2,000,000 visitors per month. What is Hickory Point's projected operating income if 1,750,000 visitors come to the park during the month? 54) _____
A) \$1,250,000 B) \$87,500,000 C) \$61,250,000 D) \$27,500,000

- 55) LaComedia Dinner Theater sells tickets for dinner and a show for \$40 each. The cost of providing dinner is \$26 per ticket and the fixed cost of operating the theater is \$100,000 per month. The company can accommodate 12,000 patrons each month. What is the projected monthly income if 10,000 patrons visit the theater each month? 55) _____
- A) \$240,000 B) \$140,000 C) \$68,000 D) \$40,000
- 56) The Settler's Chuck Wagon sells tickets for dinner and a show for \$50 each. The cost of providing dinner is \$23 per ticket and the fixed cost of operating the theater is \$115,000 per month. The company can accommodate 13,500 patrons each month. What is the projected monthly income if 5,500 patrons visit the theater each month? 56) _____
- A) \$33,500 B) \$263,500 C) \$249,500 D) \$148,500

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 57) During the past year, Pettay Enterprises had the following fixed costs: 57) _____

Fixed manufacturing costs	\$112,000
Fixed marketing costs	\$43,000
Fixed administrative costs	\$18,000

The company also had the following variable costs:

Variable manufacturing costs	\$142,000
Variable marketing costs	\$37,000
Variable administrative costs	\$28,000

During the year, the company produced and sold 60,000 units of the product at a selling price of \$7.00 per unit. The company had no inventory at the beginning of the year.

Required: Prepare a contribution margin income statement for the year.

- 58) During the past year, Nova Enterprises had the following fixed costs: 58) _____

Fixed manufacturing costs	\$120,000
Fixed marketing costs	\$50,000
Fixed administrative costs	\$20,000

The company also had the following variable costs:

Variable manufacturing costs	\$ 3.00/unit
Variable marketing costs	\$0.50/unit
Variable administrative costs	\$28,000

During the year, the company produced and sold 70,000 units of the product at a selling price of \$8.00 per unit. The company had no inventory at the beginning of the year.

Required: Prepare a contribution margin income statement for the year.

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

59) Identify the key assumptions included in CVP analysis.

60) What are some issues with using CVP analysis?

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

61) Only the unit contribution margin approach may be used to calculate the break-even point. 61) _____

62) The break-even point represents the minimum number of units a company must sell before it earns a profit. 62) _____

63) On a CVP graph, the vertical distance between the total expense line and the total fixed cost line equals the operating income or operating loss. 63) _____

64) On a CVP graph, total fixed costs are shown as a vertical line. 64) _____

65) The break-even point on a CVP graph is the point where the fixed expenses line intersects the total expense costs line. 65) _____

66) Fixed costs of \$10,000 divided by the contribution margin ratio of 40% would yield the dollar amount of break-even sales as \$25,000. 66) _____

67) The break-even point can either be calculated in terms of number of units or in terms of sales revenue. 67) _____

68) A company that sells thousands of different products would be more likely to calculate break-even in terms of sales units, rather than sales revenue. 68) _____

69) When calculating the break-even point in terms of units, fixed costs should be divided by the contribution margin ratio. 69) _____

70) When calculating the break-even point in terms of sales revenue, fixed costs should be divided by the contribution margin ratio. 70) _____

71) In CVP analysis it is best to use after-tax income when determining the volume of sales required to earn a target profit. 71) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 72) The formula used to find the number of units that need to be sold in order to break even or generate a target profit is 72) _____
A) $(\text{fixed expenses} + \text{operating income}) \div \text{contribution margin ratio}$.
B) $(\text{fixed expenses} + \text{operating income}) \div \text{contribution margin per unit}$.
C) $(\text{fixed expenses} - \text{operating income}) \div \text{contribution margin per unit}$.
D) $(\text{fixed expenses} - \text{operating income}) \div \text{contribution margin ratio}$.
- 73) The formula used to find the sales revenue (sales in dollars) needed in order to break even or generate a target profit is 73) _____
A) $(\text{fixed expenses} - \text{operating income}) \div \text{contribution margin per unit}$.
B) $(\text{fixed expenses} - \text{operating income}) \div \text{contribution margin ratio}$.
C) $(\text{fixed expenses} + \text{operating income}) \div \text{contribution margin per unit}$.
D) $(\text{fixed expenses} + \text{operating income}) \div \text{contribution margin ratio}$.
- 74) To find the break-even point using the shortcut formulas, you use zero for the 74) _____
A) contribution margin ratio. B) operating income.
C) fixed expenses. D) contribution margin per unit.
- 75) Which of the following is TRUE when using the income statement approach to finding break-even? 75) _____
A) $\text{Sales revenue} - \text{variable expenses} - \text{fixed expenses} = \text{operating income}$
B) $(\text{Variable expenses} \times \text{number of units}) - \text{fixed expenses} = \text{operating income}$
C) $\text{Fixed expenses} + \text{variable expenses} - \text{sales revenue} = \text{operating income}$
D) $\text{Fixed expenses} + \text{variable expenses} + \text{sales revenue} = \text{operating income}$
- 76) On a CVP graph, the total cost line intersects the total revenue line at which of the following points? 76) _____
A) The break-even point B) The level of the fixed costs
C) The level of the variable costs D) None of the above
- 77) The break-even point may be defined as the number of units a company must sell to do which of the following? 77) _____
A) Earn more net income than the previous accounting period
B) Generate a zero profit
C) Generate a net loss
D) Generate a net income
- 78) Sales below the break-even point indicate a _____, whereas sales above the break-even point indicate a _____. 78) _____
A) profit; profit B) loss; loss C) loss; profit D) profit; loss

- 79) Sales above the break-even point indicate a _____, whereas sales below the break-even point indicate a _____. 79) _____
 A) loss; loss B) profit; loss C) profit; profit D) loss; profit
- 80) On a CVP graph, the horizontal line intersecting the vertical y-axis represents 80) _____
 A) total fixed costs. B) total costs.
 C) break-even point. D) total variable costs.
- 81) On a CVP graph, the line that begins at the origin represents 81) _____
 A) total fixed expenses.
 B) total sales revenues.
 C) total expenses.
 D) both the total expenses and the total sales revenues.
- 82) On a CVP graph, the intersection of the sales revenue line and the variable expense line is considered to be 82) _____
 A) the break-even point. B) the intersection of the axis.
 C) the total cost point. D) the margin of safety point.
- 83) Which of the following is an underlying assumption of the cost-volume-profit graph? 83) _____
 A) Volume is the only cost driver.
 B) Inventory levels are constantly changing.
 C) Total fixed expenses will change during the accounting period.
 D) The sales mix of products is constantly changing.
- 84) The area to the right of the break-even point and between the total revenue line and total expense line represents 84) _____
 A) fixed expenses. B) variable expenses.
 C) expected losses. D) expected profits.

Use the information below to answer the following question(s).

The Sweet Factory produces and sells specialty fudge. The selling price per kilogram is \$20, variable costs are \$12 per kilogram, and total fixed costs are \$6,000.

- 85) How many kilograms of fudge must The Sweet Factory sell to break even? 85) _____
 A) 15,000 B) 188 C) 750 D) 300
- 86) What is the Contribution Margin Ratio for The Sweet Factory? 86) _____
 A) 1.0 B) .04 C) .02 D) 0.6
- 87) What are break-even sales in dollars at The Sweet Factory? 87) _____
 A) \$3,750 B) \$9,000 C) \$750 D) \$15,000

- 88) How many kilograms of fudge must Sweet Factory sell to earning operating income of \$4,000? 88) _____
 A) 1,000 B) 1,250 C) 6,000 D) 750
- 89) Using the Contribution Margin Ratio, what sales (in dollars) must Sweet Factory achieve to earn an operating income of \$8,000? 89) _____
 A) \$15,000 B) \$35,000 C) \$23,000 D) \$6,000
- 90) If the sale price per unit is \$12, the unit contribution margin is \$5, and total fixed expenses are \$21,000, what are the break-even sales in units? 90) _____
 A) 105,000 B) 4,200 C) 1,750 D) 252,000
- 91) If the sale price per unit is \$30.00, the variable expense per unit is \$21, and total fixed expenses are \$300,000, what are the break-even sales in dollars? 91) _____
 A) \$176,471 B) \$10,000 C) \$90,000 D) \$1,000,000
- 92) Assume the following amounts: 92) _____
- | | |
|-------------------------|----------|
| Total fixed costs | \$20,000 |
| Sale price per unit | \$24 |
| Variable costs per unit | \$15 |
- If 10,000 units are sold, what is the operating income?
 A) \$90,000 B) \$70,000 C) \$150,000 D) \$240,000
- 93) Assume the following amounts: 93) _____
- | | |
|-------------------------|----------|
| Total fixed costs | \$20,000 |
| Sale price per unit | \$24 |
| Variable costs per unit | \$15 |
- If sales revenue per unit decreases to \$22 and 10,000 units are sold, what is the operating income?
 A) \$90,000 B) \$50,000 C) \$220,000 D) \$70,000
- 94) If the sale price per unit is \$38, the unit contribution margin is \$17, and total fixed expenses are \$56,950, what will the break-even sales in units be? 94) _____
 A) 968,150 B) 2,712 C) 3,350 D) 1,499
- 95) If the sale price per unit is \$75, the variable expense per unit is \$45, and total fixed expenses are \$1,155,000, what will the break-even sales in units be? 95) _____
 A) 9,625 B) 25,667 C) 38,500 D) 15,400
- 96) If total fixed costs are \$120,000, the contribution margin per unit is \$16.00, and targeted operating income is \$30,000, how many units must be sold to break even? 96) _____
 A) 480,000 B) 7,500 C) 9,375 D) 1,920,000

Use the information below to answer the following question(s).

Schimmel Company provides the following information about its single product.

Targeted operating income	\$35,000
Selling price per unit	\$7.85
Variable cost per unit	\$6.10
Total fixed cost	\$96,250

- 97) What is the contribution margin per unit at the Schimmel Company? 97) _____
 A) \$0.22 B) \$13.95 C) \$6.10 D) \$1.75
- 98) What is the break-even point in units at the Schimmel Company? 98) _____
 A) 20,000 B) 2,509 C) 6,900 D) 55,000
- 99) What is the contribution margin ratio at the Schimmel Company? 99) _____
 A) 0.44 B) 0.33 C) 0.22 D) 0.11
- 100) What sales level (in dollars) must the Schimmel Company achieve to earn its targeted operating income? 100) _____
 A) \$431,750 B) \$466,750 C) \$131,250 D) \$596,591
- 101) How many units must be sold to earn the targeted operating income at the Schimmel Company? 101) _____
 A) 75,000 B) 55,000 C) 20,000 D) 9,409
- 102) Given break-even sales in units of 28,000 and a unit contribution margin of \$4, how many units must be sold to reach a target operating income of \$4,000? 102) _____
 A) 1,000 B) 16,000 C) 27,000 D) 29,000
- 103) Given break-even sales in units of 56,000 and a unit contribution margin of \$6, how many units must be sold to reach a target operating income of \$24,000? 103) _____
 A) 144,000 B) 60,000 C) 4,000 D) 52,000
- 104) If the sale price per unit is \$100, variable expenses per unit are \$45, target operating income is \$35,000, and total fixed expenses are \$20,000, how many units must be sold to reach the target operating income? 104) _____
 A) 350 B) 636 C) 364 D) 1,000
- 105) If the contribution margin ratio is 32%, target operating income is \$60,000, and the sales revenue needed to achieve the target operating income is \$400,000, what are total fixed expenses? 105) _____
 A) \$68,000 B) \$128,000 C) \$188,000 D) \$19,200
- 106) If target sales in units is 75,000, total fixed expenses are \$12,000, and the unit contribution margin is \$0.20, what is the target operating income? 106) _____
 A) \$15,000 B) \$27,000 C) \$2,400 D) \$3,000

Use the information below to answer the following question(s).

MaxTech Company has a predicted operating income of \$80,000. Their total variable expenses are \$24,000 and their total fixed expenses are \$36,000. They have a unit contribution margin of \$10.

- 107) MaxTech's break-even sales in units is 107) _____
 A) 4,400. B) 3,600. C) 14,000. D) 9,200.
- 108) To achieve the predicted operating income MaxTech's sales in units must be: 108) _____
 A) 7,200. B) 3,600 C) 11,600. D) 12,500.
- 109) If the fixed costs double then the break-even sales in units at MaxTech Company is 109) _____
 A) 17,600. B) 7,200. C) 800. D) 12,800.
- 110) Palmer Corporation has fixed expenses of \$240,000, and a unit sales price of \$75. Their variable cost per unit is \$40. If they sell 8,000 posters, their operating income is a 110) _____
 A) gain of \$80,000. B) gain of \$40,000.
 C) loss of \$520,000. D) gain of \$680,000.

Use the information below to answer the following question(s).

Healthy Greetings Corporation produces and sells fruit baskets for special events. The unit selling price is \$60, unit variable cost is \$45, and total fixed costs are \$2,670.

- 111) How many fruit baskets must Healthy Greetings Corporation sell to break even? 111) _____
 A) 25 B) 45 C) 10,680 D) 178
- 112) What are break-even sales in dollars at Healthy Greetings Corporation? 112) _____
 A) \$10,680 B) \$8,010 C) \$178 D) \$1,526

Use the information below to answer the following question(s).

Marietta Piping Corporation provides the following information about its single product.

