LEARNING OBJECTIVES

LO 1	How are the outputs of a joint process classified?
LO 2	At what point in a process are joint products identifiable?
LO 3	What management decisions must be made before beginning a joint process?
LO 4	How is the joint cost of production allocated to joint products?
LO 5	How are by-products and scrap accounted for?
LO 6	How should not-for-profit organizations account for joint costs?

QUESTION GRID

True/False

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
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

Completion

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1	x			x					
2	x			x					
3	x			x					

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

Multiple Choice

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
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	
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		

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
40		x					x		
41		x					x		
42		x					x		
43		x					x		
44		x					x		
45		x					x		
46	x						x		
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		

Short-Answer

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1		x				x			
2		x					x		
3		x					x		
4		x							x
5		x					x		
6		x						x	

Problems	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
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		

TRUE/FALSE

1. Joint costs occur after the split-off point in a production process

   ANS: F DIF: Easy OBJ: 11-1

2. Joint costs occur before the split-off point in a production process

   ANS: T DIF: Easy OBJ: 11-1

3. Joint costs are allocated to by-products as well as primary products.

   ANS: F DIF: Easy OBJ: 11-1

4. The primary distinction between by-products and scrap is the difference in sales value.

   ANS: T DIF: Easy OBJ: 11-1

5. The primary distinction between by-products and scrap is the difference in volume produced.

   ANS: F DIF: Easy OBJ: 11-1

6. The point at which individual products are first identifiable in a joint process is referred to as the split-off point

   ANS: T DIF: Easy OBJ: 11-2

7. Joint costs include all materials, labor and overhead that are incurred before the split-off point.

   ANS: T DIF: Easy OBJ: 11-1

8. Two methods of allocating joint costs to products are physical measure allocation and monetary allocation.

   ANS: T DIF: Easy OBJ: 11-4

9. A decision that must be made at split-off is to sell a product or process it further.

   ANS: T DIF: Easy OBJ: 11-3

10. Allocating joint costs based upon a physical measure ignores the revenue-generating ability of individual products.

    ANS: T DIF: Moderate OBJ: 11-4

11. Allocating joint costs based upon a physical measure considers the revenue-generating ability of individual products.

    ANS: F DIF: Moderate OBJ: 11-4

12. Monetary allocation measures recognize the revenue generating ability of each product in a joint process.

ANS: T DIF: Moderate OBJ: 11-4

13. The relative sales value method requires a common physical unit for measuring the output of each product.

ANS: F DIF: Easy OBJ: 11-4

14. Joint costs are allocated to main products, but not to by-products

ANS: T DIF: Easy OBJ: 11-5

15. Net realizable value equals product sales revenue at split-off plus any costs necessary to prepare and dispose of the product.

ANS: F DIF: Moderate OBJ: 11-4

16. Net realizable value equals product sales revenue at split-off minus any costs necessary to prepare and dispose of the product.

ANS: T DIF: Moderate OBJ: 11-4

17. If incremental revenues beyond split-off are less than incremental costs, a product should be sold at the split-off point.

ANS: T DIF: Moderate OBJ: 11-4

18. If incremental revenues beyond split-off exceed incremental costs, a product should be processed further.

ANS: T DIF: Moderate OBJ: 11-4

19. The net realizable value approach requires that the net realizable value of by-products and scrap be treated as a reduction in joint costs allocated to primary products.

ANS: T DIF: Moderate OBJ: 11-4

20. Net realizable value is considered to be the best measure of the expected contribution of each product to the coverage of joint costs.

ANS: T DIF: Moderate OBJ: 11-4

21. The net realizable value approach is used to account for scrap and by-products when the net realizable value is insignificant.

ANS: F DIF: Moderate OBJ: 11-5

22. The net realizable value approach is used to account for scrap and by-products when the net realizable value is significant.

    ANS: T DIF: Moderate OBJ: 11-5

23. Under the realized value approach, no value is recognized for by-products or scrap until they are actually sold.

    ANS: T DIF: Moderate OBJ: 11-5

24. Under the net realizable value approach, no value is recognized for by-products or scrap until they are actually sold.

    ANS: F DIF: Moderate OBJ: 11-5

25. Not-for-profit entities are required to allocate joint costs among fund-raising, program, and administrative functions.

