Chapter 3—Predetermined Overhead Rates, Flexible Budgets, and Absorption/Variable Costing

LEARNING OBJECTIVES

LO 1	Why and how are overhead costs allocated to products and services?
LO 2	What causes underapplied or overapplied overhead, and how is it treated at the end of a period?
LO 3	What impact do different capacity measures have on setting predetermined overhead rates?
LO 4	How are the high-low method and least squares regression analysis used in analyzing mixed costs?
LO 5	How do managers use flexible budgets to set predetermined overhead rates?
LO 6	How do absorption and variable costing differ?
LO 7	How do changes in sales or production levels affect net income computed under absorption and variable costing?

QUESTION GRID

True/False

	Difficulty Level				Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
1	X			x						
2	X			x						
3	X			x						
4	X			x						
5	X			x						
6	X			x						
7	X			x						
8	X			x						
9	X			x						
10	X			x						
11	X			x						
12	X			x						
13	X				x					
14	X				x					
15	X				x					
16	X				x					
17	X				x					
18	X				x					
19	X				x					
20	X				x					
21		x				x				
22		x				x				
23		x				x				
24		x				x				
25		x				x				
26		x					x			
27		x					x			

	Difficulty Level			Learning Objectives						
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
28		x					x			
29		x					x			
30		x					x			
31		x					x			
32		x					x			
33	X							x		
34	X							x		
35	X							x		
36	X							x		
37		x						x		
38		x						x		
39		x							x	
40		x							x	
41		x							x	
42		x							x	
43		x								x
44		x								x
45		x								x
46		x								x

Completion

	Difficulty Level				Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
1	X			x						
2	X			x						
3	X			x						
4	X				x					
5	X				x					
6	X				x					
7	X				x					
8		x				x				
9		x				x				
10		x				x				
11		x				x				
12	X						x			
13	X						x			
14	X						x			
15		x					x			
16		x					x			
17		x					x			
18	X							x		
19	X								x	
20	X								x	
21	X								x	
22	X								x	

Multiple Choice

	Difficulty Level				Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
1	X			x						
2	X			x						
3	x				x					
4					x					
5	x			x						
6	x									
7		x			x					
8	x			x						
9	x						x			
10	x						x			
11	x						x			
12	x						x			
13	x						x			
14	x						x			
15	x						x			
16	x						x			
17	x						x			
18	x				x					
19	x				x					
20	x				x					
21	x				x					
22	x				x					
23	x				x					
24	x				x					
25		x				x				
26		x				x				
27		x				x				
28		x				x				
29	x				x					
30		x					x			
31	x						x			
32	x						x			
33	x							x		
34	x							x		
35	x							x		
36	x							x		
37	x				x					
38		x			x					
39	x				x					
40		x			x					
41	x				x					
42	x						x			
43	x								x	
44	x								x	
45		x							x	
46	x								x	

	Difficulty Level			Learning Objectives						
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
47	x								x	
48		x								x
49	x								x	
50	x								x	
51	x								x	
52	x								x	
53	x								x	
54	x								x	
55	x								x	
56	x									x
57	x								x	
58	x								x	
59	x								x	
60	x								x	
61	x								x	
62	x								x	
63	x								x	
64	x									x
65	x								x	
66	x								x	
67	x									x
68	x								x	
69	x									x
70	x								x	
71	x								x	
72		x							x	
73	x								x	
74	x								x	
75	x								x	
76	x								x	
77	x								x	
78	x								x	
79	x								x	
80	x									x
81	x								x	
82	x								x	
83		x								x
84	x									x
85		x								x
86	X									x
87		x								x
88		x								x
89		x								x
90	X									x
91		x								x
92		x								x
93		x								x
94		x								x
95	X									x

	Difficulty Level			Learning Objectives						
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
96		x								x
97			x							x
98			x							x
99		x								x
100		x								x
101		x								x
102		x								x
103		x								x
104		x								x
105		x								x
106		x								x
107		x								x
108		x								x
109		x								x
110		x								x

Short-Answer

	Difficulty Level				Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
1		x		x						
2		x		x						
3		x		x						
4		x			x					
5		x				x				
6		x					x			
7		x							x	
8		x							x	
9		x							x	
10		x							x	
11		x								x
12		x								x

Problems

	Difficulty Level				Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
1		x			x					
2		x					x			
3		x			x					
4		x					x			
5		x					x			
6		x					x			
7		x					x			
8		x								x
9		x								x
10		x								x
11		x								x

TRUE/FALSE

1. Absorption costing is commonly used for external reporting.

   ANS: T DIF: Easy OBJ: 3-1

2. Absorption costing is commonly used for internal reporting.

   ANS: F DIF: Easy OBJ: 3-1

3. Variable costing is commonly used for internal reporting.

   ANS: T DIF: Easy OBJ: 3-1

4. Variable costing is commonly used for external reporting.

   ANS: F DIF: Easy OBJ: 3-1

5. In an actual cost system, factory overhead is assigned directly to products and services.

   ANS: T DIF: Easy OBJ: 3-1

6. In a normal cost system, factory overhead is assigned directly to products and services.

   ANS: F DIF: Easy OBJ: 3-1

7. In a normal cost system, factory overhead is assigned to an overhead control account and then allocated to products and services.

   ANS: T DIF: Easy OBJ: 3-1

8. In an actual cost system, factory overhead is assigned to an overhead control account and then allocated to products and services.

   ANS: F DIF: Easy OBJ: 3-1

9. A debit to the factory overhead account represents actual overhead costs.

   ANS: T DIF: Easy OBJ: 3-1

10. A debit to the factory overhead account represents applied overhead costs.

    ANS: F DIF: Easy OBJ: 3-1

11. A credit to the factory overhead account represents actual overhead costs.

    ANS: F DIF: Easy OBJ: 3-1

12. A credit to the factory overhead account represents applied overhead costs.

    ANS: T DIF: Easy OBJ: 3-1

13. If actual overhead exceeds applied overhead, factory overhead is said to be overapplied.

ANS: F DIF: Easy OBJ: 3-2

14. If actual overhead exceeds applied overhead, factory overhead is said to be underapplied.

ANS: T DIF: Easy OBJ: 3-2

15. If overapplied factory overhead is immaterial, the account is closed by a credit to Cost of Goods Sold.

ANS: T DIF: Easy OBJ: 3-2

16. If overapplied factory overhead is material, the account is closed by a credit to Cost of Goods Sold.

ANS: F DIF: Easy OBJ: 3-2

17. If overapplied factory overhead is immaterial, the account is closed by a debit to Cost of Goods Sold.

ANS: F DIF: Easy OBJ: 3-2

18. If underapplied factory overhead is immaterial, the account is closed by a debit to Cost of Goods Sold.

ANS: T DIF: Easy OBJ: 3-2

19. If underapplied factory overhead is immaterial, the account is closed by a credit to Cost of Goods Sold.

ANS: F DIF: Easy OBJ: 3-2

20. If underapplied factory overhead is material, it is prorated among Work in Process Inventory, Finished Goods Inventory, and Cost of Goods Sold.

ANS: T DIF: Easy OBJ: 3-2

21. The estimated maximum potential activity for a specified time is known as theoretical capacity.

ANS: T DIF: Moderate OBJ: 3-3

22. Practical capacity does not adjust for routine downtime in a production process.

ANS: F DIF: Moderate OBJ: 3-3

23. Normal capacity considers present and future production levels and cyclical fluctuations.

ANS: T DIF: Moderate OBJ: 3-3

24. Expected capacity is a long-run measure of activity.

ANS: F DIF: Moderate OBJ: 3-3

25. Practical capacity is the capacity that can be achieved during normal working hours.

ANS: T DIF: Moderate OBJ: 3-3

26. The regression equation $y = a + bX$ assumes that the function is curvilinear in nature.

ANS: F DIF: Moderate OBJ: 3-4

27. The regression equation $y = a + bX$ assumes that the function is linear in nature.

ANS: T DIF: Moderate OBJ: 3-4

28. The slope of a regression line is determined by dividing the change in activity level by the change in total cost.

ANS: F DIF: Moderate OBJ: 3-4

29. The slope of a regression line is determined by dividing the change in total cost by the change in activity level.

ANS: T DIF: Moderate OBJ: 3-4

30. The high-low method excludes outliers from the calculation of the slope of a regression line.

ANS: F DIF: Moderate OBJ: 3-4

31. When using the high-low method, fixed costs are computed before the variable component is computed.

ANS: F DIF: Moderate OBJ: 3-4

32. When using the high-low method, the variable component is computed before the fixed component is.

ANS: T DIF: Moderate OBJ: 3-4

33. A flexible budget is a planning document that presents expected variable and fixed overhead costs at different activity levels.

ANS: T DIF: Easy OBJ: 3-5

34. A master budget is a planning document that presents expected variable and fixed overhead costs at different activity levels.