Targeted operating income	\$60,000
Selling price per unit	\$120.00
Variable cost per unit	\$45.00
Total fixed cost	\$90,000

- 113) What is the contribution margin per unit at Marietta Piping Corporation? 113) _____
 A) \$45.00 B) \$0.63 C) \$75.00 D) \$165.00
- 114) What is the break-even point in units at Marietta Piping Corporation? 114) _____
 A) 545 B) 800 C) 1,200 D) 364

- 115) How many units must be sold to earn the targeted operating income at Marietta Piping Corporation? 115) _____
- A) 909 B) 800 C) 1,200 D) 2,000

Use the information below to answer the following question(s).

The Olson Company has a predicted operating income of \$100,000. Their total variable expenses are \$36,000 and their total fixed expenses are \$24,000. They have a unit contribution margin of \$10.

- 116) Olson's break-even in sales units is 116) _____
- A) 8,800. B) 2,400. C) 16,000. D) 7,600.

- 117) If the Olson Company fixed expenses increase to \$40,000 then their break-even in sales units will be 117) _____
- A) 4,000. B) 10,400. C) 6,000. D) 17,600.

- 118) If the sale price per unit is \$90.00, the variable expense per unit is \$63, and total fixed expenses are \$600,000, what are the break-even sales in dollars? 118) _____
- A) \$180,000 B) \$666,667 C) \$2,000,000 D) \$1,000,000

- 119) Assume the following amounts: 119) _____

Total fixed costs	\$48,000
Sales price per unit	\$46
Variable cost per unit	\$32

If sales revenue per unit increase to \$48 and 12,000 units are sold, the operating income for the period will be

- A) \$192,000. B) \$144,000. C) \$553,000. D) \$384,000.

Use the information below to answer the following question(s).

Essen Company has compiled the following financial information for its single product.

Targeted operating income	\$39,000
Selling price per unit	\$15.20
Variable cost per unit	\$12.35
Total fixed cost	\$151,050

- 120) What is the contribution margin per unit at Essen Company? 120) _____
- A) \$27.85 B) \$2.35 C) \$15.20 D) \$2.85

- 121) What is the break-even point in units at Essen Company? 121) _____
- A) 53,000 B) 67,000 C) 14,000 D) 99,375

- 122) Woods Inc. has fixed expenses of \$452,000, and a unit sales price of \$135. Their variable cost per unit is \$97. If they sell 9500 units their operating income is a 122) _____
- A) gain of \$921,500. B) gain of \$361,000.
C) gain of \$91,000. D) loss of \$91,000.

Answer the following question(s) using the information below.

Kaiser's Kraft Korner sells a single product. 7,000 units were sold resulting in \$70,000 of sales revenue, \$28,000 of variable costs, and \$12,000 of fixed costs.

- 123) Contribution margin per unit is 123) _____
- A) \$4.00. B) \$5.71. C) \$6.00. D) \$4.29.
- 124) Break-even point in units is 124) _____
- A) 3,000 units. B) 7,000 units. C) 2,000 units. D) 5,000 units.
- 125) The number of units that must be sold to achieve \$60,000 of operating income is 125) _____
- A) 12,000 units. B) 18,000 units. C) 15,000 units. D) 10,000 units.
- 126) If sales increase by \$25,000, operating income will increase by 126) _____
- A) \$12,500. B) \$15,000. C) \$10,000. D) \$22,200.
- 127) Following is the Becker Company Ltd. partial income statement for the most recent year: 127) _____

Becker Company Ltd.
Partial Income Statement
Most Recent Year

Sales		\$ 1,190,000
Cost of goods sold		<u>476,000</u>
Gross margin		\$ 714,000
Less operating expenses:		
Fixed	\$39,000	
Variable	<u>357,000</u>	<u>396,000</u>
Operating income		<u>\$ 318,000</u>

What would the Becker Company sales have to be in order for the company to have an operating income of \$500,000?

- A) \$1,372,000 B) \$1,567,824 C) \$2,001,988 D) \$1,796,667

Use the information below to answer the following question(s).

Franscioso Company sells several products. Information of average revenue and costs is as follows:

Selling price per unit	\$28.50
Variable costs per unit:	
Direct material	\$5.25
Direct manufacturing labour	\$1.15
Manufacturing overhead	\$0.25
Selling costs	\$1.85
Annual fixed costs	\$110,000

- 128) The Franscioso Company contribution margin ratio is 128) _____
A) 1.425:1. B) 0.702:1. C) 0.637:1. D) 1.102:1.
- 129) The Franscioso Company break-even in sales dollars is 129) _____
A) \$99,819. B) \$77,193. C) \$156,695. D) \$172,684.

Use the information below to answer the following question(s).

Jill Bishop makes homemade soap. She sells it for \$100 a case. Her variable costs are \$40 per case. She has fixed costs of \$600.

- 130) What is the break-even point in cases? 130) _____
A) 10 cases B) 6 cases C) 20 cases D) 15 cases
- 131) What is the contribution margin per case? 131) _____
A) \$60.00 B) \$10.00 C) \$40.00 D) \$15.00

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 132) Checkebox Company has a predicted operating income of \$97,500. 132) _____
Their total variable expenses are \$42,000 and their total fixed expenses are \$96,000. They have a unit contribution margin of \$15.
1. Calculate the required sales in units to achieve the predicted operating income.
 2. Calculate the required sales in units to achieve the predicted operating income if the company's fixed expenses double from \$96,000 to \$192,000.
- 133) Sandbox Company has a predicted operating income of \$34,800. Their total variable expenses are \$28,000 and their total fixed expenses are \$22,800. They have a unit contribution margin of \$12. 133) _____
1. Calculate the required sales in units to achieve the predicted operating income.
 2. Calculate the required sales in units to achieve the predicted operating income if the company's fixed expenses double.

- 134) Thomas Corporation has a targeted operating income of \$500,000 for the upcoming year. The selling price of their single product is \$40.00 each, while the variable cost per unit is \$15.00 and the fixed costs total \$270,000. 134) _____

Calculate the following:

1. Contribution margin per unit
2. Contribution margin ratio
3. Break-even point in units
4. Units to be sold to earn the targeted operating income
5. Using the contribution margin ratio, the sales (in dollars) needed to achieve an operating income of \$300,000.

- 135) Sandblast Company has a predicted operating income of \$84,000. Their total variable expenses are \$24,000 and their total fixed expenses are \$30,000. They have a unit contribution margin of \$10. 135) _____

1. Calculate the required sales in units to achieve the predicted operating income.
2. Calculate the required sales in units to achieve the predicted operating income if the company's fixed expenses double from \$30,000 to \$60,000.

- 136) Ben's Custom Golf sells special clubs. Ben is able to purchase equipment from a manufacturing company for \$100 each. The equipment is sold for \$150 each. 136) _____

Required:

- a. What is the break-even in units assuming Ben incurred \$2,500 in selling expenses, and there were no other expenses?
- b. What would be the break-even in units assuming Ben incurred \$2,500 in selling expenses and had \$10,000 in other fixed expenses?

- 137) Black Pearl, Inc., sells a single product. The company's most recent income statement is given below. 137) _____

Sales	\$50,000
Less variable expenses	<u>(30,000)</u>
Contribution margin	20,000
Less fixed expenses	<u>(12,500)</u>
Net income	<u>\$ 7,500</u>

Required:

- a. Contribution margin ratio is _____ %
- b. Break-even point in total sales dollars is \$ _____
- c. To achieve \$40,000 in net income, sales must total \$ _____
- d. If sales increase by \$50,000, net income will increase by \$ _____

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

- 138) What is meant by the term break-even point? Why should a manager be concerned about the break-even point?

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 139) If all other factors are constant, any increase in fixed costs will increase the break-even point. 139) _____
- 140) Holding all other factors constant, if fixed expenses increase by 25%, the break-even point will always double. 140) _____
- 141) Sensitivity analysis is a "what if" technique that asks what a result will be if an underlying assumption changes. 141) _____
- 142) If total fixed expenses are \$50,000, the target operating income is \$10,000 and the contribution margin is \$15 per unit, the sales needed to achieve the target operating income will be 4,000 units. 142) _____
- 143) The addition of a specified target operating income to contribution margin analysis has the same effect on required sales in units as increasing fixed expenses. 143) _____
- 144) Say variable costs are \$10 per unit and the sales price is \$16 per unit. If volume would triple as a result of decreasing the sales price to \$9 per unit, the business should strongly consider decreasing the sales price to \$9 per unit. 144) _____
- 145) If variable costs increase then the volume needed to break even or achieve target profits also increase. 145) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 146) Which of the following statements is TRUE if the sales price per unit increases while the variable cost per unit and total fixed costs remain constant? 146) _____
A) The contribution margin increases and the break-even point increases.
B) The contribution margin decreases and the break-even point decreases.
C) The contribution margin increases and the break-even point decreases.
D) The contribution margin decreases and the break-even point increases.
- 147) Which of the following statements is TRUE if the variable cost per unit decreases while the sales price per unit and total fixed costs remain constant? 147) _____
A) The contribution margin increases and the break-even point decreases.
B) The contribution margin increases and the break-even point increases.
C) The contribution margin decreases and the break-even point decreases.
D) The contribution margin decreases and the break-even point increases.

- 148) Which of the following statements is TRUE if the fixed costs increase while the sales price per unit and variable costs per unit remain constant? 148) _____
- A) The contribution margin stays the same and the break-even point increases.
 - B) The contribution margin increases and the break-even point decreases.
 - C) The contribution margin decreases and the break-even point increases.
 - D) The contribution margin stays the same and the break-even point decreases.
- 149) If the sale price per unit decreases and variable costs remain the same, what will be the effect on the contribution margin ratio? 149) _____
- A) It will increase.
 - B) It will decrease.
 - C) It will remain the same.
 - D) It is impossible to determine with the given information.
- 150) Which of the following statements is TRUE if the variable cost per unit increases while the sale price per unit and total fixed costs remain constant? 150) _____
- A) Break-even point in units remains the same.
 - B) Contribution margin ratio increases.
 - C) Break-even point in units decreases.
 - D) Break-even point in units increases.
- 151) Which of the following statements is TRUE if total fixed costs decrease while the sale price per unit and variable costs per unit remain constant? 151) _____
- A) Break-even point in units decreases.
 - B) Contribution margin increases.
 - C) Break-even point in units increases.
 - D) Contribution margin decreases.
- 152) Which of the following statements is TRUE if both fixed expenses and the sale price per unit increase while variable costs per unit are unchanged? 152) _____
- A) Break-even point in units increases.
 - B) Break-even point in units decreases.
 - C) Break-even point in units remains unchanged.
 - D) Break-even point in units could increase, decrease, or remain the same.
- 153) Which of the following will decrease the break-even point in units assuming no other changes in the cost-volume-profit relationship? 153) _____
- A) An increase in the variable costs per unit
 - B) An increase in the sale price per unit
 - C) A decrease in the sale price per unit
 - D) An increase in total fixed costs
- 154) After break-even on a CVP graph, the difference between sales dollars and total costs is the representation of 154) _____
- A) slope of fixed costs per unit.
 - B) operating income.
 - C) operating loss.
 - D) slope of variable costs per unit.

Use the information below to answer the following question(s).

Monroe Manufacturing produces and sells a product with a price of \$100/unit. The following data has been prepared for its estimated upper and lower levels of activity.

Production Category	Lower Limit	Upper Limit
Units of Production	4,000 units	6,000 units
Direct Materials	\$60,000	\$90,000
Direct labour	\$80,000	\$120,000
Manufacturing Overhead:		
Indirect materials	\$25,000	\$37,500
Indirect labour	\$40,000	\$50,000
Depreciation	\$20,000	\$20,000
Selling and Admin. Expenses:		
Sales salaries	\$50,000	\$65,000
Office salaries	\$30,000	\$30,000
Advertising	\$45,000	\$45,000
Other	\$15,000	\$20,000
Totals	\$365,000	\$477,500

- 155) The fixed expenses for Monroe Manufacturing are 155) _____
 A) sales salaries, office salaries, and advertising.
 B) direct materials, direct labour, and depreciation.
 C) indirect materials, indirect labour, and depreciation.
 D) depreciation, office salaries, and advertising.
- 156) The variable expenses for Monroe Manufacturing are 156) _____
 A) all categories of selling and administrative expenses.
 B) indirect materials, direct materials, and direct labour.
 C) direct materials, direct labour, sales salaries.
 D) indirect materials, indirect labour, direct materials, and direct labour.
- 157) If the selling price per unit is \$10.00, the variable expense per unit is \$5.75, and the break-even sales in dollars is \$465,200, what are total fixed expenses? 157) _____
 A) \$10,946 B) \$197,710 C) \$46,520 D) \$343,843
- 158) If the sale price per unit is \$64, total fixed expenses are \$90,000, and the break-even sales in dollars is \$360,000, what will the variable expense per unit be? 158) _____
 A) \$80.00 B) \$16.00 C) \$48.00 D) \$192.00
- 159) If the sale price per unit is \$95, total fixed expenses are \$480,000, and the break-even sales in dollars is \$800,000, what is the variable expense per unit? 159) _____
 A) \$38.00 B) \$57.00 C) \$152.00 D) \$63.33

- 160) If the sale price per unit is \$26, the variable expense per unit is \$19.50, and the break-even sales in dollars is \$47,320, what are total fixed expenses? 160) _____
- A) \$15,773 B) \$280 C) \$11,830 D) \$1,820

- 161) Busson Company management has budgeted the following amounts for its next fiscal year: 161) _____

Total fixed expenses	\$58,300
Sale price per unit	\$50
Variable expenses per unit	\$30

If Busson Company can reduce fixed expenses by \$10,300, how will break-even sales in units be affected?