    ANS: T DIF: Moderate OBJ: 11-6

COMPLETION

1. A single process in which one product cannot be manufactured without producing others is referred to as a _____.

   ANS: joint process

   DIF: Easy OBJ: 11-1

2. Costs that are incurred in the manufacture of two or more products from a common process are referred to as _____.

   ANS: joint costs

   DIF: Easy OBJ: 11-1

3. Costs that are incurred after the split-off point in a production process are referred to as _____.

   ANS: separate costs

   DIF: Easy OBJ: 11-1

4. Three types of products that result from a joint process are _____,_____, and _____.

   ANS: joint products, byproducts, scrap

   DIF: Easy OBJ: 11-1

5. Two incidental products of a joint process are _____ and _____.

   ANS: by-products; scrap

   DIF: Easy OBJ: 11-1

6. The point at which individual products are first identifiable in a joint process is referred to as the _____.

   ANS: split-off point

   DIF: Easy OBJ: 11-2

7. Two methods of allocating joint costs to individual products are _____ and _____.

   ANS: physical measurement allocation; monetary unit allocation

   DIF: Moderate OBJ: 11-4

8. Three monetary measures used to allocate joint costs to products are _____, _____, and _____.

   ANS: sales value at split-off; net realizable value at split-off; approximated net realizable value at split-off

   DIF: Moderate OBJ: 11-4

9. Sales revenue at split-off less disposal costs equals _____.

   ANS: net realizable value.

   DIF: Easy OBJ: 11-4

MULTIPLE CHOICE

1. If a company obtains two salable products from the refining of one ore, the refining process should be accounted for as a(n)
   a. mixed cost process.
   b. joint process.
   c. extractive process.
   d. reduction process.

   ANS: B DIF: Easy OBJ: 11-1

2. Joint costs are allocated to joint products to
   a. obtain a cost per unit for financial statement purposes.
   b. provide accurate management information on production costs of each type of product.
   c. compute variances from expected costs for each joint product.
   d. allow the use of high-low analysis by the company.

   ANS: A DIF: Easy OBJ: 11-1

3. Joint costs are allocated to which of the following products?

	By-products	Scrap
a.	yes	yes
b.	yes	no
c.	no	no
d.	no	yes

ANS: C DIF: Easy OBJ: 11-1

4. Joint cost allocation is useful for
   a. decision making.
   b. product costing.
   c. control.
   d. evaluating managers' performance.

ANS: B DIF: Easy OBJ: 11-1

5. Joint costs are useful for
   a. setting the selling price of a product.
   b. determining whether to continue producing an item.
   c. evaluating management by means of a responsibility reporting system.
   d. determining inventory cost for accounting purposes.

ANS: D DIF: Easy OBJ: 11-1

6. Which of the following components of production are allocable as joint costs when a single manufacturing process produces several salable products?
   a. direct material, direct labor, and overhead
   b. direct material and direct labor only
   c. direct labor and overhead only
   d. overhead and direct material only

ANS: A DIF: Easy OBJ: 11-2

7. Each of the following is a method to allocate joint costs **except**
   a. relative sales value.
   b. relative net realizable value.
   c. relative weight, volume, or linear measure.
   d. average unit cost.

ANS: D DIF: Easy OBJ: 11-4

8. Joint costs are most frequently allocated based upon relative
   a. profitability.
   b. conversion costs.
   c. prime costs.
   d. sales value.

ANS: D DIF: Easy OBJ: 11-4

9. When allocating joint process cost based on tons of output, **all** products will
   a. be salable at split-off.
   b. have the same joint cost per ton.
   c. have a sales value greater than their costs.
   d. have no disposal costs at the split-off point.

   ANS: B DIF: Easy OBJ: 11-4

10. If two or more products share a common process before they are separated, the joint costs should be assigned in a manner that
    a. assigns a proportionate amount of the total cost to each product on a quantitative basis.
    b. maximizes total earnings.
    c. minimizes variations in unit production costs.
    d. does not introduce an element of estimation into the process of accumulating costs for each product.

    ANS: A DIF: Easy OBJ: 11-2

11. Scrap is defined as a
    a. finished unit of product that has no sales value.
    b. residual of the production process that has limited sales value.
    c. residual of the production process that can be reworked for sale as an irregular unit of product.
    d. residual of the production process that has no sales value.