ANS: F DIF: Easy OBJ: 3-5

35. Plantwide overhead rates provide a more accurate computation of factory overhead than departmental overhead rates

ANS: F DIF: Easy OBJ: 3-5

36. Plantwide overhead rates provide a less accurate computation of factory overhead than departmental overhead rates

ANS: T DIF: Easy OBJ: 3-5

37. Absorption costing conforms with generally accepted accounting principles.

ANS: T DIF: Moderate OBJ: 3-5

38. Direct costing conforms with generally accepted accounting principles.

ANS: F DIF: Moderate OBJ: 3-5

39. The Internal Revenue Service allows the use of both variable and absorption costing.

ANS: F DIF: Moderate OBJ: 3-6

40. Sales minus cost of goods sold is referred to as variable contribution margin.

ANS: F DIF: Moderate OBJ: 3-6

41. Phantom profits result when absorption costing is used and sales exceed production.

ANS: F DIF: Moderate OBJ: 3-6

42. Phantom profits result when absorption costing is used and production exceeds sales.

ANS: T DIF: Moderate OBJ: 3-6

43. If production exceeds sales, absorption costing net income exceeds variable costing net income.

ANS: T DIF: Moderate OBJ: 3-7

44. If production exceeds sales, absorption costing net income is less than variable costing net income.

ANS: F DIF: Moderate OBJ: 3-7

45. If sales exceed production, absorption costing net income is less than variable costing net income.

ANS: T DIF: Moderate OBJ: 3-7

46. If sales exceed production, absorption costing net income exceeds variable costing net income.

ANS: F DIF: Moderate OBJ: 3-7

COMPLETION

1. In a(n) _____ cost system, factory overhead is assigned directly to products and services.

ANS: actual

DIF: Easy OBJ: 3-1

2. In a(n) _____ cost system, factory overhead is assigned to an overhead control account and then allocated to products and services.

   ANS: normal

   DIF: Easy OBJ: 3-1

3. The dollar amount of overhead assigned to work-in-process inventory using a predetermined rate is known as _____ overhead.

   ANS: applied

   DIF: Easy OBJ: 3-1

4. If actual overhead exceeds applied overhead, factory overhead is said to be _____.

   ANS: underapplied

   DIF: Easy OBJ: 3-2

5. If actual overhead is less than applied overhead, factory overhead is said to be _____.

   ANS: overapplied

   DIF: Easy OBJ: 3-2

6. If underapplied or overapplied factory overhead is material, it is prorated among _____, _____, and _____.

   ANS: Work in Process Inventory, Finished Goods Inventory, Cost of Goods Sold

   DIF: Easy OBJ: 3-2

7. If underapplied or overapplied factory overhead is immaterial, it is charged to _____.

   ANS: Cost of Goods Sold

   DIF: Easy OBJ: 3-2

8. The performance measure that considers routine interruptions is known as _____ capacity.

   ANS: practical

   DIF: Moderate OBJ: 3-3

9. A performance measure that encompasses a firm's long-run average activity is referred to as _____ capacity.

   ANS: normal

   DIF: Moderate OBJ: 3-3

10. A performance measure that assumes all production factors are operating perfectly is referred to as _____ capacity.

    ANS: theoretical

    DIF: Moderate OBJ: 3-3

11. A performance measure that is short-run in nature and represents a firm's anticipated activity level for the upcoming period is _____ capacity.

    ANS: expected

    DIF: Moderate OBJ: 3-3

12. Consider the regression equation $y = a + bX$. The portion of the equation that represents fixed costs is _____.

    ANS: *a*

    DIF: Easy OBJ: 3-4

13. Consider the regression equation $y = a + bX$. The portion of the equation that represents the variable rate is _____.

    ANS: *b*

    DIF: Easy OBJ: 3-4

14. Consider the regression equation $y = a + bX$. The portion of the equation that represents the activity base is _____.

    ANS: *X*

    DIF: Easy OBJ: 3-4

15. An observation that is found outside the relevant range is referred to as a(n) _____.

    ANS: outlier

    DIF: Moderate OBJ: 3-4

16. When a relationship between several independent variables and one dependent variable is analyzed, the regression is referred to as _____.

ANS: multiple

DIF: Moderate OBJ: 3-4

17. When a relationship between one independent variable and one dependent variable is analyzed, the regression is referred to as _____.

ANS: simple

DIF: Moderate OBJ: 3-4

18. A _____ is a planning document that presents expected variable and fixed overhead costs at different activity levels.

ANS: flexible budget

DIF: Easy OBJ: 3-5

19. The costing technique that treats manufacturing overhead as a period cost is referred to as _____ costing.

ANS: variable or direct

DIF: Easy OBJ: 3-6

20. The costing technique that treats all manufacturing costs as inventoriable is referred to as _____ costing.

ANS: absorption or full

DIF: Easy OBJ: 3-6

21. Sales less variable cost of goods sold is referred to as _____.

ANS: product contribution margin

DIF: Moderate OBJ: 3-6

22. Temporary profits that result when absorption costing is used and production exceeds sales are referred to as _____.

ANS: phantom profits

DIF: Easy OBJ: 3-6

MULTIPLE CHOICE

1. Since overhead costs are indirect costs,
   a. they require some process of allocation.
   b. they can be easily traced to production.
   c. a predetermined overhead rate is not advantageous.
   d. they cannot be allocated.

   ANS: A DIF: Easy OBJ: 3-1

2. Cost allocation is the assignment of _____ costs to one or more products using a reasonable basis.

	direct	indirect
a.	yes	yes
b.	yes	no
c.	no	no
d.	no	yes

   ANS: D DIF: Easy OBJ: 3-1

3. An actual cost system differs from a normal cost system in that an actual cost system
   a. assigns overhead as it occurs during the manufacturing cycle.
   b. assigns overhead at the end of the manufacturing process.
   c. does not assign overhead at all.
   d. does not use an Overhead Control account.

   ANS: B DIF: Easy OBJ: 3-2

4. In a normal cost system, which of the following is used?

	Actual direct materials	Actual direct labor	Actual overhead
a.	yes	no	yes
b.	yes	yes	yes
c.	yes	yes	no
d.	no	yes	no

   ANS: C DIF: Easy OBJ: 3-2

5. Predetermined overhead rates are computed based on

	estimated overhead costs	estimated level of activity
a.	yes	yes
b.	yes	no
c.	no	yes
d.	no	no

   ANS: A DIF: Easy OBJ: 3-1

6. One reason annual overhead application rates are used is
   a. because of seasonal variability of overhead costs.
   b. to help budget overhead costs.
   c. to minimize the overhead cost assigned to products.
   d. to maximize the overhead cost assigned to products.

   ANS: A DIF: Easy OBJ: 3-1

7. Which of the following is **not** a reason to use predetermined overhead rates?
   a. to overcome the problems of assigning overhead to diverse types of products
   b. to compensate for fluctuations in monthly overhead costs
   c. to provide a means for assigning overhead during the period rather than at the end of the period
   d. to smooth out the amount of overhead cost assigned to products when monthly production activity differs

   ANS: A DIF: Moderate OBJ: 3-1

8. When a manufacturing company has a highly automated manufacturing plant producing many different products, which of the following is the more appropriate basis of applying manufacturing overhead costs to work in process?
   a. direct labor hours
   b. direct labor dollars
   c. machine hours
   d. cost of materials used

   ANS: C DIF: Easy OBJ: 3-1

9. A mixed cost has which of the following components?

	Variable component	Fixed component
a.	yes	no
b.	yes	yes
c.	no	no
d.	no	yes

   ANS: B DIF: Easy OBJ: 3-4

10. In the formula y = a + bX, y represents
    a. fixed costs.
    b. total cost.
    c. variable costs.
    d. mixed costs.

    ANS: B DIF: Easy OBJ: 3-4

11. In the formula y = a + bX, a represents
    a. mixed cost.
    b. variable cost.
    c. total cost.
    d. fixed cost.

    ANS: D DIF: Easy OBJ: 3-4

12. In relationship to changes in activity, variable overhead changes

	in total	per unit
a.	no	no
b.	no	yes
c.	yes	yes
d.	yes	no

ANS: D DIF: Easy OBJ: 3-4

13. In relationship to changes in activity, fixed overhead changes

	in total	per unit
a.	yes	yes
b.	no	no
c.	no	yes
d.	yes	no

ANS: C DIF: Easy OBJ: 3-4

14. If the level of activity increases,
    a. variable cost per unit and total fixed costs increase.
    b. fixed cost per unit and total variable cost increase.
    c. total cost will increase and fixed cost per unit will decrease.
    d. variable cost per unit and total cost increase.

ANS: C DIF: Easy OBJ: 3-4

15. Weaknesses of the high-low method include all of the following **except**
    a. only two observations are used to develop the cost function.
    b. the high and low activity levels may not be representative.
    c. the method does not detect if the cost behavior is nonlinear.
    d. the mathematical calculations are relatively complex.

ANS: D DIF: Easy OBJ: 3-4

16. If there is no "a" value in a linear cost equation, this is an indication that the cost is
    a. fixed.
    b. mixed.
    c. variable.
    d. either fixed or mixed.

ANS: C DIF: Easy OBJ: 3-4

17. An outlier is
    a. something that happens outside the organization that does not affect production.
    b. always used in analyzing a mixed cost.
    c. something that happens inside the organization that does not affect production.
    d. never used in analyzing a mixed cost.

ANS: D DIF: Easy OBJ: 3-4

18. Applied overhead consists of which of the following?
    a. actual activity times predetermined overhead rate
    b. estimated activity times predetermined overhead rate
    c. actual activity times actual overhead rate
    d. estimated activity times actual overhead rate

    ANS: A DIF: Easy OBJ: 3-2

19. If a company used two overhead accounts (actual overhead and applied overhead), the one that would receive the most debits would be
    a. actual overhead.
    b. applied overhead.
    c. both would receive an equal number of debits.
    d. impossible to determine without additional information.