- A) Increase by 515 units B) Decrease by 515 units
C) Decrease by 129 units D) Increase by 129 units
- 162) Fox Company management has budgeted the following amounts for its next fiscal year: 162) _____

Total fixed expenses	\$300,000
Sale price per unit	\$50
Variable expenses per unit	\$30

Due to increased competition, Fox needs to lower its selling price to \$45. How will break-even sales in units be affected?

- A) Decrease by 5,000 units B) Increase by 2,000 units
C) No change D) Increase by 5,000 units
- 163) Fox Company management has budgeted the following amounts for its next fiscal year: 163) _____

Total fixed expenses	\$300,000
Sale price per unit	\$50
Variable expenses per unit	\$30

Fox is considering moving production off-shore. This will lower Fixed Expenses by \$150,000 and increase variable expenses by \$5.00 per unit. What would be the impact on Fox's break even point?

- A) Increase by 2,000 units B) No change
C) Decrease by 5,000 units D) Increase by 5,000 units

164) Fox Company management has budgeted the following amounts for its next fiscal year:

164) _____

Total fixed expenses	\$200,000
Sale price per unit	\$50
Variable expenses per unit	\$30

To increase sales Fox is considering an advertising campaign that will add \$50,000 to fixed costs. What would be the impact on Fox's break even point?

- A) Increase by 2,500 units B) No change
C) Decrease by 2,500 units D) Increase by 5,000 units

165) Fox Company management has budgeted the following amounts for its next fiscal year:

165) _____

Total fixed expenses	\$200,000
Sale price per unit	\$50
Variable expenses per unit	\$30

To increase sales Fox is considering an advertising campaign that will add \$50,000 to fixed costs. Management expects sales to increase by 2,500 units. What would be the impact on Fox's operating income?

- A) No change B) Increase by \$50,000
C) Decrease of \$50,000 D) Increase of \$125,000

166) Royal Corporation management has budgeted the following amounts for its next fiscal year:

166) _____

Total fixed expenses	\$580,000
Sale price per unit	\$60
Variable expenses per unit	\$40

If Royal Corporation spends an additional \$11,500 on advertising, sales volume should increase by units. What effect will this have on operating income?

- A) Increase of \$46,000 B) Decrease of \$46,000
C) Decrease of \$34,500 D) Increase of \$34,500

167) Flash Corporation management has budgeted the following amounts for its next fiscal year:

167) _____

Total fixed expenses	\$480,000
Sale price per unit	\$55
Variable expenses per unit	\$25

If Flash Corporation can reduce fixed expenses by \$20,000, by how much can variable expenses per increase and still allow the company to maintain the original break-even sales in units?

- A) \$28.75 B) \$26.25 C) \$30.00 D) \$1.25

168) Dover Industries management has budgeted the following amounts for its next fiscal year:

168) _____

Total fixed expenses	\$630,000
Sale price per unit	\$30
Variable expenses per unit	\$21

If fixed expenses increase by 10%, to maintain the original break-even sales in units, the selling price per unit would have to be

- A) decreased by 12%. B) increased by 6%.
C) increased by 3%. D) increased by 9%.

169) Bass Corporation currently sells its products for \$25 per unit. Management is contemplating a 40% increase in the selling price for the next year. Variable costs are currently 40% of sales revenue and are not expected to change next year. Fixed expenses are \$120,000 per year.

169) _____

What is the break-even point in units at the current selling price?

- A) 12,000 units B) 8,000 units C) 3,429 units D) 15 units

170) Samson Company currently sells its products for \$50 per unit. Management is contemplating a 20% increase in the selling price for the next year. Variable costs are currently 40% of sales revenue and are not expected to change in dollar amount on a per unit basis next year (the company will pay the same amount for variable costs next year). Fixed expenses are \$80,000 per year.

170) _____

What is the break-even point in units at the anticipated selling price per unit next year?

- A) 8,000 units B) 2,222 units C) 1,000 units D) 2,000 units

171) Hosbach Enterprises has fixed expenses of \$200,000 per year. Right now, Hosbach Enterprises is selling its products for \$100 per unit. Management is contemplating a 20% increase in the sale price for the next year. Variable costs are currently 40% of sales revenue and are not expected to change in dollar amount on a per unit basis next year (the company will pay the same amount for variable costs next year).

171) _____

If fixed costs increase 10% next year, and the new sale price per unit goes into effect, how many units will need to be sold to break even?

- A) 3,667 units B) 2,750 units C) 1,375 units D) 220,000 units

172) Management at the Trapper Company currently sells its products for \$200 per unit and is contemplating a 50% increase in the selling price for the next year. Variable costs are currently 25% of sales revenue and are not expected to change in dollar amount on a per unit basis next year (the company will still pay the same variable cost per unit). Fixed expenses are \$120,000 per year.

172) _____

If fixed costs were to decrease 10% during the current year and the new selling price goes into effect, how many units will need to be sold to break even?

- A) 432 units B) 880 units C) 377 units D) 132,000 units

173) Elizabeth Langley Enterprises sells its product for \$12 per unit and has variable costs of \$10 per unit. Total fixed costs are \$40,000. Suppose variable costs increase by 10% due to an increase in the cost of direct materials. What will be the effect on the break-even point in units?

173) _____

- A) Increase from 20,000 units to 40,000 units
- B) Decrease from 1,818 units to 1,739 units
- C) Decrease from 4,000 units to 3,636 units
- D) Decrease from 20,000 units to 3,636 units

174) If fixed expenses are \$40,000, the break-even in sales dollars is \$64,000, and the selling price per unit is \$80, then the variable expense per unit is

174) _____

- A) approximately \$130.
- B) approximately \$30.
- C) approximately \$50.
- D) approximately \$48.

175) Burton Company management has budgeted the following amounts for its next fiscal year:

175) _____

Total fixed expenses	\$500,000
Sale price per unit	\$20
Variable expenses per unit	\$15

If Burton Company can reduce fixed expenses by \$17,300, how will break-even sales in units be affected?

- A) Increase by 494 units
- B) Decrease by 3,460 units
- C) Decrease by 494 units
- D) Increase by 3,460 units

176) Sally Corporation management has budgeted the following amounts for its next fiscal year:

176) _____

Total fixed expenses	\$425,000
Sale price per unit	\$50
Variable expenses per unit	\$30

If Sally Corporation spends an additional \$15,000 on advertising, sales volume should increase by units. What effect will this have on operating income?

- A) Decrease of \$5,000
- B) Increase of \$5,000
- C) Increase of \$20,000
- D) Decrease of \$20,000

177) Cornelius Manufacturing management has budgeted the following amounts for its next fiscal year:

177) _____

Total fixed expenses	\$600,000
Sale price per unit	\$50
Variable expenses per unit	\$20

If Cornelius Manufacturing can reduce fixed expenses by \$50,000, by how much can variable expense per unit increase and still allow the company to maintain the original break-even sales in units?

- A) \$22.50
- B) \$27.50
- C) \$30.00
- D) \$2.50

178) Falk Manufacturing management has budgeted the following amounts for its next fiscal year:

178) _____

Total fixed expenses	\$400,000
Sale price per unit	\$75
Variable expenses per unit	\$25

If fixed expenses increase by 20%, to maintain the original break-even sales in units, the sale price per unit would have to be

A) increased by 13.33%.

B) decreased by 46.67%

C) decreased by 13.33%.

D) increased by 46.67%.

179) First Register Corp. sells its products for \$500 per unit. Variable costs are currently 40% of sales revenue. Fixed expenses are \$150,000 per year.

179) _____

What is the break-even point in units at the current sale price?

A) 214 units

B) 500 units

C) 300 units

D) 750 units

180) Jackson Company currently sells its products for \$1,000 per unit. Management is contemplating a 10% increase in the selling price for the next year. Variable costs are currently 40% of sales revenue and are not expected to change on a dollar per unit basis for next year (the company will pay the same amount for variable costs next year). Fixed expenses are \$140,000 per year.

180) _____

What is the break-even point in units at the anticipated selling price per unit next year?

A) 200 units

B) 280 units

C) 467 units

D) 93 units

181) American Corporation currently sells its products for \$200 per unit. Management is contemplating a 20% increase in the selling price for the next year. Variable costs are currently 40% of sales revenue and are not expected to change on a dollar per unit basis for next year (the company will pay the same amount for variable costs next year). Fixed expenses are \$120,000 per year.

181) _____

If fixed costs increase 10% next year, and the new selling price per unit goes into effect, how many units will need to be sold to break even?

A) 1,100 units

B) 825 units

C) 132,000 units

D) 413 units

182) Sunnyside Company currently sells its products for \$500 per unit. Management is contemplating a 10% increase in the selling price for the next year. Variable costs are currently 20% of sales revenue and are not expected to change on a dollar per unit basis for next year (the company will pay the same amount for variable costs next year). Fixed expenses are \$150,000 per year.

182) _____

If fixed costs were to decrease 10% during the current year and the new selling price goes into effect, how many units will need to be sold to break even?

A) 300 units

B) 1,100 units

C) 254 units

D) 165,000 units

- 183) Cozy Mitts produces heated motorcycle gloves. The company has fixed expenses of \$125,000 and variable expenses of \$75 per pair. Each pair sells for \$125. If Cozy Mitts can decrease its variable costs to \$60 per pair by increasing its fixed expenses to \$160,000 how many pairs will it have to sell to generate \$100,000 operating income? 183) _____
- A) 2,500 B) 4,000 C) 4,500 D) 5,200

- 184) Cozy Mitts produces heated motorcycle gloves. The company has fixed expenses of \$125,000 and variable expenses of \$75 per pair. Each pair sells for \$125. If Cozy Mitts can decrease its variable costs to \$60 per pair by increasing its fixed expenses to \$160,000 how many more or fewer pairs will Cozy Mitts have to sell to continue to generate \$100,000 operating income if these changes are made? 184) _____
- A) 38 fewer pair B) 500 fewer pair
C) 500 more pair D) 2,500 more pair

- 185) Balmoral Company management has budgeted the following amounts for its next fiscal year: 185) _____

Total fixed expenses	\$35,775
Sale price per unit	\$75
Variable expenses per unit	\$60

If Balmoral Company increases fixed expenses by \$3,600, how will break-even sales in units be affected?

- A) Increase by 240 units B) Decrease by 48 units
C) Increase by 48 units D) Decrease by 240 units
- 186) Funky Corporation management has budgeted the following amounts for its next fiscal year: 186) _____

Total fixed expenses	\$588,000
Sale price per unit	\$135
Variable expenses per unit	\$100

If Funky Corporation must increase fixed expenses by \$50,400, then by how much must they decrease variable expenses per unit to allow the company to maintain the original break-even sales in units?

- A) \$2.75 B) \$3.00 C) \$168 D) \$93.00
- 187) Portmain Industries management has budgeted the following amounts for its next fiscal year: 187) _____

Total fixed expenses	\$60,000
Sale price per unit	\$40
Variable expenses per unit	\$31

Increase competition in the market has forced management to consider a price reduction of 10%. In order to maintain the same targeted operating income of \$30,000 by what percentage must Portmain increase the number of units sold?

- A) Increased by 50% B) Increased by 100%
C) Decreased by 100% D) Increased by 40%

188) If the variable cost per unit is \$30.00, the break-even in sales dollars is \$64,000, and fixed costs are \$40,000, the selling price per unit is _____
 A) \$30.00. B) \$5.00. C) \$80.00. D) \$800.00.

189) Solar films Inc. manufactures a window tint film to block UV rays. Price and cost data for a relevant range of up to 250,000 square metres of film per month are as follows: _____

Sales price per unit \$25.00
 (Current monthly volume is 150,000 square metres)

Variable costs per unit:
 Direct materials \$5.00
 Direct labour 7.50
 Variable manufacturing overhead 2.20
 Variable selling and administrative expense 3.30

Monthly fixed expenses:
 Fixed manufacturing overhead \$268,300
 Fixed selling and administrative expense 151,700

Management is currently in contract negotiations with the labour union. The new contract is expected to result in an increase of 10% in direct labour costs and an increase in monthly fixed costs of \$15,625. If these estimates are accurate by how many units per month will break-even sales change?
 A) 2,500 B) 2,232 C) 70,500 D) 10,500

Use the information below to answer the following question(s).

Big Sports University is planning to hold a fund raising banquet at one of the local country clubs. It has two options for the banquet:

1. Foothills Country Club
 - a. Fixed rental cost of \$600
 - b. plus \$15.00 per person for food.
2. Downhill Country Club
 - a. Fixed rental cost of \$1,080
 - b. It will have to hire a caterer who charges \$12.00 per person for food.

Big Sports has budgeted \$900 for administrative and marketing expenses. It plans to hire a band, which will cost another \$400. All other items required for the event will be donated by its local business supporters.