    ANS: B DIF: Easy OBJ: 11-1

12. Waste created by a production process is
    a. accounted for in the same manner as defective units.
    b. accounted for as an abnormal loss.
    c. material that can be sold as an irregular product.
    d. discarded rather than sold.

    ANS: D DIF: Easy OBJ: 11-1

13. While preparing a salad, you remove the core of a head of lettuce. This core would be classified as
    a. defective.
    b. shrinkage.
    c. waste.
    d. scrap.

    ANS: C DIF: Easy OBJ: 11-1

14. Which of the following is/are synonyms for joint products?

	Main products	Co-products
a.	no	no
b.	yes	yes
c.	yes	no
d.	no	yes

    ANS: B DIF: Easy OBJ: 11-1

15. In a lumber mill, which of the following would most likely be considered a primary product?
    a. 2×4 studs
    b. sawdust
    c. wood chips
    d. tree bark

    ANS: A DIF: Easy OBJ: 11-1

16. Fisher Company produces three products from a joint process. The products can be sold at split-off or processed further. In deciding whether to sell at split-off or process further, management should
    a. allocate the joint cost to the products based on relative sales value prior to making the decision.
    b. allocate the joint cost to the products based on a physical quantity measure prior to making the decision.
    c. subtract the joint cost from the total sales value of the products before determining relative sales value and making the decision.
    d. ignore the joint cost in making the decision.

    ANS: D DIF: Easy OBJ: 11-3

17. By-products are
    a. allocated a portion of joint production cost.
    b. not sufficient alone, in terms of sales value, for management to justify undertaking the joint process.
    c. also known as scrap.
    d. the primary reason management undertook the production process.

    ANS: B DIF: Easy OBJ: 11-1

18. Which of the following statements is **true** regarding by-products or scrap?
    a. Process costing is the only method that should result in by-products or scrap.
    b. Job order costing systems will never have by-products or scrap.
    c. Job order costing systems may have instances where by-products or scrap result from the production process.
    d. Process costing will never have by-products or scrap from the production process.

    ANS: C DIF: Moderate OBJ: 11-5

19. Which of the following has sales value?

	By-products	Waste
a.	no	no
b.	yes	no
c.	yes	yes
d.	no	yes

    ANS: B DIF: Easy OBJ: 11-5

20. Under an acceptable method of costing by-products, inventory costs of the by-product are based on the portion of the joint production cost allocated to the by-product
    a. but any subsequent processing cost is debited to the cost of the main product.
    b. but any subsequent processing cost is debited to revenue of the main product.
    c. plus any subsequent processing cost.
    d. minus any subsequent processing cost.

    ANS: C DIF: Easy OBJ: 11-5

21. Which of the following is a **false** statement about scrap and by-products?
    a. Both by-products and scrap are salable.
    b. A by-product has a higher sales value than does scrap.
    c. By-products and scrap are the primary reason that management undertakes the joint process.
    d. Both scrap and by-products are incidental outputs to the joint process.

    ANS: C DIF: Easy OBJ: 11-5

22. The split-off point is the point at which
    a. output is first identifiable as individual products.
    b. joint costs are allocated to joint products.
    c. some products may first be sold.
    d. all of the above.

    ANS: D DIF: Easy OBJ: 11-2

23. A product may be processed beyond the split-off point if management believes that
    a. its marketability will be enhanced.
    b. the incremental cost of further processing will be less than the incremental revenue of further processing.
    c. the joint cost assigned to it is not already greater than its prospective selling price.
    d. both a and b.

    ANS: D DIF: Easy OBJ: 11-3

24. Which of the following would **not** be considered a sunk cost?
    a. direct material cost
    b. direct labor cost
    c. joint cost
    d. building cost

    ANS: D DIF: Easy OBJ: 11-3

25. The definition of a sunk cost is
    a. a cost that cannot be recovered regardless of what happens.
    b. a cost that relates to money poured into the ground.
    c. considered the original cost of an item.
    d. also known as an opportunity cost.