    ANS: A DIF: Easy OBJ: 3-2

20. If underapplied overhead is considered to be **immaterial**, it is closed to which of the following accounts?

	Work in Process	Finished Goods	Cost of Goods Sold
a.	yes	yes	yes
b.	no	yes	yes
c.	yes	no	no
d.	no	no	yes

    ANS: D DIF: Easy OBJ: 3-2

21. All other things being equal, if actual cost per unit is greater than budgeted cost per unit, variable overhead will be
    a. overapplied.
    b. the same as fixed overhead.
    c. underapplied.
    d. applied to Finished Goods.

    ANS: C DIF: Easy OBJ: 3-2

22. Overapplied overhead will result if
    a. the plant is operated at less than expected capacity.
    b. overhead costs incurred were greater than estimated overhead costs.
    c. overhead costs incurred were less than overhead costs charged to production.
    d. overhead costs incurred were greater than overhead charged to production.

    ANS: C DIF: Easy OBJ: 3-2

23. Actual overhead exceeds applied overhead and the amount is **immaterial**. Which of the following will be **true?** Upon closing,

	Overhead is	Cost of Goods Sold will
a.	underapplied	increase
b.	overapplied	decrease
c.	overapplied	increase
d.	underapplied	decrease

ANS: A DIF: Easy OBJ: 3-2

24. If actual overhead is less than applied overhead, which of the following will be **true**? Upon closing,

	Overhead is	Cost of Goods Sold is
a.	underapplied	credited
b.	underapplied	debited
c.	overapplied	debited
d.	overapplied	credited

ANS: D DIF: Easy OBJ: 3-2

25. The estimated maximum potential activity for a specified time is:
    a. theoretical capacity
    b. practical capacity
    c. normal capacity
    d. expected capacity

ANS: A DIF: Moderate OBJ: 3-3

26. The measure of activity that allows for routine variations in manufacturing activity is:
    a. theoretical capacity
    b. practical capacity
    c. normal capacity
    d. expected capacity

ANS: B DIF: Moderate OBJ: 3-3

27. The measure of production that considers historical and estimated future production levels and cyclical fluctuations is referred to as:
    a. theoretical capacity
    b. practical capacity
    c. normal capacity
    d. expected capacity

ANS: C DIF: Moderate OBJ: 3-3

28. A short-run measure of activity that represents a firm's anticipated activity level for an upcoming period based upon expected demand is referred to as:
    a. theoretical capacity
    b. practical capacity
    c. normal capacity
    d. expected capacity

ANS: D DIF: Moderate OBJ: 3-3

29. An item or event that has a cause-effect relationship with the incurrence of a variable cost is called a
    a. mixed cost.
    b. predictor.
    c. direct cost.
    d. cost driver.

    ANS: D DIF: Easy OBJ: 3-2

30. Furman Tailors has gathered information on utility costs for the past year. The controller has decided that utilities are a function of the hours worked during the month. The following information is available and representative of the company's utility costs:

	Hours worked	Utility cost incurred
Low point	1,300	$ 903
High point	1,680	1,074

    If 1,425 hours are worked in a month, total utility cost (rounded to the nearest dollar) using the high-low method should be
    a. $947.
    b. $954.
    c. $959.
    d. $976.

    ANS: C

Variable portion:

$$\frac{1,074-903}{1680-1,300}=\frac{171}{380}=0.45$$

Fixed Portion

903 - 0.45 (1,300) = $318

Y = $318 + $0.45(1,425) = $959

    DIF: Moderate OBJ: 3-4

31. Reno Corporation uses a predetermined overhead application rate of $.30 per direct labor hour. During the year it incurred $345,000 dollars of actual overhead, but it planned to incur $360,000 of overhead. The company applied $363,000 of overhead during the year. How many direct labor hours did the company plan to incur?
    a. 1,150,000
    b. 1,190,000
    c. 1,200,000
    d. 1,210,000

    ANS: C

$360,000 / .30 = 1,200,000 direct labor hours

    DIF: Easy OBJ: 3-4

32. Birmingham Machine Works had the following data regarding monthly power costs:

Month	Machine hours	Power cost
Jun	300	$680
Jul	600	720
Aug	400	695
Sept.	200	640

Assume that management expects 500 machine hours in October. Using the high-low method, calculate October's power cost using machine hours as the basis for prediction.

a. $700
b. $705
c. $710
d. $1,320

ANS: A

Variable portion:

$$\frac{\$(720-640)}{600-200}=\frac{80}{400}=0.20$$

Fixed portion:

$640 - (200 *$0 .20) = $600

$600 + (500*$0.20) = $700

DIF: Easy OBJ: 3-4

33. Gary Corporation has developed the following flexible budget formula for monthly overhead:

For output of less than 200,000 units: $36,600 + $.80(units)
For output of 200,000 units or more: $43,000 + $.80(units)

How much overhead should Gary expect if the firm plans to produce 200,000 units?

a. $52,600
b. $59,000
c. $196,600
d. $203,000

ANS: D

$43,000 + $0.80(200,000) = $43,000 + $160,000 = $203,000

DIF: Easy OBJ: 3-5

34. Walton Corporation wishes to develop a single predetermined overhead rate. The company's expected annual fixed overhead is $340,000 and its variable overhead cost per machine hour is $2. The company's relevant range is from 200,000 to 600,000 machine hours. Walton expects to operate at 425,000 machine hours for the coming year. The plant's theoretical capacity is 850,000. The predetermined overhead rate per machine hour should be
    a. $2.40.
    b. $2.57.
    c. $2.80.
    d. $2.85.

    ANS: C

Fixed component:

$$\frac{\$340,000}{425,000} = \$0.80/unit$$

Variable component = $2.00 per unit

Total predetermined overhead = $2.80 per unit

DIF: Easy OBJ: 3-4

Burke Corporation

Burke Corporation has the following data for use of its machinery

Month	Usage	Cost
Jun	600	$750
Jul	650	775
Aug	420	550
Sept	500	650
Oct	450	570

35. Refer to Burke Corporation. Using the high-low method, compute the variable cost element.
    a. $1.02
    b. $.98
    c. $1.31
    d. $1.19

    ANS: B

$$\frac{\$775-\$550}{650-420} = \frac{225}{230} = \$0.98$$

DIF: Easy OBJ: 3-4

36. Refer to Burke Corporation. Using the high-low method, compute the fixed cost element (to the nearest whole dollar).
    a. $225
    b. $138
    c. $411
    d. $364

    ANS: B
    $775 - 650(.98) = $775 - 637 = $138

    DIF: Easy OBJ: 3-4

Zenith Corporation

The records of Zenith Corporation revealed the following data for the current year.

Work in Process	$ 73,150
Finished Goods	115,000
Cost of Goods Sold	133,650
Direct Labor	111,600
Direct Material	84,200

37. Refer to Zenith Corporation. Assume, for this question only, actual overhead is $98,700 and applied overhead is $93,250. Manufacturing overhead is:
    a. overapplied by $12,900.
    b. underapplied by $18,350.
    c. overapplied by $5,450.
    d. underapplied by $5,450.

    ANS: D
    $98,700 - $93,250 = $5,450 underapplied

    DIF: Easy OBJ: 3-2

38. Refer to Zenith Corporation. Assume that Zenith has underapplied overhead of $37,200 and that this amount is material. What journal entry is needed to close the overhead account? (Round decimals to nearest whole percent.)
    a. Debit Work in Process $8,456; Finished Goods $13,294; Cost of Goods Sold $15,450 and credit Overhead $37,200
    b. Debit Overhead $37,200 and credit Work in Process $8,456; Finished Goods $13,294; Cost of Goods Sold $15,450
    c. Debit Work in Process $37,200 and credit Overhead $37,200
    d. Debit Cost of Goods Sold $37,200 and credit Overhead $37,200

    ANS: A
    WIP: 73,150/321,800 = $ 8,456
    FG: 115,000/321,800 = $13,294
    EI: 133,650/321,800 = $15,450

    DIF: Moderate OBJ: 3-2

39. Refer to Zenith Corporation. Assume that Zenith has underapplied overhead of $10,000 and that this amount is **immaterial**. What is the balance in Cost of Goods Sold after the underapplied overhead is closed?
    a. $133,650
    b. $123,650
    c. $143,650
    d. $137,803

    ANS: C

    COGS + Underapplied Overhead = Adjusted COGS

    $133,650 + $ 10,000 = $143,650

    DIF: Easy OBJ: 3-2

40. Refer to Zenith Corporation. Assume that Zenith has overapplied overhead of $25,000 and that this amount is **material**. What is the balance in Cost of Goods Sold after the overapplied overhead is closed?
    a. $123,267
    b. $144,033
    c. $158,650
    d. $108,650

    ANS: A

    $133,650/$321,800 * $25,000 = $10,383

    $133,650-$10,383 = $123,267

    DIF: Moderate OBJ: 3-2

41. Aztec Company is relocating its facilities. The company estimates that it will take three trucks to move office contents. If the per truck rental charge is $1,000 plus 25 cents per mile, what is the expected cost to move 800 miles?
    a. $1,000
    b. $1,200
    c. $2,400
    d. $3,600

    ANS: D

    3 trucks * ($1,000 + $0.25(800)) = 3 * $1,200 = $3,600

    DIF: Easy OBJ: 3-2

42. Aquatic Motor Company is exploring different prediction models that can be used to forecast indirect labor costs. One independent variable under consideration is machine hours. Following are matching observations on indirect labor costs and machine hours for the past six months:

Month	Machine hours	Indirect labor costs
1	300	$20,000
2	400	$24,000
3	240	$17,000
4	370	$22,000
5	200	$13,000
6	225	$14,000

In a high-low model, which months' observations would be used to compute the model's parameters?

a. 2 and 5
b. 1 and 6
c. 2 and 6
d. 4 and 5

ANS: A DIF: Easy OBJ: 3-4

43. Consider the following three product costing alternatives: process costing, job order costing, and standard costing. Which of these can be used in conjunction with absorption costing?
a. job order costing
b. standard costing
c. process costing
d. all of the above

ANS: D DIF: Easy OBJ: 3-6

44. Another name for absorption costing is
a. full costing.
b. direct costing.
c. job order costing.
d. fixed costing.

ANS: A DIF: Easy OBJ: 3-6

45. If a firm produces more units than it sells, absorption costing, relative to variable costing, will result in
a. higher income and assets.
b. higher income but lower assets.
c. lower income but higher assets.
d. lower income and assets.