190) What is the break-even point in tickets sold of option one? _____
 A) 76 tickets B) 85 tickets C) 24 tickets D) 60 tickets

191) The break-even point in tickets sold of option two? _____
 A) 85 tickets B) 71 tickets C) 76 tickets D) 39 tickets

192) What is the "operating income" assuming 250 people attend and option one is chosen? _____
 A) \$4,750 B) \$4,000 C) \$4,400 D) \$4,350

- 193) What is the "operating income" assuming 250 people attend and option two is chosen? 193) _____
 A) \$2,900 B) \$5,080 C) \$4,620 D) \$2,750
- 194) How many people must purchase tickets assuming option two is chosen, and Big Sports expects to raise \$4,820 for the athletic fund? Assume no one pays more than the cost of his/her ticket. 194) _____
 A) 243 people B) 258 people C) 276 people D) 173 people

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use the following information for the next section

Max Industries produces a single product at its facility in North America. Management has the following projections for the upcoming year:

Annual Fixed Costs	\$	240,000
Selling Price Per Unit	\$	40
Contribution Margin Ratio		0.4
Expected sales volume		20,000 units

- 195) What is the break-even point in units? 195) _____
- 196) Calculate Max Industries expected operating income 196) _____
- 197) Due to increased competition Max Industries must make some decisions. If it does nothing sales volume will decrease by 20%. To maintain its sales volume Max Industries can increase marketing costs by \$50,000 or reduce the selling price by 10%. Which option should it choose and why? 197) _____
- 198) Due to increased competition Max Industries must lower the price of its product to \$35.00 maintain its sales level and management wants to maintain the same operating income. Max Industries can purchase a new automated machine that will lower variable costs per unit by \$15 but will increase fixed costs by \$80,000. Max Industries can out source part of its production which will increase the variable cost per unit to \$25 and will lower fixed costs by \$120,000. Which option should Max Industries choose and why? 198) _____

- 199) Woodley Corporation management has budgeted the following amounts for its next fiscal year: 199) _____

Total fixed expenses	\$500,000
Sale price per unit	\$1,000
Variable expenses per unit	\$600

Requirements:

1. If Woodley Corporation can reduce fixed expenses by \$20,000, how will break-even sales in units be affected?
2. If Woodley Corporation spends an additional \$15,000 on advertising, sales volume should increase by 1,000 units. What effect will this have on operating income?
3. If Woodley Corporation can reduce fixed expenses by \$50,000, by how much can variable expenses per unit increase and still allow the company to maintain the original break-even in units?
4. If fixed expenses increase by 20%, to maintain the original break-even sales in units, what would be the sale price per unit have to be?

- 200) Barklay's Technologies Inc. (BTI) is a manufacturing company with facilities in North America, Europe and Asia. The company's board of directors has passed a resolution to increase corporate social responsibility by various means. In this regard management is evaluating whether or not to implement new control systems that will also be part of future robotics platforms. The company sees robotics as a way of repatriating work from countries who are not providing workers with safe working conditions, appropriate remuneration, or an environment that respects human rights. In addition, improved production processes will increase environmental sustainability by reducing material waste. 200) _____

In Winnipeg the company has a machine shop that produces parts for warehouse storage systems. The following table presents financial information for the past year:

Revenue	\$14,750,000
Cost of goods sold	(8,850,000)
Gross profit	\$5,900,000
Operating expenses	1,230,000
Operating income	\$4,670,000

The capital cost of a new control system will be \$1,900,000 which will be amortized using straightline amortization over five years with no salvage value. The new system will permit reduction in scrap and direct labour costs, resulting in a decline in variable costs of 8%. The system will reduce downtime and the resulting increase in customer satisfaction from on-time delivery is expected to translate to a 2% increase in revenue. Operating expenses will be unchanged.

Required:

1. What is the incremental break-even in sales dollars assuming that cost of goods sold is a variable cost?
2. What will be the effect on operating income from implementing this change in the first year?
3. How many years will it take to cover the capital cost of the new control system from the increased revenue and cost savings.

- 201) Query Company sells pillows for \$25.00 each. The manufacturing cost, all variable, is \$10 per pillow. The company is planning on renting an exhibition booth at the annual crafts and art convention. The convention coordinator allows three options for each participating company. They are: 201) _____
1. paying a fixed booth fee of \$5,010, or;
 2. paying an \$4,000 fee plus 10% of revenue made at the convention, or;
 3. paying 20% of revenue made at the convention.

Required:

- a. Compute the break-even sales in pillows of each option.
- b. Which option should Query Company choose, assuming sales are expected to be 800 pillows?

- 202) Sleep Easy sells pillows for \$64.00 each. The manufacturing cost, all variable, is \$16.00 per pillow. The company is planning on renting an exhibition booth at the annual crafts and art convention. The convention coordinator allows three options for each participating company. They are: 202) _____
1. paying a fixed booth fee of \$10,500, or;
 2. paying a \$7,000 fee plus 10% of revenue made at the convention, or;
 3. paying a \$4,000 fee plus 20% of revenue made at the convention

Required:

- a. Compute the break-even sales in pillows of each option.
- b. Which option should Sleep Easy choose, assuming sales are expected to be 600 pillow:
- c. Which option should Sleep Easy choose, assuming sales are expected to be 200 pillow:

- 203) Karen Hefner, a florist, operates retail stores in several shopping malls. The average selling of an arrangement is \$30 and the average cost of each sale is \$18. A new mall is opening w Karen wants to locate a store, but the location manager is not sure about the rent method t accept. The mall operator offers the following three options for its retail store rentals: 203) _____
1. paying a fixed rent of \$15,000 a month, or
 2. paying a base rent of \$9,000 plus 10% of revenue received, or
 3. paying a base rent of \$4,800 plus 20% of revenue received up to a maximum rent of \$25,000.

Required:

- a. For each option, compute the break-even sales and the monthly rent paid at break-even.
- b. Beginning at zero sales, show the sales levels at which each option is preferable up to ! units.

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 204) Gray Company sells two products, X and Y. For the coming year, Gray predicts the sale of 5,000 units of X and 10,000 units of Y. The contribution margins of the two products are \$2 and \$3, respectively. The weighted-average contribution margin per unit would be \$2.50. 204) _____

- 205) The sales mix can greatly affect CVP relationships. 205) _____

- 206) To calculate the weighted-average contribution margin, divide the sum of the individual product contribution margins by the sales mix in dollars of value. 206) _____
- 207) To calculate the weighted-average contribution margin, add the contribution margin of each product. 207) _____
- 208) If unit sales prices, unit variable costs and total fixed costs remain the same, but the sales mix changes, there is most likely no effect on the break-even point. 208) _____
- 209) A sales mix is the combination of products that are available for sale. 209) _____
- 210) All else being equal, a company earns more income by selling high-contribution margin products than by selling an equal number of low-contribution margin products. 210) _____
- 211) The same CVP formulas that are used to perform CVP analysis for a company with a single product can be used for any company that sells more than one product, as long as a company uses the *weighted-average contribution margin* of all products, rather than the contribution margin of a sole product. 211) _____
- 212) To find the weighted average contribution margin, a company adds up the individual unit contribution margins of the different products and then divides by the total number of different products. 212) _____
- 213) When a company sells more than one product, there is one unique break-even point. 213) _____
- 214) The weighted average contribution margin will always be the same as the contribution margin of the highest-volume product. 214) _____
- 215) To calculate the break-even point in a multi-product situation, one must assume that the sales mix of the various products remains constant. 215) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 216) Fixed costs divided by weighted-average contribution margin per unit equals 216) _____
 A) break-even sales in units. B) break-even sales in dollars.
 C) contribution margin ratio. D) margin of safety ratio.
- 217) Contribution margin less fixed costs yields 217) _____
 A) variable costs. B) operating income.
 C) sales. D) None of the above

- 218) Vango Industries sells two products, Basic models and Deluxe models. Basic models sell for \$40 per unit with variable costs of \$30 per unit. Deluxe models sell for \$48 per unit with variable costs of \$40 per unit. Total fixed costs for the company are \$76,000. Vango Industries typically sells three Basic models for every Deluxe model. What is the break-even point in total units?
 A) 8,000 units B) 6,909 units C) 4,000 units D) 13,818 units 218) _____
- 219) Vango Industries sells two products, Basic models and Deluxe models. Basic models sell for \$40 per unit with variable costs of \$32 per unit. Deluxe models sell for \$48 per unit with variable costs of \$38 per unit. Total fixed costs for the company are \$51,000. Vango Industries typically sells three Basic models for every Deluxe model. What is the break-even point in Basic and Deluxe models?
 A) 2,000; 8,000 B) 8,000; 8,000 C) 24,000; 8,000 D) 6,000; 2,000 219) _____
- 220) Vango Industries sells two products, Basic models and Deluxe models. Basic models sell for \$40 per unit with variable costs of \$32 per unit. Deluxe models sell for \$48 per unit with variable costs of \$36 per unit. Total fixed costs for the company are \$126,900. Vango Industries typically sells two Basic models for every Deluxe model. What is the break-even point in Basic and Deluxe models?
 A) 14,100; 14,100 B) 3,173; 2,644 C) 9,400; 4,700 D) 15,863; 11,537 220) _____
- 221) Waterside Company sells two products, Yellow models and Striped models. Yellow models sell for \$50 per unit with variable costs of \$30 per unit. Striped models sell for \$60 per unit with variable costs of \$25 per unit. Total fixed costs for the company are \$20,000. Waterside Company typically sells one yellow model for every three striped models. What is the break-even point in total units?
 A) 320 units B) 941 units C) 239 units D) 640 units 221) _____
- 222) Mist Company sells two products, blue bowls and green cups. Mist predicts that it will sell 2,500 blue bowls and 1,500 green cups in the next period. The unit contribution margins for blue bowls and green cups are \$3.60 and \$4.80, respectively. What is the weighted-average unit contribution margin?
 A) \$1.80 B) \$0.45 C) \$16.20 D) \$4.05 222) _____
- 223) Coodson Company sells two products, Quartz models and Wind-up models. Coodson predicts that it will sell 7,200 Quartz models and 5,600 Wind-up models in the next period. The unit contribution margins for Quartz models and Wind-up models are \$31 and \$63, respectively. What is the weighted-average unit contribution margin?
 A) \$0.02 B) \$23.14 C) \$45.00 D) \$360.00 223) _____
- 224) Reynold Coffee sells three large coffees for every two small ones. A small coffee sells for \$4 per cup, with a variable cost of \$2 per cup. A large coffee sells for \$5 per cup with a variable cost of \$3 per cup. What is the weighted-average contribution margin?
 A) \$7.20 B) \$2.00 C) \$0.40 D) \$0.50 224) _____

- 225) Gregory Enterprises sells two products, larges and smalls. Larges sell for \$120 per unit with variable costs of \$80 per unit. Smalls sell for \$30 per unit with variable costs of \$10 per unit. Total fixed costs for the company are \$40,000. Gregory Enterprises typically sells three larges for every two smalls. What is the break-even point in total units?
- A) 294 units B) 250 units C) 1,250 units D) 2,500 units

225) _____

- 226) The Nut House sells almonds, cashews, and pistachios. They sold 10,000 cans last year. Pistachios outsold cashews by a margin of 2 to 1 in cans. Sales of almonds were half the sales of cashews in cans. Fixed costs for the Nut House are \$20,000 and additional information follows:

226) _____

Product	Unit Sales Prices	Unit Variable Cost
Almonds	\$8.00	\$4.00
Cashews	\$10.00	\$5.00
Pistachios	\$6.00	\$4.00

The formula to determine the number of cans of each nut sold is

- A) $x + y + z = 10,000$ B) $x + 2x + 0.5x = 10,000$
 C) $x + 2x + 0.5x = 20,000$ D) $3x + 2x + x = 10,000$

Use the information below to answer the following question(s).

The Snack Hut sells fudge, cashews, and caramel corn. They sold 10,000 units last year. Caramel corn outsold cashews by a ratio of 2 to 1. Sales of fudge were the same as sales of cashews. Fixed costs for The Snack Hut are \$19,500. Additional information follows:

Product	Unit Sales Prices	Unit Variable Cost
Fudge	\$8.00	\$4.00
Cashews	\$10.00	\$5.00
Caramel Corn	\$6.00	\$4.50

- 227) The sales mix percentage of caramel corn based upon units is
- A) 44%. B) 25%. C) 75%. D) 50%.

227) _____

- 228) The weighted average contribution margin for the three products of The Snack Hut is
- A) \$48.00. B) \$2.44. C) \$3.00. D) \$12.00.

228) _____

- 229) The break-even sales volume in units for The Snack Hut is
- A) 3,333. B) 6,500. C) 1,625. D) 4,875.

229) _____

- 230) Break-even sales in dollars for The Snack Hut is
- A) \$34,125. B) \$25,000. C) \$48,750. D) \$12,188.

230) _____

Use the information below to answer the following question(s).

Death by Chocolate sells specialty fudge in three flavors: Marshmallow, Plain, and Peanut. They sold 10,000 pounds last year. every five pounds of fudge sold, one pound is Marshmallow and the remainder is split evenly between Plain and Peanut. Fixed costs for Death by Chocolate are \$24,000 and additional information follows:

	Marshmallow	Plain	Peanut
Sales price per pound	\$10.00	\$8.00	\$12.00
Variable cost per pound	\$6.00	\$5.00	\$9.00

- 231) The sales mix percentage at Death by Chocolate of Peanut based upon pounds is 231) _____
 A) 22%. B) 75%. C) 40%. D) 20%.
- 232) The weighted average contribution margin per pound for the three products of Death by Chocolate is 232) _____
 A) \$16.80. B) \$80.00. C) \$1.40. D) \$3.20.
- 233) The break-even sales volume in pounds for Death by Chocolate is 233) _____
 A) 3,125. B) 1,429. C) 4,800. D) 7,500.
- 234) Break-even sales in dollars for Death by Chocolate is 234) _____
 A) \$14,286. B) \$30,000. C) \$31,250. D) \$75,000.