    ANS: A DIF: Easy OBJ: 11-3

26. The net realizable value approach mandates that the NRV of the by-products/scrap be treated as
    a. an increase in joint costs.
    b. a sunk cost.
    c. a reduction of joint costs.
    d. a cost that can be ignored totally.

    ANS: C DIF: Easy OBJ: 11-5

27. The net realizable value approach is normally used when the NRV is expected to be

	insignificant	significant
a.	yes	yes
b.	no	yes
c.	no	no
d.	yes	no

    ANS: B DIF: Easy OBJ: 11-5

28. Approximated net realizable value at split-off for joint products is computed as
    a. selling price at split-off minus further processing and disposal costs.
    b. final selling price minus further processing and disposal costs.
    c. selling price at split-off minus allocated joint processing costs.
    d. final selling price minus a normal profit margin.

    ANS: B DIF: Easy OBJ: 11-4

29. Which of the following is a commonly used joint cost allocation method?
    a. high-low method
    b. regression analysis
    c. approximated sales value at split-off method
    d. weighted average quantity technique

    ANS: C DIF: Easy OBJ: 11-4

30. Incremental separate costs are defined as all costs incurred between _____ and the point of sale.
    a. inception
    b. split-off point
    c. transfer to finished goods inventory
    d. point of addition of disposal costs

    ANS: B DIF: Easy OBJ: 11-3

31. All costs that are incurred between the split-off point and the point of sale are known as
    a. sunk costs.
    b. incremental separate costs.
    c. joint cost.
    d. committed costs.

    ANS: B DIF: Easy OBJ: 11-3

32. Incremental revenues and costs need to be considered when using which allocation method?

	Physical measures	Sales value at split-off
a.	yes	yes
b.	yes	no
c.	no	no
d.	no	yes

ANS: C DIF: Moderate OBJ: 11-4

33. The method of pricing by-products/scrap where no value is assigned to these items until they are sold is known as the
    a. net realizable value at split-off point method.
    b. sales value at split-off method.
    c. realized value approach.
    d. approximated net realizable value at split-off method.

ANS: C DIF: Moderate OBJ: 11-5

34. Relative sales value at split-off is used to allocate

	costs beyond split-off	joint costs
a.	yes	yes
b.	yes	no
c.	no	yes
d.	no	no

ANS: C DIF: Easy OBJ: 11-5

35. For purposes of allocating joint costs to joint products using the relative sales value at split-off method, the costs beyond split-off
    a. are allocated in the same manner as the joint costs.
    b. are deducted from the relative sales value at split-off.
    c. are deducted from the sales value at the point of sale.
    d. do not affect the allocation of the joint costs.

ANS: D DIF: Easy OBJ: 11-5

36. Not-for-profit organizations are required by the _____ to allocate joint costs.
    a. AICPA
    b. FASB
    c. CASB
    d. GASB

ANS: A DIF: Difficult OBJ: 11-6

Ratcliff Company

Ratcliff Company produces two products from a joint process: X and Z. Joint processing costs for this production cycle are $8,000.

	Yards	Sales price per yard at split-off	Disposal cost per yard at split-off	Further processing per yard	Final sale price per yard
X	1,500	$6.00	$3.50	$1.00	$ 7.50
Z	2,200	9.00	5.00	3.00	11.25

If X and Z are processed further, no disposal costs will be incurred or such costs will be borne by the buyer.

37. Refer to Ratcliff Company. Using a physical measure, what amount of joint processing cost is allocated to X (round to the nearest dollar)?
    a. $4,000
    b. $4,757
    c. $5,500
    d. $3,243

    ANS: D

    1,500/3,700 * $8,000 = $3,243

    DIF: Easy OBJ: 11-4

38. Refer to Ratcliff Company. Using a physical measure, what amount of joint processing cost is allocated to Z (round to the nearest dollar)?
    a. $4,000
    b. $3,243
    c. $5,500
    d. $4,757

    ANS: D

    2,200/3,700 * $8,000 = $4,757

    DIF: Easy OBJ: 11-4

39. Refer to Ratcliff Company. Using sales value at split-off, what amount of joint processing cost is allocated to X (round to the nearest dollar)?
    a. $5,500
    b. $2,500
    c. $4,000
    d. $3,243