ANS: A DIF: Moderate OBJ: 3-6

46. Under absorption costing, fixed manufacturing overhead could be found in all of the following **except** the
a. work-in-process account.
b. finished goods inventory account.
c. Cost of Goods Sold.
d. period costs.

ANS: D DIF: Easy OBJ: 3-6

47. If a firm uses absorption costing, fixed manufacturing overhead will be included
    a. only on the balance sheet.
    b. only on the income statement.
    c. on both the balance sheet and income statement.
    d. on neither the balance sheet nor income statement.

    ANS: C DIF: Easy OBJ: 3-6

48. Under absorption costing, if sales remain constant from period 1 to period 2, the company will report a larger income in period 2 when
    a. period 2 production exceeds period 1 production.
    b. period 1 production exceeds period 2 production.
    c. variable production costs are larger in period 2 than period 1.
    d. fixed production costs are larger in period 2 than period 1.

    ANS: A DIF: Moderate OBJ: 3-7

49. The FASB requires which of the following to be used in preparation of external financial statements?
    a. variable costing
    b. standard costing
    c. activity-based costing
    d. absorption costing

    ANS: D DIF: Easy OBJ: 3-6

50. An ending inventory valuation on an absorption costing balance sheet would
    a. sometimes be less than the ending inventory valuation under variable costing.
    b. always be less than the ending inventory valuation under variable costing.
    c. always be the same as the ending inventory valuation under variable costing.
    d. always be greater than or equal to the ending inventory valuation under variable costing.

    ANS: D DIF: Easy OBJ: 3-6

51. Absorption costing differs from variable costing in all of the following **except**
    a. treatment of fixed manufacturing overhead.
    b. treatment of variable production costs.
    c. acceptability for external reporting.
    d. arrangement of the income statement.

    ANS: B DIF: Easy OBJ: 3-6

52. Which of the following is **not** associated with absorption costing?
    a. functional format
    b. gross margin
    c. period costs
    d. contribution margin

    ANS: D DIF: Easy OBJ: 3-6

53. Unabsorbed fixed overhead costs in an absorption costing system are
    a. fixed manufacturing costs not allocated to units produced.
    b. variable overhead costs not allocated to units produced.
    c. excess variable overhead costs.
    d. costs that cannot be controlled.

    ANS: A DIF: Easy OBJ: 3-6

54. Profit under absorption costing may differ from profit determined under variable costing. How is this difference calculated?
    a. Change in the quantity of all units in inventory times the relevant fixed costs per unit.
    b. Change in the quantity of all units produced times the relevant fixed costs per unit.
    c. Change in the quantity of all units in inventory times the relevant variable cost per unit.
    d. Change in the quantity of all units produced times the relevant variable cost per unit.

    ANS: A DIF: Easy OBJ: 3-6

55. What factor, related to manufacturing costs, causes the difference in net earnings computed using absorption costing and net earnings computed using variable costing?
    a. Absorption costing considers all costs in the determination of net earnings, whereas variable costing considers fixed costs to be period costs.
    b. Absorption costing allocates fixed overhead costs between cost of goods sold and inventories, and variable costing considers all fixed costs to be period costs.
    c. Absorption costing "inventories" all direct costs, but variable costing considers direct costs to be period costs.
    d. Absorption costing "inventories" all fixed costs for the period in ending finished goods inventory, but variable costing expenses all fixed costs.

    ANS: B DIF: Easy OBJ: 3-7

56. The costing system that classifies costs by functional group only is
    a. standard costing.
    b. job order costing.
    c. variable costing.
    d. absorption costing.

    ANS: D DIF: Easy OBJ: 3-6

57. A functional classification of costs would classify "depreciation on office equipment" as a
    a. product cost.
    b. general and administrative expense.
    c. selling expense.
    d. variable cost.

    ANS: B DIF: Easy OBJ: 3-6

58. The costing system that classifies costs by both functional group and behavior is
    a. process costing.
    b. job order costing.
    c. variable costing.
    d. absorption costing.

    ANS: C DIF: Easy OBJ: 3-6

59. Under variable costing, which of the following are costs that can be inventoried?
    a. variable selling and administrative expense
    b. variable manufacturing overhead
    c. fixed manufacturing overhead
    d. fixed selling and administrative expense

    ANS: B DIF: Easy OBJ: 3-6

60. Consider the following three product costing alternatives: process costing, job order costing, and standard costing. Which of these can be used in conjunction with variable costing?
    a. job order costing
    b. standard costing
    c. process costing
    d. all of them

    ANS: D DIF: Easy OBJ: 3-6

61. Another name for variable costing is
    a. full costing.
    b. direct costing.
    c. standard costing.
    d. adjustable costing.

    ANS: B DIF: Easy OBJ: 3-6

62. If a firm uses variable costing, fixed manufacturing overhead will be included
    a. only on the balance sheet.
    b. only on the income statement.
    c. on both the balance sheet and income statement.
    d. on neither the balance sheet nor income statement.

    ANS: B DIF: Easy OBJ: 3-6

63. Under variable costing,
    a. all product costs are variable.
    b. all period costs are variable.
    c. all product costs are fixed.
    d. product costs are both fixed and variable.

    ANS: A DIF: Easy OBJ: 3-6

64. How will a favorable volume variance affect net income under each of the following methods?

	Absorption	Variable
a.	reduce	no effect
b.	reduce	increase
c.	increase	no effect
d.	increase	reduce

    ANS: C DIF: Easy OBJ: 3-7

65. Variable costing considers which of the following to be product costs?

	Fixed Mfg. Costs	Fixed Selling & Adm.	Variable Mfg. Costs	Variable Selling & Adm.
a.	yes	no	yes	no
b.	yes	no	yes	yes
c.	no	no	yes	yes
d.	no	no	yes	no

ANS: D DIF: Easy OBJ: 3-6

66. The variable costing format is often more useful to managers than the absorption costing format because
    a. costs are classified by their behavior.
    b. costs are always lower.
    c. it is required for external reporting.
    d. it justifies higher product prices.

ANS: A DIF: Easy OBJ: 3-6

67. The difference between the reported income under absorption and variable costing is attributable to the difference in the
    a. income statement formats.
    b. treatment of fixed manufacturing overhead.
    c. treatment of variable manufacturing overhead.
    d. treatment of variable selling, general, and administrative expenses.

ANS: B DIF: Easy OBJ: 3-7

68. Which of the following costs will vary directly with the level of production?
    a. total manufacturing costs
    b. total period costs
    c. variable period costs
    d. variable product costs

ANS: D DIF: Easy OBJ: 3-6

69. On the variable costing income statement, the difference between the "contribution margin" and "income before income taxes" is equal to
    a. the total variable costs.
    b. the Cost of Goods Sold.
    c. total fixed costs.
    d. the gross margin.

ANS: C DIF: Easy OBJ: 3-7

70. For financial reporting to the IRS and other external users, manufacturing overhead costs are
    a. deducted in the period that they are incurred.
    b. inventoried until the related products are sold.
    c. treated like period costs.
    d. inventoried until the related products have been completed.

ANS: B DIF: Easy OBJ: 3-6

71. In the application of "variable costing" as a cost-allocation process in manufacturing,
    a. variable direct costs are treated as period costs.
    b. nonvariable indirect manufacturing costs are treated as product costs.
    c. variable indirect manufacturing costs are treated as product costs.
    d. nonvariable direct costs are treated as product costs.

    ANS: C DIF: Easy OBJ: 3-6

72. A basic tenet of variable costing is that period costs should be currently expensed. What is the rationale behind this procedure?
    a. Period costs are uncontrollable and should not be charged to a specific product.
    b. Period costs are generally immaterial in amount and the cost of assigning the amounts to specific products would outweigh the benefits.
    c. Allocation of period costs is arbitrary at best and could lead to erroneous decision by management.
    d. Because period costs will occur whether production occurs, it is improper to allocate these costs to production and defer a current cost of doing business.

    ANS: D DIF: Moderate OBJ: 3-6

73. Which of the following is a term more descriptive of the term "direct costing"?
    a. out-of-pocket costing
    b. variable costing
    c. relevant costing
    d. prime costing

    ANS: B DIF: Easy OBJ: 3-6

74. What costs are treated as product costs under variable (direct) costing?
    a. only direct costs
    b. only variable production costs
    c. all variable costs
    d. all variable and fixed manufacturing costs

    ANS: B DIF: Easy OBJ: 3-6

75. Which of the following must be known about a production process in order to institute a variable costing system?
    a. the variable and fixed components of all costs related to production
    b. the controllable and non-controllable components of all costs related to production
    c. standard production rates and times for all elements of production
    d. contribution margin and break-even point for all goods in production

    ANS: A DIF: Easy OBJ: 3-6

76. Why is variable costing **not** in accordance with generally accepted accounting principles?
    a. Fixed manufacturing costs are treated as period costs under variable costing.
    b. Variable costing procedures are not well known in industry.
    c. Net earnings are always overstated when using variable costing procedures.
    d. Variable costing ignores the concept of lower of cost or market when valuing inventory.