Use the information below to answer the following question(s).

Warm Hands sells three styles of heated gloves for motorcycle enthusiasts; Basic, Premium, and Platinum. The following information is taken from Warm Hands budget for the upcoming year:

PRODUCT	UNIT SALES	UNIT PRICE	UNIT VARIABLE COSTS
BASIC	6,000	\$125	\$75
PREMIUM	3,000	\$200	\$100
PLATINUM	1,000	\$300	\$150

Fixed costs are expected to be \$731,250.

- 235) The weighted average contribution margin for the three products of Warm Hands is 235) _____
 A) \$30. B) \$90. C) \$75. D) \$100.
- 236) The break-even sales volume in units for Warm Hands is 236) _____
 A) 8,125. B) 24,375. C) 7,313. D) 9,750.
- 237) The break-even sales in dollars for Warm Hands are 237) _____
 A) \$4,570,313. B) \$1,608,750. C) \$4,021,875. D) \$1,206,645.

Use the information below to answer the following question(s).

Harry's Snack Cart sells three varieties of Sausages on a bun. Harry's budgeted fixed expenses for the upcoming month are \$1. The following is additional budgeted information for the upcoming month:

VARIETY	UNIT SALES	UNIT SELLING PRICE	UNIT VARIABLE COST	UNIT CONTRIBUTION MARGIN
ITALIAN	2,500	\$5.00	\$2.20	\$2.80
BRITISH BANGER	3,500	\$5.00	\$3.00	\$2.00
GERMAN	4,000	\$4.00	\$1.75	\$2.25

- 238) What is the budgeted contribution margin ratio for Harry's Snack Cart? 238) _____
 A) 50.0% B) 50.75% C) 50.3% D) 70.5%
- 239) What is the budgeted break-even sales for Harry's Snack Cart? 239) _____
 A) \$36,000 B) \$25,332 C) \$35,743 D) \$35,468

Use the information below to answer the following question(s).

The following information is for Winnie Company:

Product A: Revenue	\$4.00
Variable Cost	\$1.00
Product B: Revenue	\$6.00
Variable Cost	\$2.00
Total fixed costs are	40,000

- 240) What is the break-even point at Winnie Company assuming the sales mix consists of two units of Product A and one unit of Product B? 240) _____
 A) 4,000 units of B and 8,000 units of A B) 4,025 units of B and 8,050 units of A
 C) 2,025 units of B and 4,050 units of A D) 2,000 units of B and 4,000 units of A
- 241) What is the operating income at Winnie Company assuming actual sales are 300,000 units, and the sales mix is one unit of Product A and two units of Product B? 241) _____
 A) \$1,100,000 B) \$1,040,000 C) \$1,060,000 D) \$1,100,100

Answer the following question(s) using the information below.

The following information is for the Jeffries Corporation:

Product A:	
Revenue	\$16.00
Variable Cost	\$12.00
Product B:	
Revenue	\$24.00
Variable Cost	\$16.00
Total fixed costs	\$75,000

- 242) What is the break-even point at Jeffries Corporation, assuming the sales mix consists of three units of Product A and one unit of Product B? 242) _____
- A) 11,250 units of A and 3,750 units of B B) 18,750 units of A and 6,250 units of B
C) 3,750 units of A and 3,750 units of B D) 10,000 units of A and 5,000 units of B
- 243) What is the operating income at Jeffries Corporation, assuming actual sales total 25,000 units, and the sales mix is three units of Product A and one unit of Product B? 243) _____
- A) \$50,000 B) \$75,000 C) \$225,000 D) \$60,000
- 244) If the sales mix at Jeffries Corporation shifts to four units of Product A and one unit of Product B, then the weighted-average contribution margin will be 244) _____
- A) \$20. B) \$30. C) \$16. D) \$24.
- 245) If the sales mix at Jeffries Corporation shifts to four units of Product A and one unit of Product B, then the break-even point will 245) _____
- A) increase then decrease. B) decrease.
C) decrease then increase. D) increase.

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 246) The Nut House sells almonds, cashews, and pistachios. Pistachios outsold cashews by a margin of 2 to 1 in cans. Sales of almonds were half the sales of cashews in cans. Fixed costs for the Nut House are \$120,000 and additional information follows: 246) _____

Product	Unit Sales Prices	Unit Variable Cost
Almonds	\$8.00	\$4.00
Cashews	\$10.00	\$5.50
Pistachios	\$6.00	\$4.00

What is break-even in terms of Pistachios, Cashews, and Almonds?

- 247) The Nut House sells almonds, cashews, and pistachios. Pistachios outsold cashews by a margin of 3 to 1 in cans. Sales of almonds were one quarter the sales of cashews in cans. Fixed costs for the Nut House are \$72,000 and additional information follows:

247) _____

Product	Unit Sales Prices	Unit Variable Cost
Almonds	\$8.00	\$3.50
Cashews	\$10.00	\$5.50
Pistachios	\$6.00	\$3.00

What is break-even in terms of Pistachios, Cashews, and Almonds?

- 248) Arden Florists sells three types of bouquets at a kiosk in the mall: Carnations, Roses, and Mixtures. They sold 10,000 bouquets last year. Mixtures outsold Roses by a margin of 2 to 1. Sales of Carnations were the same as sales of Roses. Fixed costs for Arden Florists are \$19,500 and additional information follows:

248) _____

Product	Unit Sales Prices	Unit Variable Cost
Carnations	\$28.00	\$14.00
Roses	\$40.00	\$18.00
Mixed	\$20.00	\$12.00

1. Calculate the sales mix percentage of all three products (based upon the number of bouquets).
2. Calculate the weighted average contribution margin for all three types of bouquets.
3. Calculate the break-even volume in number of bouquets.
4. Calculate the break-even sales in dollars.

- 249) Karen's Klothess sells blouses for women and girls. The average selling price and variable cost for each product are as follows:

249) _____

Women: Selling Price \$18.00 Girls: Selling Price \$15.00

Women: Variable Cost \$12.75 Girls: Variable Cost \$10.50

Fixed costs are \$30,000 and cannot be separated evenly between the two products.

Required:

- a. What is the break-even point in units for each type of blouse assuming the sales mix is in favour of women's blouses? Total sales cannot exceed 7,000 units due to space constraints.
- b. What is the operating income assuming the sales mix is 2:1 in favour of women's blouses and sales total 9,900 blouses?

250) Sam's Suits sells garments - mens suits and sport coats The average selling price and variable cost for each product are as follows: 250) _____

	Suits	Sport Coats
Selling Price	\$ 450.00	\$ 320.00
Variable Costs	\$ 300.00	\$ 200.00

Fixed cost for Sam's Suits is \$39,000 and is a common fixed cost.

Required:

- What is the break-even point in units for each type of garment assuming the sales mix is 2:1 in favour of sport coats?
- What is the operating income assuming the sales mix is 2:1 in favour of sport coats, and sales total 600 total garments?

251) Sam's Suits sells garments - mens suits and sport coats The average selling price and variable cost for each product are as follows: 251) _____

	Suits	Sport Coats
Selling Price	\$ 450.00	\$ 320.00
Variable Costs	\$ 300.00	\$ 200.00

Fixed cost for Sam's Suits is \$64,000 and is a common fixed cost.

Required:

- Calculate the contribution margin ratio assuming a sales mix of 3 suits and 2 sport coats.
- What is Sam's Suits break even in Sales dollars with a sales mix of 3 suits and 2 sport coats?

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

252) The margin of safety is the excess of expected sales over break-even sales. 252) _____

253) The margin of safety can be expressed in units, in sales dollars, or as a percentage. 253) _____

254) Companies with high operating leverages generally have higher fixed costs than variable costs. 254) _____

255) Operating leverage refers to the relative amount of fixed and variable costs that make up total costs for a company. 255) _____

256) The operating leverage factor, at a given level of sales, indicates the percentage change in operating income that will occur from a 1% change in volume. 256) _____

257) The operating leverage factor will be exactly "1" only if a company has no fixed costs. 257) _____

258) Companies with low operating leverage has relatively lower variable costs and higher fixed costs. 258) _____

259) A hotel would be an example of a company with low operating leverage. 259) _____

260) Companies with high operating leverage have higher levels of fixed costs and lower levels of variable costs. 260) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

261) A company's margin of safety is computed as 261) _____
A) expected sales - sales at break-even. B) actual sales - expected sales.
C) sales at break-even - expected sales. D) expected sales - actual sales.

262) All else being equal, a company with a high operating leverage will have 262) _____
A) a relatively high contribution margin ratio.
B) relatively low fixed costs.
C) relatively high variable costs.
D) a relatively low risk.

263) All else being equal, a company with a low operating leverage will have 263) _____
A) a relatively high risk.
B) relatively high fixed costs.
C) relatively high variable costs.
D) a relatively high contribution margin ratio.

264) To find a firm's operating leverage factor at a given level of sales, you 264) _____
A) divide variable expenses by fixed expenses.
B) divide the contribution margin by operating income.
C) divide operating income by contribution margin.
D) divide the contribution margin by fixed expenses.

265) By multiplying the operating leverage factor by the anticipated percentage change in volume, one 265) _____
can find the anticipated change
A) in contribution margin. B) in fixed expenses.
C) in sales revenue. D) in operating income.

266) The higher the operating leverage factor, the 266) _____
A) less the impact of volume on operating income.
B) greater the impact of volume on operating income.
C) more likely operating income is to stay constant.
D) greater the chance that none of the above occur.

267) Which of the following would likely have the lower operating leverage? 267) _____
A) Golf course B) Theme park C) Hotel D) Retailer

- 268) Total predicted sales (in units) minus total break-even sales in units divided by total predicted sales (in units) yields _____
 A) margin of safety percentage. B) contribution margin ratio.
 C) percent of sales mix. D) contribution margin per unit.
- 269) The lowest possible operating leverage factor for a company is _____
 A) -1. B) zero.
 C) +1. D) somewhere between zero and +1.
- 270) Wynn Technology USB drives sell for \$15 per drive. Unit variable expenses total \$9. The break-even sales in units is 2,000 and budgeted sales in units is 4,200. What is the margin of safety in dollars? _____
 A) \$93,000 B) \$147 C) \$33,000 D) \$2,200

Use the information below to answer the following question(s).

Julia's Catering has a monthly target operating income of \$6,000. Variable expenses are 40% of sales and monthly fixed expenses are \$3,600.

- 271) What is the monthly margin of safety in dollars if Julia's Catering achieves its operating income goal? _____
 A) \$16,000 B) \$4,000 C) \$10,000 D) \$22,000
- 272) What is the monthly margin of safety as a percentage of target sales in dollars at Julia's Catering? _____
 A) 62.50% B) 137.50% C) 166.67% D) 60.00%
- 273) What is Julia's operating leverage factor at the target level of operating income? _____
 A) 1.60 B) 2.67 C) 0.63 D) 0.40

Use the information below to answer the following question(s).

Veron Corporation is considering building a new plant in Europe. They predict sales at the new plant to be 100,000 units at \$4 Below is a listing of estimated expenses:

Category	Total Annual Expenses	% of Annual Expense that are Fixed
Materials	\$20,000	10%
Labour	\$30,000	20%
Overhead	\$50,000	40%
Marketing/Admin	\$10,000	60%

A European firm was contracted to sell the product and will receive a commission of 13% of the sales price. No Canadian home expenses will be allocated to the new facility.

- 274) How much does the European contractor expect to make in commissions? _____
 A) \$80,000 B) \$40,000 C) \$13,000 D) \$52,000

- 275) The variable cost per unit for Veron Corporation is 275) _____
 A) \$1.28. B) \$0.86. C) \$0.76. D) \$1.62.
- 276) The contribution margin ratio for Veron Corporation is 276) _____
 A) 32.00%. B) 132.00%. C) 68.00%. D) 81.00%.
- 277) The margin of safety percentage for Veron Corporation is 277) _____
 A) 87.50%. B) 112.50%. C) 93.56%. D) 12.50%.

Use the information below to answer the following question(s).

Southwest Electric Co-op has variable expenses of 20% of sales and monthly fixed expenses of \$150,000. The monthly target operating income is \$50,000.

- 278) What is the monthly margin of safety in dollars if Southwest Electric Co-op achieves its operating 278) _____
 income goal?
 A) \$62,500 B) \$437,500 C) \$125,000 D) \$250,000
- 279) What is the monthly margin of safety as a percentage of target sales in dollars at Southwest 279) _____
 Electric Co-op?
 A) 80.00% B) 25.00% C) 175.00% D) 33.33%
- 280) What is Southwest Electric Co-op's operating leverage factor at the target level of operating 280) _____
 income?
 A) 2.00 B) 4.00 C) 0.25 D) 1.33

Use the information below to answer the following question(s).

Hartville Kitchens has a monthly target operating income of \$18,000. Variable expenses are 25% of sales and monthly fixed expenses are \$12,000.

- 281) What is the monthly margin of safety in dollars if Hartville Kitchens achieves its operating income 281) _____
 goal?
 A) \$8,000 B) \$40,000 C) \$56,000 D) \$24,000

Use the for the next few questions

North East printing produces posters of popular music groups for sale at concerts and festivals. The company has fixed expenses of \$319,500 per month plus variable costs of \$2.40 per poster. North East sells each poster for \$9.50. North East has a target monthly income of \$213,000.