    ANS: B

	Yards	Sales price at Split-off	Total
X	1,500	$6.00	$ 9,000
Y	2,200	$9.00	$19,800
			$28,800
$(9,000/28,800) * $8,000 = $2,500			

    DIF: Moderate OBJ: 11-4

40. Refer to Ratcliff Company. Using sales value at split-off, what amount of joint processing cost is allocated to Z (round to the nearest dollar)?
    a. $5,500
    b. $4,000
    c. $2,500
    d. $4,757

    ANS: A

	Yards	Sales price at Split-off	Total
X	1,500	$6.00	$ 9,000
Y	2,200	$9.00	$19,800
			$28,800
$(19,800/28,800) * $8,000 = $5,500			

    DIF: Moderate OBJ: 11-4

41. Refer to Ratcliff Company. Using net realizable value at split-off, what amount of joint processing cost is allocated to X (round to the nearest dollar)?
    a. $4,000
    b. $5,610
    c. $2,390
    d. $5,500

    ANS: C

	Yards	Sales price at Split-off	Disposal Cost/Yard	NRV/ Splitoff	Total NRV
X	1,500	$6.00	$3.50	$2.50	$ 3,750
Y	2,200	$9.00	$5.00	$4.00	$ 8,800
					$12,550
$(3,750/12,550) * $8,000 = $2,390					

    DIF: Moderate OBJ: 11-4

42. Refer to Ratcliff Company. Using net realizable value at split-off, what amount of joint processing cost is allocated to Z (round to the nearest dollar)?
    a. $5,500
    b. $4,000
    c. $2,390
    d. $5,610

    ANS: D

	Yards	Sales price at Split-off	Disposal Cost/Yard	NRV/ Splitoff	Total NRV
X	1,500	$6.00	$3.50	$2.50	$ 3,750
Y	2,200	$9.00	$5.00	$4.00	$ 8,800
					$12,550
$(8,800/12,550) * $8,000 = $5,610					

    DIF: Moderate OBJ: 11-4

43. Refer to Ratcliff Company. Using approximated net realizable value at split-off, what amount of joint processing cost is allocated to X (round to the nearest dollar)?
    a. $3,090
    b. $5,204
    c. $4,000
    d. $2,390

    ANS: A

	Yards	Final Sales Price	Separate Cost per Yard	Net Sales Price	Approximated NRV
X	1,500	$ 7.50	$4.50	$3.00	$ 4,500
Y	2,200	$11.25	$8.50	$3.25	$ 7,150
					$11,650
$(4,500/11,650) * $8,000 = $3,090					

    DIF: Moderate OBJ: 11-4

44. Refer to Ratcliff Company. Using approximated net realizable value at split-off, what amount of joint processing cost is allocated to Z (round to the nearest dollar)?
    a. $2,796
    b. $4,910
    c. $4,000
    d. $2,390

    ANS: B

	Yards	Final Sales Price	Separate Cost per Yard	Net Sales Price	Approximated NRV
X	1,500	$ 7.50	$4.50	$3.00	$ 4,500
Y	2,200	$11.25	$8.50	$3.25	$ 7,150
					$11,650
$(7,150/11,650) * $8,000 = $4,910					

    DIF: Moderate OBJ: 11-4

45. Refer to Ratcliff Company. Which products would be processed further?
    a. only X
    b. only Z
    c. both X and Z
    d. neither X or Z

    ANS: A

	Yards	Incremental Revenues	Incremental Costs	Net Difference
X	1,500	$ 1.50	$1.00	$ 0.50
Y	2,200	$ 2.25	$3.00	$(0.75)

    DIF: Moderate OBJ: 11-4

Gordon Company

Gordon Company produces three products: A, B, and C from the same process. Joint costs for this production run are $2,100.

	Pounds	Sales price per lb. at split-off	Disposal cost per lb. at split-off	Further processing per pound	Final sales price per pound
A	800	$6.50	$3.00	$2.00	$ 7.50
B	1,100	8.25	4.20	3.00	10.00
C	1,500	8.00	4.00	3.50	10.50

If the products are processed further, Gordon Company will incur the following disposal costs upon sale: A, $3.00; B, $2.00; and C, $1.00.