    ANS: A DIF: Easy OBJ: 3-6

77. Which of the following is an argument against the use of direct (variable) costing?
    a. Absorption costing overstates the balance sheet value of inventories.
    b. Variable factory overhead is a period cost.
    c. Fixed manufacturing overhead is difficult to allocate properly.
    d. Fixed manufacturing overhead is necessary for the production of a product.

    ANS: D DIF: Easy OBJ: 3-6

78. Which of the following statements is **true** for a firm that uses variable costing?
    a. The cost of a unit of product changes because of changes in the number of units manufactured.
    b. Profits fluctuate with sales.
    c. An idle facility variation is calculated.
    d. None of the above.

    ANS: B DIF: Easy OBJ: 3-6

79. An income statement is prepared as an internal report. Under which of the following methods would the term contribution margin appear?

	Absorption costing	Variable costing
a.	no	no
b.	no	yes
c.	yes	no
d.	yes	yes

    ANS: B DIF: Easy OBJ: 3-6

80. In an income statement prepared as an internal report using the variable costing method, fixed manufacturing overhead would
    a. not be used.
    b. be used in the computation of operating income but not in the computation of the contribution margin.
    c. be used in the computation of the contribution margin.
    d. be treated the same as variable manufacturing overhead.

    ANS: B DIF: Easy OBJ: 3-7

81. Variable costing has an advantage over absorption costing for which of the following purposes?
    a. analysis of profitability of products, territories, and other segments of a business
    b. determining the CVP relationship among the major factors of selling price, sales mix, and sales volume
    c. minimizing the effects of inventory changes on net income
    d. all of the above

    ANS: D DIF: Easy OBJ: 3-6

82. In the variable costing income statement, which line separates the variable and fixed costs?
    a. selling expenses
    b. general and administrative expense
    c. product contribution margin
    d. total contribution margin

    ANS: D DIF: Easy OBJ: 3-6

83. A firm presently has total sales of $100,000. If its sales rise, its
    a. net income based on variable costing will go up more than its net income based on absorption costing.
    b. net income based on absorption costing will go up more than its net income based on variable costing.
    c. fixed costs will also rise.
    d. per unit variable costs will rise.

    ANS: A DIF: Moderate OBJ: 3-7

Langley Corporation

Langley Corporation has the following standard costs associated with the manufacture and sale of one of its products:

Direct material	$3.00 per unit
Direct labor	2.50 per unit
Variable manufacturing overhead	1.80 per unit
Fixed manufacturing overhead	4.00 per unit (based on an estimate of 50,000 units per year)
Variable selling expenses	.25 per unit
Fixed SG&A expense	$75,000 per year

During its first year of operations Langley manufactured 51,000 units and sold 48,000. The selling price per unit was $25. All costs were equal to standard.

84. Refer to Langley Corporation. Under absorption costing, the standard production cost per unit for the current year was
    a. $11.30.
    b. $ 7.30.
    c. $11.55.
    d. $13.05.

    ANS: A

DM + DL + VFOH + FFOH = Standard Cost per Unit
$3.00 + $2.50 + $1.80 + $4.00 = $11.30

    DIF: Easy OBJ: 3-7

85. Refer to Langley Corporation. The volume variance under absorption costing is
    a. $8,000 F.
    b. $4,000 F.
    c. $4,000 U.
    d. $8,000 U.

    ANS: B

1,000 favorable units production variance * $4.00 fixed factory overhead = $4,000 F

    DIF: Moderate OBJ: 3-7

86. Refer to Langley Corporation. Under variable costing, the standard production cost per unit for the current year was
    a. $11.30.
    b. $7.30.
    c. $7.55.
    d. $11.55.

    ANS: B

DM + DL + VOH = Standard Production Cost per Unit $3.00 + $2.50 + $1.80 = $7.30

    DIF: Easy OBJ: 3-7

87. Refer to Langley Corporation. Based on variable costing, the income before income taxes for the year was
    a. $570,600.
    b. $560,000.
    c. $562,600.
    d. $547,500.

    ANS: C

Sales:	$1,200,000
Variable Expenses	362,400
Contribution Margin	$ 837,600
Fixed Expenses	
Overhead	$ 200,000
	75,000
Net Income	$ 562,600 =========

    DIF: Moderate OBJ: 3-7

Ford Company

The following information is available for Ford Company for its first year of operations:

Sales in units	5,000
Production in units	8,000
Manufacturing costs:	
Direct labor	$3 per unit
Direct material	5 per unit
Variable overhead	1 per unit
Fixed overhead	$100,000
Net income (absorption method)	$30,000
Sales price per unit	$40

88. Refer to Ford Company. If Ford Company had used variable costing, what amount of income before income taxes would it have reported?
    a. $30,000
    b. ($7,500)
    c. $67,500
    d. can't be determined from the information given

    ANS: B

Net Income--Absorption Costing	$ 30,000
Fixed OH in Ending Inventory:	
$100,000 * (3,000/8,000)	($37,500)
Net Loss--Variable Costing	($ 7,500)

    DIF: Moderate OBJ: 3-7

89. Refer to Ford Company. What was the total amount of Selling,General and Administrative expense incurred by Ford Company?
    a. $30,000
    b. $62,500
    c. $6,000
    d. can't be determined from the information given

    ANS: B

Sales	$200,000
COGS	107,500
Gross Profit	92,500
SG&A	X
Net Income	$ 30,000

    X = $62,500

    DIF: Moderate OBJ: 3-7

90. Refer to Ford Company. If Ford Company were using variable costing, what would it show as the value of ending inventory?
    a. $120,000
    b. $64,500
    c. $27,000
    d. $24,000

    ANS: C
    3,000 units * $9.00/unit = $27,000

    DIF: Easy OBJ: 3-7

Clinton Corporation

The following information has been extracted from the financial records of Clinton Corporation for its first year of operations:

Units produced	10,000
Units sold	7,000
Variable costs per unit:	
Direct material	$8
Direct labor	9
Manufacturing overhead	3
SG&A	4
Fixed costs:	
Manufacturing overhead	$70,000
SG&A	30,000

91. Refer to Clinton Corporation. Based on absorption costing, Clinton Corporation's income in its first year of operations will be
    a. $21,000 higher than it would be under variable costing.
    b. $70,000 higher than it would be under variable costing.
    c. $30,000 higher than it would be under variable costing.
    d. higher than it would be under variable costing, but the exact difference cannot be determined from the information given.

    ANS: A
    3,000 unsold units * $7.00 fixed overhead/unit = $21,000 higher under absorption costing.

    DIF: Moderate OBJ: 3-7

92. Refer to Clinton Corporation. Based on absorption costing, the Cost of Goods Manufactured for Clinton Corporation's first year would be
    a. $200,000.
    b. $270,000.
    c. $300,000.
    d. $210,000.

    ANS: B

COGM = Variable Overhead + Fixed Overhead COGM = (100,000 units * $20/unit) + $70,000 COGM = $270,000

    DIF: Moderate OBJ: 3-7

93. Refer to Clinton Corporation. Based on absorption costing, what amount of period costs will Clinton Corporation deduct?
    a. $70,000
    b. $79,000
    c. $30,000
    d. $58,000

    ANS: D

Period costs = Variable SG&A + Fixed SG&A $58,000 = (7,000 * $4) + $30,000

    DIF: Moderate OBJ: 3-7

94. For its most recent fiscal year, a firm reported that its contribution margin was equal to 40 percent of sales and that its net income amounted to 10 percent of sales. If its fixed costs for the year were $60,000, how much were sales?
    a. $150,000
    b. $200,000
    c. $600,000
    d. can't be determined from the information given

    ANS: B

Let S = Sales Let CM = .40S Let NI = .10S FC = .30S $60,000 = .30S S = $200,000

    DIF: Moderate OBJ: 3-7

95. At its present level of operations, a small manufacturing firm has total variable costs equal to 75 percent of sales and total fixed costs equal to 15 percent of sales. Based on variable costing, if sales change by $1.00, income will change by
    a. $0.25.
    b. $0.10.
    c. $0.75.
    d. can't be determined from the information given.

    ANS: A

Let S = 1.00 Let VC = .75S Let CM = .25S Under variable costing every dollar of sales will increase net income by $0.25.

    DIF: Easy OBJ: 3-7

96. The following information regarding fixed production costs from a manufacturing firm is available for the current year:

Fixed costs in the beginning inventory	$ 16,000
Fixed costs incurred this period	100,000

    Which of the following statements is **not true**?
    a. The maximum amount of fixed production costs that this firm could deduct using absorption costs in the current year is $116,000.
    b. The maximum difference between this firm's the current year income based on absorption costing and its income based on variable costing is $16,000.
    c. Using variable costing, this firm will deduct no more than $16,000 for fixed production costs.
    d. If this firm produced substantially more units than it sold in the current year, variable costing will probably yield a lower income than absorption costing.