- 282) What is the monthly margin of safety in units if North East achieves its operating income goal? 282) _____
 A) 100,000 posters B) 45,000 posters
 C) 75,000 posters D) 30,000 posters
- 283) What is the monthly margin of safety in dollars if North East achieves its operating income goal? 283) _____
 A) \$712,566 B) \$427,540 C) \$285,026 D) \$532,500

- 284) What is the monthly margin of safety percentage if North East achieves its operating income goal? 284) _____
 A) 100% B) 60% C) 80% D) 40%
- 285) What is North East's operating leverage if it achieves its operating income goal? 285) _____
 A) 2.5 B) 4.0 C) 1.0 D) 0.4
- 286) If sales increase by 10%, what would be the expected percentage change in North East's operating income? 286) _____
 A) 40% B) 4% C) 25% D) 10%

Use the information below to answer the following question(s).

Hartville Kitchens has a monthly target operating income of \$18,000. Variable expenses are 25% of sales and monthly fixed expenses are \$12,000.

- 287) What is the monthly margin of safety as a percentage of target sales in dollars at Hartville Kitchens? 287) _____
 A) 75% B) 60% C) 140% D) 150%
- 288) What is Hartville Kitchens' operating leverage factor at the target level of operating income? 288) _____
 A) 0.60 B) 1.67 C) 0.33 D) 2.50

Use the information below to answer the following question(s).

Duncan Enterprises is considering building a new plant in Canada. They predict sales at the new plant to be 50,000 units at \$10.00/unit. Below is a listing of estimated expenses:

Category	Total Annual Expenses	% of Annual Expense that are Fixed
Materials	\$50,000	10%
Labour	\$90,000	20%
Overhead	\$40,000	30%
Marketing/Admin	\$20,000	50%

A Canadian firm was contracted to sell the product and will receive a commission of 20% of the sales price. No U.S. home office expenses will be allocated to the new facility.

- 289) How much does the Canadian contractor expect to make in commissions? 289) _____
 A) \$50,000 B) \$100,000 C) \$400,000 D) \$10,000
- 290) The variable cost per unit for Duncan Enterprises is 290) _____
 A) \$5.10. B) \$6.00. C) \$2.90. D) \$3.10.
- 291) The contribution margin ratio for Duncan Enterprises is 291) _____
 A) 151.00%. B) 69.00%. C) 51.00%. D) 49.00%.

- 292) The margin of safety percentage for Duncan Enterprises is 292) _____
 A) 18.37%. B) 118.37%. C) 94.04%. D) 81.63%.
- 293) Creative Cravat neckties sell for \$75 each. Unit variable expenses total \$50. The break-even sales 293) _____
 in units is 4,000 and budgeted sales in units is 9,600. What is the margin of safety in dollars?
 A) \$100,000 B) \$280,000 C) \$420,000 D) \$300,000

Use the information below to answer the following question(s).

Ava's Fruit Cups has a monthly target operating income of \$5,425. Variable expenses are 30% of sales and monthly fixed expenses are \$9,800.

- 294) What is Ava's Fruit Cups monthly margin of safety in dollars if the business achieves its operating 294) _____
 income goal?
 A) \$6,525 B) \$7,750 C) \$1,750 D) \$11,070
- 295) What is the monthly margin of safety as a percentage of sales if Ava's Fruit Cups achieves its 295) _____
 operating income goal?
 A) 50.9% B) 55.4% C) 142.8% D) 35.6%
- 296) What is Ava's operating leverage factor at the target level of operating income? 296) _____
 A) 0.36 B) 1.8 C) 2.8 D) 0.55

Use the information below to answer the following question(s).

Northern Electric Co-op has variable expenses of 25% of sales and monthly fixed expenses of \$285,000. The monthly target operating income is \$75,000.

- 297) What is the monthly margin of safety in dollars if Northern Electric Co-op achieves its operating 297) _____
 income goal?
 A) \$100,000 B) \$230,000 C) \$185,000 D) \$285,000
- 298) What is the monthly margin of safety as a percentage of target sales in dollars at Northern Electric 298) _____
 Co-op?
 A) 59.4 B) 20.8 C) 38.5 D) 47.9
- 299) What is N Electric Co-op's operating leverage factor at the target level of operating income? 299) _____
 A) 3.8 B) 0.79 C) 4.8 D) 1.26

Answer the following question(s) using the information below.

Southwestern College is planning to hold a fund raising banquet at one of the local country clubs. It has two options for the b.

OPTION 1: *Crestview Country Club*

- a. Fixed rental cost of \$1,000
- b. \$12 per person for food

OPTION 2: *Tallgrass Country Club*

- a. Fixed rental cost of \$3,000
- b. A caterer who charges \$8.00 per person for food

Southwestern College has budgeted \$1,800 for administrative and marketing expenses. It plans to hire a band which will cost \$800. Tickets are expected to be \$30 per person. Local business supporters will donate any other items required for the event.

300) Which option provides the least amount of risk? 300) _____
A) Option one
B) Option two
C) Both options provide the same amount of risk.
D) Neither option has risks.

301) What is the break-even point in units for each option? 301) _____
A) 120 units and 187 units respectively B) 96 units and 114 units respectively
C) 56 units and 137 units respectively D) 200 units and 255 units respectively

302) What is the operating income for each option if 600 people attend? 302) _____
A) \$7,200 and \$7,600 respectively B) \$14,400 and \$12,400 respectively
C) \$7,900 and \$8,000 respectively D) \$9,800 and \$10,200 respectively

303) What is the degree of operating leverage for both options if 600 people attend? 303) _____
A) 1.37 and 1.75 times respectively B) 1.5 times and 1.74 times respectively
C) 0.75 and 1.07 times respectively D) 1.10 and 1.29 times respectively

Use the information below to answer the following question(s).

Dr. Mickey Finn performs a certain procedure for \$400.00. The fixed costs are \$8,000 and variable costs are \$200.00 per proced

304) What is the margin of safety assuming the procedure is performed 200 times? 304) _____
A) \$80,000 B) \$32,000 C) \$40,000 D) \$64,000

305) What is the margin of safety in units assuming the procedure is performed 200 times? 305) _____
A) 200 units B) 160 units C) 130 units D) 140 units

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use the following information for the next questions

Biker Socks produces heated socks for motorcycling and other outdoor activities. The socks variable cost of \$57 per pair which are then sold for \$95 per pair. Monthly fixed costs are \$418,000; current sales are 13,000 pairs per month.

- 306) Compute the break-even sales in units 306) _____
- 307) Compute Biker Sock's margin of safety in units and sales dollars 307) _____
- 308) Compute Biker Socks' margin of safety as a percentage 308) _____
- 309) Compute Biker Socks operating leverage factor 309) _____
- 310) Using Biker Socks' operating leverage factor, compute the change in operating income if sales fall by 20%. Provide proof of your answer. 310) _____
- 311) Arnold Bess, Tailor has a monthly target operating income of \$5,000. Variable expenses are 311) _____
of sales and monthly fixed expenses are \$2,000.

Requirements:

1. What is the monthly margin of safety in dollars if the business achieves its operating income goal?
2. What is the monthly margin of safety as a percentage of target sales in dollars?
3. What is Arnold Bess's operating leverage factor at the target level of operating income?

- 312) Happy Feet hiking socks have variable cost of \$6 per pair which are then sold for \$10 per pair. 312) _____
Monthly fixed costs are \$18,000; current sales are 12,000 pairs per month.

Required:

1. Compute the break-even sales in units.
2. Compute ABC's margin of safety in units and sales dollars.
3. Compute ABC's margin of safety as a percentage.
4. Compute ABC's operating leverage factor.
5. Compute ABC's % of operating income decline if sales fall by 20%.

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

- 313) Suppose a company decided to automate a production line with an investment in robotic equipment. Explain what effects this would have on a company's cost structure using CVP terminology and the concept of operating leverage. Could these changes have any possible negative effect on the firm?
- 314) Explain the relationship between Operating Leverage and risk.

- 315) Bonnie and Clyde started the BC Restaurant a few years ago. They rented a building, bought equipment, and hired two employees to work full time at a fixed monthly salary. Utilities and other operating charges remain fairly constant during each month. During the past two years the business has grown with average sales increasing one percent a month. This situation pleases both Bonnie and Clyde, but they do not understand how sales can grow by one percent a month while profits are increasing at an even faster pace. They are afraid that one day they will wake up to increasing sales but declining profits.

Required:

Explain why the profits have increased at a faster rate than sales.

Answer Key

Testname: UNTITLED1

- 1) TRUE
- 2) FALSE
- 3) TRUE
- 4) FALSE
- 5) FALSE
- 6) TRUE
- 7) TRUE
- 8) TRUE
- 9) TRUE
- 10) TRUE
- 11) TRUE
- 12) FALSE
- 13) TRUE
- 14) FALSE
- 15) FALSE
- 16) A
- 17) C
- 18) C
- 19) A
- 20) D
- 21) C
- 22) D
- 23) D
- 24) D
- 25) C
- 26) B
- 27) B
- 28) C
- 29) C
- 30) C
- 31) B
- 32) A
- 33) C
- 34) B
- 35) D
- 36) B
- 37) B
- 38) C
- 39) B
- 40) C
- 41) C
- 42) A

Answer Key

Testname: UNTITLED1

- 43) D
- 44) A
- 45) B
- 46) A
- 47) B
- 48) A
- 49) C
- 50) C
- 51) B
- 52) A
- 53) D
- 54) A
- 55) D
- 56) A
- 57)

Pettay Enterprises	
Contribution Margin Income Statement	
Total sales revenue	\$420,000
Less variable costs:	
Variable manufacturing costs	\$(142,000)
Variable marketing costs	\$(37,000)
Variable administrative costs	\$(28,000)
Contribution margin	\$ 213,000
Less fixed costs:	
Fixed manufacturing costs	\$(112,000)
Fixed marketing costs	\$(43,000)
Fixed administrative costs	\$(18,000)
Operating income	\$ 40,000

- 58) Nova Enterprises Income Statement For the Year Ending December 31

Revenue (70,000 × \$8)	\$540,000
Less Variable Costs:	
Variable Manufacturing Costs (70,000 × \$3)	(\$210,000)
Variable Marketing Costs (70,000 × \$0.5)	(35,000)
Variable Administrative Costs	(28,000)
Contribution Margin	\$ 267,000
Less Fixed Costs:	
Fixed Manufacturing Costs	(\$120,000)
Fixed Marketing Costs	(\$ 50,000)
Fixed Administrative Costs	(\$ 20,000)
Operating Income	\$ 77,000

Answer Key

Testname: UNTITLED1

- 59) A change in volume is the only factor that affects costs
Managers can identify whether a cost is fixed or variable
All costs are linear through the relevant range
Revenues are linear through the relevant range
Inventory levels don't change
The sales mix won't change

60) Student answers will vary but should include discussion about the assumptions particularly:

Managers can identify whether a cost is fixed or variable - this can be difficult as many costs are mixed.
All costs are linear through the relevant range - there are often volume discounts as companies buy more products.
Revenues are linear through the relevant range - often customers must be offered discounts to purchase more products.
Inventory levels don't change - this would require perfect estimates of volume.
The sales mix won't change - as above, this would assume perfect estimations

- 61) FALSE
62) TRUE
63) FALSE
64) FALSE
65) FALSE
66) TRUE
67) TRUE
68) FALSE
69) FALSE
70) TRUE
71) FALSE
72) B
73) D
74) B
75) A
76) A
77) B
78) C
79) B
80) A
81) B
82) A
83) A
84) D
85) C
86) B
87) D
88) B
89) B
90) B
91) D

Answer Key

Testname: UNTITLED1

- 92) B
- 93) B
- 94) C
- 95) C
- 96) B
- 97) D
- 98) D
- 99) C
- 100) D
- 101) A
- 102) D
- 103) B
- 104) D
- 105) A
- 106) D
- 107) B
- 108) C
- 109) B
- 110) B
- 111) D
- 112) A
- 113) C
- 114) C
- 115) D
- 116) B
- 117) A
- 118) C
- 119) B
- 120) D
- 121) A
- 122) D
- 123) C
- 124) C
- 125) A
- 126) B
- 127) D
- 128) B
- 129) C
- 130) A
- 131) A

Answer Key

Testname: UNTITLED1

132) 1.

Total fixed costs	\$96,000
Predicted operating income	\$97,500
	\$193,500
Divide by	Divide by
Unit contribution margin	\$15.00
Unit sales needed to reach target income	12,900

2.

New fixed costs	\$192,000
Predicted operating income	\$97,500
	\$289,500
Divide by	Divide by
Unit contribution margin	\$15.00
Unit sales needed to reach target income at new level of fixed costs	19,300

133) 1.

Total fixed costs	\$22,800
Predicted operating income	\$34,800
	\$57,600
Divide by	Divide by
Unit contribution margin	\$12.00
Unit sales needed to reach target income	4,800

2.

New fixed costs	\$45,600
Predicted operating income	\$34,800
	\$80,400
Divide by	Divide by
Unit contribution margin	\$12.00
Unit sales needed to reach target income at new level of fixed costs	6,700

Answer Key

Testname: UNTITLED1

134) 1.

Selling price per unit	40.00
Variable cost per unit	\$(15.00)
Contribution margin per unit	\$25.00

2. Contribution Margin per unit / Selling price per unit = \$25 / \$40 = .625

3.

Total fixed cost	\$270,000
Divide by	Divide by
Contribution margin per unit	\$25.00
Break-even in units	10,800

4.