    ANS: C DIF: Moderate OBJ: 3-7

Enigma Corporation

The following information was extracted from the first year absorption-based accounting records of Enigma Corporation

Total fixed costs incurred	$100,000
Total variable costs incurred	50,000
Total period costs incurred	70,000
Total variable period costs incurred	30,000
Units produced	20,000
Units sold	12,000
Unit sales price	$12

97. Refer to Enigma Corporation. What is Cost of Goods Sold for Enigma Corporation's first year?
    a. $80,000
    b. $90,000
    c. $48,000
    d. can't be determined from the information given

ANS: C

Total variable manufacturing costs = $50,000 - 30,000 = $20,000 Total fixed period costs incurred = $70,000 - 30,000 = $40,000 Total fixed manufacturing costs = $100,000 - 40,000 = $60,000 Total manufacturing costs = $60,000 + $20,000 = $80,000 Percent of goods sold: 12,000/20,000 = 60% $80,000 * 60% = $48,000

DIF: Difficult OBJ: 3-7

98. Refer to Enigma Corporation. If Enigma Corporation had used variable costing in its first year of operations, how much income (loss) before income taxes would it have reported?
    a. ($6,000)
    b. $54,000
    c. $26,000
    d. $2,000

ANS: D

Sales	$144,000
Less: Variable Costs	
Manufacturing $20,000 * 60%	12,000
Period Costs $30,000	30.000
Contribution Margin	$102,000
Fixed Costs	100,000
Variable Costing Net Income	2,000 ======

DIF: Difficult OBJ: 3-7

99. Refer to Enigma Corporation. Based on variable costing, if Enigma had sold 12,001 units instead of 12,000, its income before income taxes would have been
    a. $9.50 higher.
    b. $11.00 higher.
    c. $8.50 higher.
    d. $8.33 higher.

ANS: C

Sales Price per Unit:	$12.00
Variable Costs per Unit ($50,000 / 20,000)	2.50
Contribution Margin	$ 8.50
	======

DIF: Moderate OBJ: 3-7

King Corporation

King Corporation produces a single product. The following cost structure applied to its first year of operations:

Variable costs:	
SG&A	$2 per unit
Production	$4 per unit
Fixed costs (total cost incurred for the year):	
SG&A	$14,000
Production	$20,000

100. Refer to King Corporation. Assume for this question only that during the current year King Corporation manufactured 5,000 units and sold 3,800. There was no beginning or ending work-in-process inventory. How much larger or smaller would King Corporation's income be if it uses absorption rather than variable costing?
a. The absorption costing income would be $6,000 larger.
b. The absorption costing income would be $6,000 smaller.
c. The absorption costing income would be $4,800 larger.
d. The absorption costing income would be $4,000 smaller.

ANS: C

Add back fixed manufacturing portion of units unsold (1,200/5,000) * $20,000 = $4,800.

DIF: Moderate OBJ: 3-7

101. Refer to King Corporation. Assume for this question only that King Corporation manufactured and sold 5,000 units in the current year. At this level of activity it had an income of $30,000 using variable costing. What was the sales price per unit?
a. $16.00
b. $18.80
c. $12.80
d. $14.80

ANS: B

Sales--5,000 units * **$18.80/unit**	$94,000
Variable Costs:	
Manufacturing	20,000
S G & A	10,000
Contribution Margin	$64,000
Fixed Costs	
Manufacturing	14,000
S G & A	20,000
Net Income	$30,000

DIF: Moderate OBJ: 3-7

102. Refer to King Corporation. Assume for this question only that King Corporation produced 5,000 units and sold 4,500 units in the current year. If King uses absorption costing, it would deduct period costs of
a. $24,000.
b. $34,000.
c. $27,000.
d. $23,000.

ANS: D

Variable SG&A Costs (4,500 units * $2/unit)	$ 9,000
Fixed SG&A Costs	14,000
Total period costs to be deducted	$23,000

DIF: Moderate OBJ: 3-7

103. Refer to King Corporation. Assume for this question only that King Corporation manufactured 5,000 units and sold 4,000 in the current year. If King employs a costing system based on variable costs, the company would end the current year with a finished goods inventory of
a. $4,000.
b. $8,000.
c. $6,000.
d. $5,000.

ANS: A

1,000 units * $4.00 variable cost per unit = $4,000

DIF: Moderate OBJ: 3-7

Companies R, S, and T

Three new companies (R, S, and T) began operations on January 1 of the current year. Consider the following operating costs that were incurred by these companies during the complete calendar year:

	Company R	Company S	Company T
Production in units	10,000	10,000	10,000
Sales price per unit	$10	$10	$10
Fixed production costs	$10,000	$20,000	$30,000
Variable production costs	$30,000	$20,000	$10,000
Variable SG&A	$10,000	$20,000	$30,000
Fixed SG&A	$30,000	$20,000	$10,000

104. Refer to Companies R, S, and T. Based on sales of 7,000 units, which company will report the greater income before income taxes if absorption costing is used?
a. Company R
b. Company S
c. Company T
d. All of the companies will report the same income.

ANS: D

Under absorption costing, the net income for all three companies is the same.

DIF: Moderate OBJ: 3-7

105. Refer to Companies R, S, and T. Based on sales of 7,000 units, which company will report the greater income before income taxes if variable costing is used?
a. Company R
b. Company S
c. Company T
d. All of the companies will report the same income.

ANS: A

Since Company R has the largest variable manufacturing costs, income will increase by the amount that was held in finished goods inventory.

DIF: Moderate OBJ: 3-7

106. Refer to Companies R, S, and T. Based on sales of 10,000 units, which company will report the greater income before income taxes if variable costing is used?
a. Company R
b. Company S
c. Company T
d. All of the companies will report the same income before income taxes.

ANS: D

Since all the companies have the same net income and all had the same amount of sales, all three companies would have the same net income under variable costing.

DIF: Moderate OBJ: 3-7

107. A firm has fixed costs of $200,000 and variable costs per unit of $6. It plans on selling 40,000 units in the coming year. To realize a profit of $20,000, the firm must have a sales price per unit of at least
a. $11.00.
b. $11.50.
c. $10.00.
d. $10.50.

ANS: B

Sales--40,000 units * $**11.50/unit**	$460,000
Variable Costs:	
Manufacturing	240,000
Contribution Margin	$220,000
Fixed Costs	200,000
Net Income	$ 20,000 =====

DIF: Moderate OBJ: 3-7

Bennett Corporation

Bennett Corporation produces a single product that sells for $7.00 per unit. Standard capacity is 100,000 units per year; 100,000 units were produced and 80,000 units were sold during the year. Manufacturing costs and selling and administrative expenses are presented below.

There were no variances from the standard variable costs. Any under- or overapplied overhead is written off directly at year-end as an adjustment to cost of goods sold.

	Fixed costs	Variable costs
Direct material	$0	$1.50 per unit produced
Direct labor	0	1.00 per unit produced
Manufacturing overhead	$150,000	0.50 per unit produced
Selling & Administration expense	80,000	0.50 per unit sold

Bennett Corporation had no inventory at the beginning of the year.

108. Refer to Bennett Corporation. In presenting inventory on the balance sheet at December 31, the unit cost under absorption costing is
a. $2.50.
b. $3.00.
c. $3.50.
d. $4.50.

ANS: D

DM + DL + VOH + FOH = Absorption Cost per Unit $1.50 + $1.00 + $0.50 + $(150,000/100,000) = $4.50 / Unit

DIF: Moderate OBJ: 3-7

109. Refer to Bennett Corporation. What is the net income under variable costing?
a. $50,000
b. $80,000
c. $90,000
d. $120,000

ANS: A

Sales	$560,000
Variable Costs:	
Materials	$120,000
Labor	80,000
Overhead	40,000
Selling and Administrative	40,000
Contribution Margin	$280,000
Fixed Costs	
Overhead	150,000
Selling and Administrative	80,000
Net Income	$ 50,000 =======

DIF: Moderate OBJ: 3-7

110. Refer to Bennett Corporation. What is the net income under absorption costing?
a. $50,000
b. $80,000
c. $90,000
d. $120,000

ANS: B

Sales	$560,000
Cost of Goods Sold:	
Materials	$120,000
Labor	80,000
Overhead (Variable and Fixed)	160,000
Gross Profit	$200,000
Fixed Costs:	
Selling and Administrative	$120,000
Net Income	$ 80,000

DIF: Moderate OBJ: 3-7

SHORT ANSWER

1. What are three reasons that overhead must be allocated to products?

   ANS:
   Overhead must be allocated because it is necessary to (1) determine fill cost, (2) it can motivate managers, and (3) it allows managers to compare alternative courses of action.

   DIF: Moderate OBJ: 3-1

2. Why should predetermined overhead rates be used?

   ANS:
   Predetermined overhead rates should be used for three reasons: (1) to assign overhead to Work in Process during the production cycle instead of at the end of the period; (2) to compensate for fluctuations in actual overhead costs that have no bearing on activity levels; and (3) to overcome problems of fluctuations in activity levels that have no impact on actual fixed overhead costs.

   DIF: Moderate OBJ: 3-1

3. What are the primary reasons for using a predetermined overhead rate?

   ANS:
   1. A predetermined overhead rate allows overhead to be assigned during a period and therefore improves the timeliness of information.
   2. A predetermined overhead rate adjusts for variations in actual overhead costs that are unrelated to activity.
   3. A predetermined overhead rate overcomes the problem of fluctuations in activity levels that have no impact on actual fixed overhead costs.
   4. Using a predetermined overhead rate often allows managers to be more aware of individual product or product line profitability as well as the profitability of doing business with a particular customer or vendor.

   DIF: Moderate OBJ: 3-1

4. Discuss underapplied and overapplied overhead and its disposition at the end of the period.

   ANS:
   During the course of the production cycle, actual overhead costs are incurred. When overhead is applied to Work in Process, it is commonly applied using a predetermined rate. Overhead application at a predetermined rate may cause overhead to be under- or overapplied. If actual overhead is greater than applied overhead, then underapplied overhead results and a debit balance exists in the overhead account. If applied overhead is greater than actual overhead, then overapplied overhead results and a credit balance exists in the overhead account. If the amount of under- or overapplied overhead is immaterial, it is closed directly to Cost of Goods Sold. If the amount is material, it must be allocated among Work in Process, Finished Goods, and Cost of Goods Sold.

   DIF: Moderate OBJ: 3-2

5. List and explain the four alternative measures of capacity.

   ANS:
   Theoretical capacity--This is the estimated maximum potential activity for a specified time. It assumes that all production factors are operating perfectly. It disregards such factors as machinery breakdowns and reduced plant operations.
   Practical capacity--This measure reduces theoretical capacity by ongoing regular operating interruptions. It represents the capacity that could realistically be achieved during normal working hours.
   Normal capacity--This measure considers historical and estimated future production levels and cyclical fluctuations.
   Expected capacity--This is a short-run capacity measure that represents the firm's anticipated activity level for the upcoming period based upon projected product demand.

   DIF: Difficult OBJ: 3-3

6. Discuss the high-low method.

   ANS:
   The high-low method is a technique for analyzing mixed costs. The high-low method analyzes changes at two levels of activity (the high end and the low end) within the relevant range. The changes in cost and activity are calculated for these two levels of activity. Dividing the change in cost by the change in activity determines the variable cost element portion of the mixed cost. Once this is determined, the fixed portion is computed by subtracting the variable element times either the high or low level of activity from respectively, total cost at either the high or low level of activity.

   DIF: Moderate OBJ: 3-4

7. Why do managers frequently prefer variable costing to absorption costing for internal use?

   ANS:
   Managers may prefer variable costing because it classifies costs both by their function and their behavior. When costs are classified by behavior, managers can more accurately predict how total costs will change when volume changes. With more accurate information, managers can make better production and pricing decisions.

   DIF: Moderate OBJ: 3-6

8. Why is variable costing not used extensively in external reporting?

   ANS:
   Variable costing is not used extensively outside of the firm because absorption costing is required by GAAP and the IRS.

   DIF: Moderate OBJ: 3-6

9. How can a company produce both variable and absorption costing information from a single accounting system?

   ANS:
   Firms only have one accounting information system. This system will be based on either variable or absorption costing. If the system needs to provide information in both the variable and absorption formats, the system's accounting information can be converted from one format to the other. The conversion requires an adjustment to the product inventory accounts and the amount of product costs charged against the period's income. The conversion is typically easier if standard costing is employed.

   DIF: Moderate OBJ: 3-7

10. What are the major differences between variable and absorption costing?

    ANS:
    The major difference between variable costing and absorption costing is in the way each defines product cost. While absorption costing includes fixed manufacturing overhead as a product cost, variable costing treats it as a cost of the period. A secondary difference between the two methods is the format of the income statement. Absorption costing utilizes the traditional income statement format that categorizes costs by their function only. Variable costing uses an income statement format that categorizes costs by both their function and behavior.

    DIF: Moderate OBJ: 3-6

11. Why is absorption costing not used for CVP analysis?

    ANS:
    Absorption costing is not used in break-even analysis because it presents a classification of costs by function rather than by behavior. Without a behavioral classification of costs, it is impossible to predict how total costs change as volume changes.

    DIF: Moderate OBJ: 3-7

12. How do differences in sales and production level affect net income computed under absorption costing and variable costing?

    ANS:
    If production equals sales, absorption costing net income equals variable costing net income.

    If production exceeds sales, absorption costing net income exceeds variable costing net income, because some fixed manufacturing overhead is deferred as inventory cost on the balance sheet.

    If production is less than sales, absorption costing net income is less than variable costing net income, because some fixed manufacturing overhead that had been deferred as inventory cost is now expensed.

    DIF: Moderate OBJ: 3-7

PROBLEM

1. Hume Corporation has the following data for the current year:

Direct Labor	$220,000
Direct Material	137,800
Actual Overhead	320,000
Applied Overhead	395,000
Raw Material	51,394
Work in Process	101,926
Finished Goods	111,192
Cost of Goods Sold	250,182

What is the amount of under- or overapplied overhead? Prepare the necessary journal entry to dispose of under- or overapplied overhead.

ANS:

Applied Overhead	$395,000	
Actual Overhead	320,000	
	$ 75,000	overapplied

WIP $101,926/$463,300=.22	x	$75,000 = $16,500
FG $111,192/$463,300=.24	x	$75,000 = $18,000
CGS $250,182/$463,300=.54	x	$75,000 = $40,500

Manufacturing Overhead	$75,000	
Work in Process		$16,500
Finished Goods		18,000
Cost of Goods Sold		40,500

DIF: Moderate OBJ: 3-2

2. Leon Corporation has the following data relating to its power usage for the first six months of the current year.

Month	Usage	(Kw)Cost
Jan.	500	$450
Feb.	550	455
Mar.	475	395
Apr.	425	310
May	450	380
June	725	484

Assume usage is within the relevant range of activity.

Required:

a. Using the high-low method, compute the cost formula.

b. Leon Corporation estimates its power usage for July at 660 watts. Compute the total power cost for July.

ANS:

	Usage	Cost
High	725	$484
Low	425	310
	300	$174

$174/300 = $.58 x 425 = $246.50 Total variable cost

$310 (TC) - $246.50 (TVC) = $63.50 Fixed cost

TC = $63.50 + $0.58(VC)

At 660 kw, the total cost would be

TC = $63.50 + $0.58(660 kwh)
TC = $446.30

DIF: Moderate OBJ: 3-4

3. Miller Corporation applies overhead at the rate of 70 percent of direct labor. Miller incurred $450,000 of direct labor during the current year. Miller incurred actual overhead of $367,000.

(a) Compute the amount of under- or overapplied overhead for Miller Corporation for the current year
(b) Prepare the necessary journal entry to dispose of the under- or overapplied overhead (assuming that the amount is immaterial).

ANS:

a. $450,000 x 70% = $315,000 applied overhead
367,000 actual overhead
$ 52,000 underapplied overhead

b.

Cost of Goods Sold	$52,000	
Manufacturing Overhead		$52,000

DIF: Easy OBJ: 3-2

4. Action Trainers provides a personalized training program that is popular with many companies. The number of programs offered over the last five months, and the costs of offering these programs are as follows:

	Programs Offered	Costs Incurred
Jan	55	$15,400
Feb	45	14,050
Mar	60	18,000
April	50	14,700

May	75	19,000

a. Using the high-low method, compute the variable cost per program and the total fixed cost per month.
b. Using the least squares regression method, compute the variable cost per program and the total fixed cost per month.

ANS:

a. Variable cost per program:

$\frac{\text{Change in costs}}{\text{Change in activity}} \quad \frac{\$19{,}000 - \$14{,}050}{75 - 45} = \$165$ per program

Fixed cost:
At high activity = $19,000 - (75 x $165) = $6,625 per month
At low activity = $14,050 - (45 x $165) = $6,625 per month

b.

x	y	xy	x^2
55	$15,400	$ 847,000	3,025
45	14,050	632,250	2,025
60	18,000	1,080,000	3,600
50	14,700	735,000	2,500
75	19,000	1,425,000	5,625
285	$81,150	$4,719,250	16,775

$\bar{X} = 57$

$\bar{Y} = 16{,}230$

$b = 4{,}719{,}250 - (5 \times 57 \times 16{,}230) \div (16{,}775 - (5 \times 57^2))$
b = 176.79
a = 16,230 - (176.79 × 57)
a = 6,152.97

DIF: Moderate OBJ: 3-4

5. The facility manager of Bello Corporation asked the systems analyst for information to help in forecasting handling costs. The following printout was generated using the least squares regression method.

Fixed cost	$2550
Variable cost per unit	1.85
Activity variable	units of production volume

a. Using the information from the printout, develop a cost function that can be used to estimate handling costs at different volume levels.
b. Estimate handling costs if expected production for next month is 20,000 units.

ANS:

a. Total handling costs = $2,550 + $1.85 (unit production)
Total handling costs = $2,550 + ($1.85 x 20,000) = $39,550

b.

DIF: Moderate OBJ: 3-4

6. The McAlister Co. has the following information available regarding costs and revenues for two recent months. Selling price is $20.

	March	April
Sales revenue	$60,000	$100,000
Cost of goods sold	-36,000	- 60,000
Gross profit	$24,000	$ 40,000
Less other expenses:		
Advertising	$ 600	$ 600
Utilities	4,200	5,600
Salaries and commissions	3,200	4,000
Supplies (bags, cleaning supplies etc.)	320	400
Depreciation	2,300	2,300
Administrative costs	1,900	1,900
Total	-12,520	-14,800
Net income	$11,480	$25,200

Required:

a. Identify each of the company's expenses (including cost of goods sold) as being either variable, fixed, or mixed.
b. By use of the high-low method, separate each mixed expense into variable and fixed elements. State the cost formula for each mixed expense.
c. What is the total cost equation?
d. Estimate total cost if sales = $75,000.

ANS:

a.