Selling price per unit	\$40.00
Variable cost per unit	\$(15.00)
Contribution margin per unit	\$25.00
Total fixed cost	\$270,000
Targeted operating income	\$500,000
	\$770,000
Divide by	Divide by
Contribution margin per unit	\$25.00
Unit sales at target income	30,800

5. Total Fixed Costs \$270,000
 Target Income \$300,000
 \$570,000
 Divide by Contribution Margin Ratio 0.625
 Revenue at target income \$912,000

135) 1.

Total fixed costs	\$30,000
Predicted operating income	\$84,000
	\$114,000
Divide by	Divide by
Unit contribution margin	\$10.00
Unit sales needed to reach target income	11,400

2.

New fixed costs	\$60,000
Predicted operating income	\$84,000
	\$144,000
Divide by	Divide by
Unit contribution margin	\$10.00
Unit sales needed to reach target income at new level of fixed costs	14,400

Answer Key

Testname: UNTITLED1

- 136) a. N = Break-even units
 $\$150N - \$100N - \$2,500 = 0$
 $\$50N - \$2,500 = 0$
 $N = \$2,500/\50
 $N = 50$ units
- b. N = Break-even units
 $\$150N - \$100N - \$2,500 - \$10,000 = 0$
 $\$50N - \$12,500 = 0$
 $N = \$12,500/\50
 $N = 250$ units
- 137) a. Contribution margin ratio is $\$20,000/\$50,000 = 40\%$
b. Fixed costs $\$12,500/0.40 \text{ CM}\% = \$31,250$ in sales
c. $[\text{Fixed costs } \$12,500 + \text{Net income } \$40,000]/0.40 \text{ CM}\% = \$131,250$ in sales
d. $\$50,000 \times 0.40 \text{ CM}\% = \$20,000$ increase in net income
- 138) The break-even point is the level of production and sales at which total revenues equal total costs. Managers should be concerned about the break-even point because it helps determine when a business venture will be profitable. Break-even point shows a company how far sales can decline before a net loss will be incurred. It helps to assess the risk of loss.
- 139) TRUE
- 140) FALSE
- 141) TRUE
- 142) TRUE
- 143) TRUE
- 144) FALSE
- 145) TRUE
- 146) C
- 147) A
- 148) A
- 149) B
- 150) D
- 151) A
- 152) D
- 153) B
- 154) B
- 155) D
- 156) B
- 157) B
- 158) C
- 159) A
- 160) C
- 161) B
- 162) D
- 163) C
- 164) A

Answer Key

Testname: UNTITLED1

165) A

166) D

167) D

168) C

169) B

170) D

171) B

172) A

173) A

174) B

175) B

176) B

177) D

178) A

179) B

180) A

181) B

182) A

183) B

184) B

185) A

186) B

187) B

188) C

189) D

190) A

191) A

192) D

193) C

194) B

195) Unit Contribution = Selling Price x Contribution Margin Ratio = $\$40 \times 0.4 = \16

Break Even = Fixed Costs / Unit Contribution = $\$240,000 / \$16 = 15,000$ units

196) Contribution Margin - Fixed Costs

$20,000 \text{ units} \times (\$40 \times 0.4) - \$240,000 = \$80,000$

Answer Key

Testname: UNTITLED1

197) Current Operating Income:

Contribution Margin - Fixed Costs

$$20,000 \text{ units} \times (\$40 \times 0.4) - \$240,000 = \$80,000$$

Do Nothing:

$$20,000 \text{ units} \times (1 - 0.2) \times (\$40 \times 0.4) - \$240,000 = \$16,000$$

Increase Marketing (Fixed) costs:

$$20,000 \text{ units} \times (\$40 \times 0.4) - \$290,000 = \$30,000$$

Reduce Selling Price:

$$\text{Step 1 determine variable cost per unit } \$40 \times (1 - 0.4) = \$24.00$$

$$\text{New Selling price } \$40 \times (1 - 0.1) = \$36$$

$$20,000 \text{ units} \times (\$36 - \$24) - \$240,000 = \$0$$

The best option is to increase marketing costs as it yields the best outcome of the three alternatives.

198) Current Operating Income:

Contribution Margin - Fixed Costs

$$20,000 \text{ units} \times (\$40 \times 0.4) - \$240,000 = \$80,000$$

New Machine:

$$20,000 \text{ units} \times (\$35 - \$15) - (\$240,000 + \$80,000) = \$80,000$$

Out source Production:

$$20,000 \text{ units} \times (\$35 - \$25) - (\$240,000 - \$120,000) = \$80,000$$

Both options achieve the same result so Max Industries can choose either one.

199)

Part A		
Sales price per unit	\$1,000.00	
Variable expense per unit	\$(600.00)	
Contribution margin per unit	\$400.00	
Reduction in fixed expenses	\$20,000	
Divide by	Divide by	
Contribution margin per unit	\$400.00	
Change in breakeven units	50	decrease by

Part B		
Sales price per unit	\$1,000.00	
Variable expense per unit	\$(600.00)	
Contribution margin per unit	\$400.00	
Contribution margin per unit	\$400.00	
Sales increase in units	1,000	
Increase in contribution margin from additional sales	\$400,000	
Increase in contribution margin from additional sales	\$400,000	
Increase in fixed expenses	\$(15,000)	
Change in operating income	\$385,000	Increase of

Answer
Testna

Contribution margin per unit	\$400.00	
Contribution margin per unit	\$400.00	
Sales increase in units	1,000	
Increase in contribution margin from additional sales	\$400,000	
Increase in contribution margin from additional sales	\$400,000	
Increase in fixed expenses	\$(15,000)	
Change in operating income	\$385,000	Increase of

Part C	
Sales price per unit	\$1,000.00
Variable expense per unit	\$(600.00)
Contribution margin per unit	\$400.00
Initial fixed expenses	\$500,000
Divide by	Divide by
Contribution margin per unit	\$400.00
Breakeven in units at old fixed expense	1,250
Initial fixed expenses	\$500,000
Reduction in fixed expenses	\$(50,000)
New fixed expenses	\$450,000
New fixed expenses	\$450,000
Divide by	Divide by
Breakeven in units at old fixed expense	1,250
Target contribution margin per unit	\$360.00
Sales price per unit	\$1,000.00
Target contribution margin per unit	\$(360.00)
Variable expense at new contribution margin	\$640.00
Variable expense at new contribution margin	\$640.00
Variable expense per unit	\$(600.00)
Change in variable expense to keep breakeven units the same	\$ 40.00

Part D	
Sales price per unit	\$1,000.00
Variable expense per unit	\$(600.00)
Contribution margin per unit	\$400.00
Initial fixed expenses	\$500,000
Divide by	Divide by
Contribution margin per unit	\$400.00
Breakeven in units at old fixed expense	1,250
Initial fixed expenses	\$500,000
Increase in fixed expenses (%)	20%
	\$100,000
Initial fixed expenses	\$500,000
New fixed expenses	\$600,000
New fixed expenses	\$600,000
Divide by	Divide by
Breakeven in units at old fixed expense	1,250
Target contribution margin per unit	\$480.00
Variable expense per unit	\$600.00
Target contribution margin per unit	\$480.00
New sales price at same variable expense	\$1,080.00

Answer Key

Testname: UNTITLED1

200) 1. Incremental break-even in sales dollars.

Revenue (\$14,750,000 1.02)	\$15,045,000
Cost of goods sold (8,850,000 0.92)	(8,142,000)
Gross profit	\$6,903,000
CM ratio	46%
BE in sales \$= \$1,900,000/0.46	\$4,130,435

Proof: $\$4,130,435 - [(\$4,130,435 \times 54\%) + \$1,900,000] = \$ (200)$ due to rounding 46%

2. Effect on first year operating income

Revenue (\$14,750,000 1.02)	\$15,045,000
Cost of goods sold $(8,850,000 \times 0.92) + (\$1,900,000/5)$	(8,522,000)
Gross profit	\$6,523,000
Operating expenses	1,230,000
Operating income	\$5,293,000

Proof: $(\$14,750,000 \times 0.02) + (\$8,850,000 \times 0.08) - (\$1,900,000/5) = \$623,000$
 $\$5,293,000 - \$4,670,000 = \$623,000$

3. Years to cover the cost of the new control system

$\$1,900,000 / [(\$14,750,000 \times 0.02) + (\$8,850,000 \times 0.08)] = 1.89$ years

201) a. Option 1 N = Break-even in pillows

$$\$25N - \$10N - \$5,010 = 0$$

$$\$15N - \$5,010 = 0$$

$$N = \$5,010/\$15 = 334 \text{ pillows}$$

Option 2 N = Break-even in pillows

$$\$25N - \$10N - 0.10(\$25N) - \$4,000 = 0$$

$$\$12.5N - \$4,000 = 0$$

$$N = \$4,000/\$12.5 = 320 \text{ pillows}$$

Option 3 N = Break-even in pillows

$$\$25N - \$10N - 0.20(\$25N) = 0$$

$$\$10N - \$0 = 0$$

$$N = \$0/\$10 = 0 \text{ pillows}$$

b. Option 1 profit for 800 pillows = $\$15 \times 800 - \$5,010 = \$6,990$

Option 2 profit for 800 pillows = $\$12.5 \times 800 - 4,000 = \$6,000$

Option 3 profit for 800 pillows = $\$10 \times 800 = \$8,000$

Option 3 is the best choice.

Answer Key

Testname: UNTITLED1

202) a. Option 1

B/E = Fixed Costs/Contribution Margin

$\$10,500 / (\$64 - \$16) = 218.75$ round up to 219 pillows

Option 2

B/E = Fixed Costs/Contribution Margin

$\$7,000 / ((\$64 \times (1 - 0.1)) - \$16) = 168.27$ round up to 169 pillows

Option 3

B/E = Fixed Costs/Contribution Margin

$\$4,000 / ((\$64 \times (1 - 0.2)) - \$16) = 113.64$ round up to 114 pillows

b. Option 1 profit for 600 pillows = $(\$64 - \$16) \times 600 - \$10,500 = \$18,300$

Option 2 profit for 600 pillows = $(\$64 - \$6.4 - \$16) \times 600 - \$7,000 = \$17,960$

Option 3 profit for 600 pillows = $(\$64 - \$12.8 - \$16) \times 600 - \$4,000 = \$17,120$

Option 1 is the best choice.

c. Option 1 profit for 200 pillows = $(\$64 - \$16) \times 200 - \$10,500 = (\$900)$

Option 2 profit for 200 pillows = $(\$64 - \$6.4 - \$16) \times 200 - \$7,000 = \$1,320$

Option 3 profit for 200 pillows = $(\$64 - \$12.8 - \$16) \times 200 - \$4,000 = \$3,040$

Option 3 is the best choice.

203) a. Option 1 N = Break-even units

$\$30N - \$18N - \$15,000 = 0$

$\$12N - \$15,000 = 0$

$N = \$15,000 / \$12 = 1,250$ units

rent at break-even = $\$15,000$

Option 2 N = Break-even units

$\$30N - \$18N - 0.10(\$30N) - \$9,000 = 0$

$\$9N - \$9,000 = 0$

$N = \$9,000 / \$9 = 1,000$ units

Rent at break-even = $\$9,000 + (0.10 \times \$30 \times 1,000) = \$12,000$

Option 3 N = Break-even units

$\$30N - \$18N - 0.20(\$30N) - \$4,800 = 0$

$\$6N - \$4,800 = 0$

$N = \$4,800 / \$6 = 800$ units

Rent at break-even = $\$4,800 + (0.20 \times \$30 \times 800) = \$9,600$

b. Option 3 from 0 to 1,400 units for \$4,800 plus \$6 per unit.

Option 2 from 1,401 to 2,000 for \$9,000 plus \$3 per unit.

Option 1 above 2,000 for \$15,000.

The preferable option at zero will be Option 3 as it has the lowest fixed cost. The incremental contribution margin betw
Option 3 and Option 2 is (20% - 10% of revenue; \$3/unit). The difference in fixed cost is (\$9,000 - \$4,800 = \$4,200).

Therefore, Option 3 will be preferable until the benefit of the lower fixed cost is eliminated by the cost of the lower
contribution margin (\$4,200/\$3 per unit = 1,400 units). Similar calculation for determining the level at which Option 1
is preferable over Option 2: $(\$15,000 - \$9,000) / \$3$ per unit = 2,000 units.