Cost	April	May	Behavior
COGS	36,000/60,000=60%	60,000/100,000=60%	V
Advertising	600	600	F
Utilities	4,200/60,000= 7%	5,600/100,000=5.6%	M
Salaries, Etc. 3,200/60,000=5.3%	4,000/100,000=4%	M	
Supplies	320/60,000 .53%	400/100,000=.4%	M
Depreciation	2,300	2,300	F
Administration	1,900	1,900	F

b. Utilities $1,400 / $40,000 = 3.5% Sales

FC = $4,200 - (3.5% x 60,000) = $2,100

Salaries $800/$40,000 = 2% Sales

FC = $3,200 - (2% x 60,000) = $2,000

Supplies $80/$40,000 = .2% sales

FC = $320 - (.2% x $60,000) = $200

c. Total FC = $600 + $2,300 + $1,900 + $2,100 + $2,000 + $200 = $9,100
Total VC = 60% + 3.5% + 2% + .2% = 65.7% sales
TC = $9,100 + 65.7% sales

d. TC = $9100 + (65.7% x $75,000) = $58,375

DIF: Moderate OBJ: 3-4

7. Browning Company owns two luxury automobiles that are used by employees on company business. Mileage and expenses, excluding depreciation, by quarters for the most recent year are presented below:

Quarter	Mileage	Expenses
First	3,000	$ 550
Second	3,500	560
Third	2,000	450
Fourth	3,500	600
	12,000	$2,160

Required: Determine the variable cost per mile (nearest tenth of a cent) and the fixed costs per quarter, using the method of least squares.

ANS:

	X	Y	XY	X^2
1ST	3,000	$550	$1,650,000	9,000,000
2ND	3,500	560	1,960,000	12,250,000
3RD	2,000	450	900,000	4,000,000
4TH	3,500	600	2,100,000	12,250,000
	12,000	$2,160	$6,610,000	37,500,000

$\bar{X}$ = 12,000/4 = 3,000/miles per quarter

$\bar{Y}$ = $2,160/4 = $540

b = $\frac{\$6,610,000 - 4\ (3,000)\ (\$540)}{\$37,500,000 - 4\ (3,000)\ (3,000)} = \frac{\$130,000}{\$1,500,000}$ = $.087/mile

a = $540 - ($.087) (3,000) = $279

TC = $279 + .087/mile

DIF: Moderate OBJ: 3-4

8. On December 30, a fire destroyed most of the accounting records of the Adams Division, a small one-product manufacturing division that uses standard costs and flexible budgets. All variances are written off as additions to (or deductions from) income; none are pro-rated to inventories. You have the task of reconstructing the records for the year. The general manager informs you that the accountant has been experimenting with both absorption costing and variable costing.

   The following information is available for the current year:

a.	Cash on hand, December 31	$10	
b.	Sales	$128,000	
c.	Actual fixed indirect manufacturing costs	21,000	
d.	Accounts receivable, December 31	20,000	
e.	Standard variable manufacturing costs per unit	1	
f.	Variances from standard of all variable manufacturing costs	$5,000	U
g.	Operating income, absorption-costing basis	$14,400	
h.	Accounts payable, December 31	18,000	
i.	Gross profit, absorption costing at standard (before deducting variances)	22,400	
j.	Total liabilities	100,000	
k.	Unfavorable budget variance, fixed manufacturing costs	1,000	U
l.	Notes receivable from chief accountant	4,000	
m.	Contribution margin, at standard (before deducting variances)	48,000	
n.	Direct-material purchases, at standard prices	50,000	
o.	Actual selling and administrative costs (all fixed)	6,000	

   Required:

   Compute the following items (ignore income tax effects).

1. Operating income on a variable-costing basis.
2. Number of units sold.
3. Number of units produced.
4. Number of units used as the denominator to obtain fixed indirect cost application rate per unit on absorption-costing basis.
5. Did inventory (in units) increase or decrease? Explain.
6. By how much in dollars did the inventory level change (a) under absorption costing, (b) under variable costing?
7. Variable manufacturing cost of goods sold, at standard prices.
8. Manufacturing cost of goods sold at standard prices, absorption costing.

   ANS:

1.

CM	48,000	Actual fix mfg	$21,000	
- FC	(26,000)	- unfavorable VAR	(1,000)	
Operating Income (STD)	$22,000	fix cost @STD	$20,000	
- unfavorable variances	(6,000)			
Operating Income (actual)	$16,000			

2.

Sales	$128,000	
- CM	(48,000)	
= VC	$ 80,000	/$1 UNIT = 80,000 units sold

3. Sales $128,000

- GM	(22,400)
COGS	$105,600 /80,000 = $1.32

Difference in OI = (P - S) × fix mfg/unit
$(1,600) = (P - 80,000) × $.32 P = 75,000

4. OI - absorption cost = $22,400 - $6,000 =

	$ 16,400	OI STD
	(14,400)	OI ACT
variances	$ 2,000	UNF
- other VAR	6,000	UNF
VOL VAR	$ 4,000	FAV

$4,000 F = (75,000 - X) × $.32
X = 62,500 units produced

5. Inventory decreased. OI absorption is less than OI variable.

6. Absorption cost 5,000 units × $1.32 = $6,600
Variable cost 5,000 units × $1 = $5,000

7. 80,000 units × $1 = $80,000

8. 80,000 × $1.32 = $105,600

DIF: Difficult OBJ: 3-7

9. Sports Innovators has developed a new design to produce hurdles that are used in track and field competition. The company's hurdle design is innovative in that the hurdle yields when hit by a runner and its height is extraordinarily easy to adjust. Management estimates expected annual capacity to be 90,000 units; overhead is applied using expected annual capacity. The company's cost accountant predicts the following 2001 activities and related costs:

Standard unit variable manufacturing costs	$12
Variable unit selling expense	$5
Fixed manufacturing overhead	$480,000
Fixed selling and administrative expenses	$136,000
Selling price per unit	$35
Units of sales	80,000
Units of production	85,000
Units in beginning inventory	10,000

Other than any possible under- or overapplied fixed overhead, management expects no variances from the previous manufacturing costs. Under- or overapplied fixed overhead is to be written off to Cost of Goods Sold.

Required:

1. Determine the amount of under- or overapplied fixed overhead using (a) variable costing and (b) absorption costing.

2. Prepare projected income statements using (a) variable costing and (b) absorption costing.

3. Reconcile the incomes derived in part 2.

ANS:

1. a. $0

   b. (90,000 - 85,000) × $5.33 = $26,650 U

2. a.

Sales (80,000 × $35) =	$2,800,000
- VC (80,000 × $17) =	(1,360,000)
CM	$1,440,000
- FC	(616,000)
Income before income taxes	$ 824,000

   b.

Sales (80,000 × $35)	$2,800,000
- COGS ($17.33 × 80,000)	(1,386,400)
GM	$1,413,600
- S&A	(536,000)
Income before income (STD)	$ 877,600
- VOL VAR	(26,650)
Income before income taxes	$ 850,950

3. 5,000 × $5.33 = $26,650.

DIF: Moderate OBJ: 3-7

10. Sherrill Corporation produces a single product. The following is a cost structure applied to its first year of operations.

Sales price	$15 per unit
Variable costs:	
SG&A	$2 per unit
Production	$4 per unit
Fixed costs (total cost incurred for the year):	
SG&A	$14,000
Production	$20,000

During the first year, Sherrill Corporation manufactured 5,000 units and sold 3,800. There was no beginning or ending work-in-process inventory.

a. How much income before income taxes would be reported if Stanley uses absorption costing?
b. How much income before income taxes would be reported if variable costing was used?
c. Show why the two costing methods give different income amounts.

ANS:

a. Income under absorption costing is:

Sales $15 × 3,800 =		$57,000
COGS 3,800 × ($4 + $20,000/5,000)		30,400
GM		$26,600
Oper. Exp.		
VSE $2 × 3,800 =	$ 7,600	

FSE	14,000	(21,600)
Absorption income before income taxes		$ 5,000

b. Income under variable costing:

CMU = SP - VProd.Cost - VSGA = $15 - $4 - $2 = $9	
× Vol. sold 3,800	
CM	$34,200
Less: FC - Production	(20,000)
SG&A	(14,000)
Variable costing income before income taxes	$ 200

c. Reason for difference in income:

Fixed costs expensed under absorp. costing	
COGS 3,800 × $20,000/5,000 units	$15,200
Fixed SG&A	14,000
Total	$29,200
Fixed costs expensed under variable costing	
Fixed SG&A	$14,000
Fixed Production	20,000
Total FC	$34,000
Difference in FC expensed under two methods	$ 4,800

This is also the difference in income amounts.

DIF: Moderate OBJ: 3-7

11. Trent Johnson Company used least squares regression analysis to obtain the following output:

Personnel Department Cost
Explained by Number of
Employees

Constant	$5,800
Standard error of Y estimate	$630
R - squared	0.8924
No. of observations	20
Degrees of freedom	18
X coefficient(s)	1.902
Standard error of coefficient(s)	0.0966

a. What is the total fixed cost?

b. What is the variable cost per employee?

c. Prepare the linear cost function.

d. What is the coefficient of determination? Comment on the goodness of fit.

ANS:

a. The constant or intercept is the total fixed cost of $5,800.

b. The variable cost per employee is the X coefficient of $1.902.

c. Personnel department cost = $5,800 + $1.902 * (number of employees).

d. The coefficient of determination is the R - squared of 0.8924. This represents a very high goodness of fit. The closer to 1.0, the better the cost driver explains the dependent variable. Therefore, the conclusion can be drawn that there is a significant relationship between the cost of the personnel department and the number of employees.

DIF: Difficult OBJ: 3-7