204) FALSE

Answer Key

Testname: UNTITLED1

- 205) TRUE
- 206) FALSE
- 207) FALSE
- 208) FALSE
- 209) TRUE
- 210) TRUE
- 211) TRUE
- 212) FALSE
- 213) FALSE
- 214) FALSE
- 215) TRUE
- 216) A
- 217) B
- 218) A
- 219) D
- 220) C
- 221) D
- 222) D
- 223) C
- 224) B
- 225) C
- 226) B
- 227) D
- 228) C
- 229) B
- 230) C
- 231) C
- 232) D
- 233) D
- 234) D
- 235) C
- 236) D
- 237) B
- 238) A
- 239) A
- 240) A
- 241) C
- 242) A
- 243) A
- 244) D
- 245) D

Answer Key

Testname: UNTITLED1

246) Step 1 - Determine Sales Mix

Let N - number of Cashews

Pistachios are 2N

Almonds are 0.5N

The Sales mix is 1 Almond, 2 Cashew, 4 Pistachio

	Almonds	Cashews	Pistachios	
Selling Price	\$ 8.00	\$ 10.00	\$ 6.00	
Variable Costs	\$ 4.00	\$ 5.50	\$ 4.00	
Contribution Margin	\$ 4.00	\$ 4.50	\$ 2.00	
Weight	1	2	4	7
	\$ 4.00	\$ 9.00	\$ 8.00	\$ 21.00
Weighted Average				\$ 3.00
Contribution Margin				

Break Even = $\$120,000 / \$3.00 = 40,000$ units

Almonds = $1/7 \times 40,000 = 5,715$

Cashews = $2/7 \times 40,000 = 11,429$

Pistachios = $4/7 \times 40,000 = 22,858$

247) Step 1 - Determine Sales Mix

Let N - number of Cashews

Pistachios are 3N

Almonds are 0.25N

The Sales mix is 1 Almond, 4 Cashew, 12 Pistachio

	Almonds	Cashews	Pistachios	
Selling Price	\$ 8.00	\$ 10.00	\$ 6.00	
Variable Costs	\$ 3.50	\$ 5.50	\$ 3.00	
Contribution Margin	\$ 4.50	\$ 4.50	\$ 3.00	
Weight	1	4	12	17
	\$ 4.50	\$ 18.00	\$ 36.00	\$ 58.50
Weighted Average				\$ 3.44
Contribution Margin				

Break Even = $\$72,000 / \$3.44 = 20,931$ units

Almonds = $1/17 \times 20,931 = 1,232$

Cashews = $4/17 \times 20,931 = 4,925$

Pistachios = $12/17 \times 20,931 = 14,775$

Answer Key

Testname: UNTITLED1

248) a.

Sales mix, Carnations	1
Sales mix, Roses	1
Sales mix, Mixtures	2
Sales mix for all products	4
Sales mix, Mixtures	2
Divide by	Divide by
Sales mix for all products	4
Mixtures sales mix percentage	50%

b.

Sales price per unit	\$28.00	\$40.00	\$20.00
Variable cost per unit	\$(14.00)	\$(18.00)	\$(12.00)
Contribution margin per unit	\$14.00	\$22.00	\$8.00
Sales mix	1	1	2
Total contribution margin	\$14.00	\$22.00	\$16.00
Total contribution margin, Carnations	\$14.00		
Total contribution margin, Roses	\$22.00		
Total contribution margin, Mixtures	\$16.00		
Total contribution margin for all products	\$52.00		
Sales mix, Carnations	1		
Sales mix, Roses	1		
Sales mix, Mixtures	2		
Sales mix for all products	4		
Total contribution margin for all products	\$52.00		
Divide by	Divide by		
Sales mix for all products	4		
Weighted average contribution margin	\$13.00		

c.

Answer Key

Testname: UNTITLED1

c.

	Carnations
Sales price per unit	\$28.00
Variable cost per unit	\$(14.00)
Contribution margin per unit	\$14.00
Sales mix	1
Total contribution margin	\$14.00
Total contribution margin, Carnations	\$14.00
Total contribution margin, Roses	\$22.00
Total contribution margin, Mixtures	\$16.00
Total contribution margin for all products	\$52.00
Sales mix, Carnations	1
Sales mix, Roses	1
Sales mix, Mixtures	2
Sales mix for all products	4
Total contribution margin for all products	\$52.00
Divide by	Divide by
Sales mix for all products	4
Weighted average contribution margin	\$13.00
Fixed expenses	\$19,500
Divide by	Divide by
Weighted average contribution margin	\$13.00
Total breakeven units	1,500

d.

Answer Key

Testname: UNTITLED1

d.

	Carnations	Roses	Mixtures
Sales price per unit	\$28.00	\$40.00	\$20.00
Variable cost per unit	\$(14.00)	\$(18.00)	\$(12.00)
Contribution margin per unit	\$14.00	\$22.00	\$8.00
Sales mix	1	1	2
Total contribution margin	\$14.00	\$22.00	\$16.00
Total contribution margin, Carnations	\$14.00		
Total contribution margin, Roses	\$22.00		
Total contribution margin, Mixtures	\$16.00		
Total contribution margin for all products	\$52.00		
	Carnations	Roses	Mixtures
Sales price per unit	\$28.00	\$40.00	\$20.00
Sales mix	1	1	2
Sales mix total revenue	\$28.00	\$40.00	\$40.00
Sales mix total revenue, Carnations	\$28.00		
Sales mix total revenue, Roses	\$40.00		
Sales mix total revenue, Mixtures	\$40.00		
Sales mix total revenue for all products	\$108.00		
Total contribution margin for all products	\$52.00		
Divide by	Divide by		
Sales mix total revenue for all products	\$108.00		
Contribution margin ratio	48%		
Fixed expenses	\$19,500		
Divide by	Divide by		
Contribution margin ratio	48%		
Breakeven in sales dollars	\$40,500		

Answer Key

Testname: UNTITLED1

249) a.

$N = \text{Break-even in girls' blouses}$ $2N = \text{break-even in women's blouses}$

$$\$15N + \$18(2N) - \$10.5N - \$12.75(2N) - \$30,000 = 0$$

$$\$51N - \$36N - \$30,000 = 0$$

$$\$15N - \$30,000 = 0$$

$$N = \$30,000 / \$15$$

$$N = 2,000 \text{ blouses}$$

Therefore, to break even, 2,000 girls' blouses and 4,000 women's blouses need to be sold.

b.

	<u>Girls</u>	<u>Women</u>	<u>Total</u>
Sales in units	<u>3,300</u>	<u>6,600</u>	<u>9,900</u>
Revenue	\$49,500	\$118,800	\$168,300
Variable costs	<u>34,650</u>	<u>84,150</u>	<u>118,800</u>
Cont. Mar.	<u>\$14,850</u>	<u>\$34,650</u>	\$49,500
Fixed costs			<u>30,000</u>
Operating income			<u>\$19,500</u>

250) a.

	Suits	Sport Coats	
Selling Price	\$ 450.00	\$ 320.00	
Variable Costs	\$ 300.00	\$ 200.00	
Contribution Margin	\$ 150.00	\$ 120.00	
Weight	1	2	3
	\$ 150.00	\$ 240.00	\$ 390.00
Weighted Average			\$ 130.00
Contribution Margin			

$$\text{Break even} = \$39,000 / \$130 = 300 \text{ Units}$$

$$\text{Suits} = 1/3 \times 300 = 100$$

$$\text{Sport Coats} = 2/3 \times 300 = 200$$

b.

600 units = 200 suits and 400 sport coats

$$((200 \times \$150) + (400 \times \$120)) - \$39,000 = \$39,000$$

251) a.

	Suits	Sport Coats	
Selling Price	\$ 450.00	\$ 320.00	
Variable Costs	\$ 300.00	\$ 200.00	
Contribution Margin	\$ 150.00	\$ 120.00	
Weight	3	2	
	\$ 450.00	\$ 240.00	\$ 690.00
	\$ 1,350.00	\$ 640.00	\$ 1,990.00

$$\text{Weighted average Contribution margin ratio} = \$690 / \$1,990 = .3467$$

$$\text{b. Break even in dollars} = \$64,000 / 0.3467 = \$184,598$$

252) TRUE

253) TRUE

Answer Key

Testname: UNTITLED1

- 254) TRUE
- 255) TRUE
- 256) TRUE
- 257) TRUE
- 258) FALSE
- 259) FALSE
- 260) TRUE
- 261) A
- 262) A
- 263) C
- 264) B
- 265) D
- 266) B
- 267) D
- 268) A
- 269) C
- 270) C
- 271) C
- 272) A
- 273) A
- 274) D
- 275) A
- 276) C
- 277) A
- 278) A
- 279) B
- 280) B
- 281) D
- 282) D
- 283) C
- 284) D
- 285) A
- 286) C
- 287) B
- 288) B
- 289) B
- 290) A
- 291) D
- 292) D
- 293) C
- 294) B
- 295) D

Answer Key

Testname: UNTITLED1

296) C

297) A

298) B

299) C

300) A

301) D

302) A

303) B

304) D

305) B

306) Fixed Costs / Contribution Margin per unit

$$\$418,000 / (\$95 - \$57) = 11,000$$

307) Break Even in units $\$418,000 / (\$95 - \$57) = 11,000$

$$\text{Contribution Margin Ratio} = (\$95 - \$57) / \$95 = 0.40$$

$$\text{Break Even in dollars} \$418,000 / 0.40 = \$1,045,000$$

$$\text{Margin of safety in units} = 13,000 - 11,000 = 2,000 \text{ units}$$

$$\text{Margin of safety in dollars} = (13,000 \times \$95) - \$1,045,000 = \$190,000$$

308) Using Units $2,000 / 13,000 = 15.38\%$

$$\text{Using Dollars} \$190,000 / \$1,235,000 = 15.38\%$$

309) Contribution Margin at 13,000 units

$$13,000 \times (\$95 - \$57) = \$494,000$$

$$\text{Operating Income at 13,000 units} = \text{Contribution Margin} - \text{Fixed Costs}$$

$$13,000 \times (\$95 - \$57) - \$418,000 = \$76,000$$

$$\text{Operating Leverage} = \text{Contribution Margin} / \text{Operating Income}$$

$$\$494,000 / \$76,000 = 6.5$$

310) Operating income would drop $20\% \times 6.5$ or 130%

Proof:

$$\text{Operating Income at 13,000 units} = \text{Contribution Margin} - \text{Fixed Costs}$$

$$13,000 \times (\$95 - \$57) - \$418,000 = \$76,000$$

Operating income at 20% drop

$$\text{Sales } 13,000 \times (1 - .2) \times \$95 \quad \$988,000$$

$$\text{Variable } 13,000 \times (1 - .2) \times \$57 \quad \underline{592,800}$$

$$\text{Contribution} \quad \$395,200$$

$$\text{Fixed Costs} \quad \underline{418,000}$$

$$\text{Operating Income (Loss)} \quad (\$22,800)$$

$$\text{Change in Operating Income } \$76,000 - (\$22,800) = \$98,800 \text{ drop}$$

$$\$98,800 / \$76,000 = 130\%$$

Answer Key

Testname: UNTITLED1

311) 1.

Sales	100%
Variable expenses (% of sales)	- 60%
Contribution margin ratio	40%
Monthly fixed expenses	\$2,000
Target operating income	\$5,000
	\$7,000
Divide by	Divide by
Contribution margin ratio	40%
Target sales dollars	\$17,500
Monthly fixed expenses	\$2,000
Divide by	Divide by
Contribution margin ratio	40%
Break-even sales dollars	\$5,000
Target sales dollars	\$17,500
Break-even sales dollars	\$(5,000)
Margin of safety in dollars	\$12,500

2.

	1
Variable expenses (% of sales)	- 60%
Contribution margin ratio	40%
Monthly fixed expenses	\$2,000
Target operating income	\$5,000
	\$7,000
Divide by	Divide by
Contribution margin ratio	40%
Target sales dollars	\$17,500
Monthly fixed expenses	\$2,000
Divide by	Divide by
Contribution margin ratio	40%
Break-even sales dollars	\$5,000
Target sales dollars	\$17,500
Break-even sales dollars	\$(5,000)
Margin of safety in dollars	\$12,500
Margin of safety in dollars	\$12,500
Divide by	Divide by
Target sales dollars	\$17,500
Margin of safety as % of target sales dollars	71.43%

Answer Key

Testname: UNTITLED1

3.

Target operating income	\$5,000
Monthly fixed expenses	\$2,000
Contribution margin	\$7,000
Contribution margin	\$7,000
Divide by	Divide by
Target operating income	\$5,000
Operating leverage factor	1.40
Target operating income	\$5,000
Contribution margin	\$3,000
Contribution margin	\$3,000
Target operating income	\$5,000

Answer Key

Testname: UNTITLED1

312)

1.	
Sales price per unit	\$10.00
Variable cost per unit	\$(6.00)
Contribution margin per unit	\$4.00
Total fixed costs	\$18,000
Contribution margin per unit	\$4.00
Break-even in units	4,500

2.	
Current unit sales	12,000
Break-even in units	(4,500)
Margin of safety in units	7,500
Times sales price per unit	\$10.00
Margin of safety in sales dollars	\$75,000

3.	
Margin of safety in units	7,500
Current unit sales	12,000
Margin of safety in percentage	62.50%

4.	
Contribution margin per unit	\$4.00
Current unit sales	12,000
Total contribution margin	48,000
Total fixed costs	\$(18,000)
Operating income	30,000
Total contribution margin	48,000
Operating income	30,000
Operating leverage factor	1.60

5.	
Operating leverage factor	1.60
Times	
Sales decline (percentage)	-20.00%
% change in income if sales fall	-32.00%

- 313) An automated production line would increase fixed costs through extra amortization on the new machinery and also decrease variable costs due to the elimination of direct labour as a result of automation. This would increase the break-even point. This could possibly have a negative effect on the firm if demand for the product produced by this production line is expected to decline in the future. With high fixed costs and low demand, a decline in profits might be more severe due to the presence of unchanging fixed costs as volume.

Answer Key

Testname: UNTITLED1

- 314) The operating leverage factor is used to determine the volatility of operating income relative to changes in sales volume. The larger the operating leverage is, the greater the impact a change in sales volume has on operating income. This is for both increases and decreases in volume. There is a greater gain for a company with a relatively high operating leverage when sales volume goes up but there is a greater loss when sales volume goes down.
- 315) The fixed costs per meal served are decreasing with increased volumes, while the contribution margin per meal served remains constant. Apparently, most of the restaurant's expenses are fixed. Therefore, as sales pass the break-even point the profit will increase even faster because the fixed expenses have already been covered. This allows sales to cover only variable expenses before contributing to the profit margin, thereby causing it to increase at a faster rate.