46. Refer to Gordon Company. Using a physical measurement method, what amount of joint processing cost is allocated to Product A (round to the nearest dollar)?
    a. $700
    b. $679
    c. $927
    d. $494

    ANS: D

(800/3,400) * $2,100 = $494

    DIF: Easy OBJ: 11-4

47. Refer to Gordon Company. Using a physical measurement method, what amount of joint processing cost is allocated to Product B (round to the nearest dollar)?
    a. $494
    b. $679
    c. $927
    d. $700

    ANS: B

(1,100/3,400) * $2,100 = $679

    DIF: Easy OBJ: 11-4

48. Refer to Gordon Company. Using sales value at split-off, what amount of joint processing cost is allocated to Product B (round to the nearest dollar)?
    a. $700
    b. $416
    c. $725
    d. $959

    ANS: C

	Yards	Sales price at Split-off	Total
X	800	$6.50	$ 5,200
Y	1,100	$8.25	$ 9,075
Z	1,500	$8.00	$12,000
			$26,275
$(9,075/26,275) * $2,100 = $725			

    DIF: Moderate OBJ: 11-4

49. Refer to Gordon Company. Using sales value at split-off, what amount of joint processing cost is allocated to Product C (round to the nearest dollar)?
    a. $959
    b. $725
    c. $700
    d. $416

    ANS: A

	Yards	Sales price at Split-off	Total
X	800	$6.50	$ 5,200
Y	1,100	$8.25	$ 9,075
Z	1,500	$8.00	$12,000
			$26,275
$(12,000/26,275) * $2,100 = $959			

    DIF: Moderate OBJ: 11-4

50. Refer to Gordon Company. Using net realizable value at split-off, what amount of joint processing cost is allocated to Product A (round to the nearest dollar)?
    a. $706
    b. $951
    c. $700
    d. $444

    ANS: D

	Yards	Sales price at Split-off	Disposal Costs at Split-Off	Net Realizable Value at Splitoff	Total
X	800	$6.50	$3.00	$3.50	$ 2,800
Y	1,100	$8.25	$4.20	$4.05	$ 4,455
Z	1,500	$8.00	$4.00	$4.00	$ 6,000
					$13,255
$(2,800/13,255) * $2,100 = $444					

    DIF: Moderate OBJ: 11-4

51. Refer to Gordon Company. Using net realizable value at split-off, what amount of joint processing cost is allocated to Product C (round to the nearest dollar)?
    a. $706
    b. $951
    c. $444
    d. $700

    ANS: B

	Yards	Sales price at Split-off	Disposal Costs at Split-Off	Net Realizable Value at Splitoff	Total
X	800	$6.50	$3.00	$3.50	$ 2,800
Y	1,100	$8.25	$4.20	$4.05	$ 4,455
Z	1,500	$8.00	$4.00	$4.00	$ 6,000
					$13,255
$(6,000/13,255) * $2,100 = $951					

    DIF: Moderate OBJ: 11-4

Sabrina Company

Sabrina Company is placing an ad in the local paper to advertise its products. The ad will run for one week at a total cost of $5,500. Sabrina Company has four categories of products as follows:

	% of floor space occupied	Expected sales value
Hardware	20%	$35,000
Hand Tools	15	15,000
Lawn Furniture	45	64,500
Light Fixtures	20	25,500

52. Refer to Sabrina Company. What amount of advertising cost should be allocated to hardware, assuming Sabrina allocates based on percent of floor space occupied?
    a. $1,375
    b. $1,100
    c. $2,475
    d. $ 825

    ANS: B
    $5,500 * 0.20 = $1,100

    DIF: Easy OBJ: 11-4

53. Refer to Sabrina Company. Assume that Sabrina decides to allocate based on expected sales value. What amount of advertising cost should be allocated to light fixtures (round to the nearest dollar)?
    a. $1,375
    b. $589
    c. $1,002
    d. $2,534

    ANS: C
    $(25,500/140,000) * $5,500 = $1,002

    DIF: Moderate OBJ: 11-4

Versatile Company

Versatile Company produces four solvents from the same process: C, D, E, and G. Joint product costs are $9,000. (Round all answers to the nearest dollar.)

	Barrels	Sales price per barrel at split-off	Disposal cost per barrel at split-off	Further processing costs	Final sales price per barrel
C	750	$10.00	$6.50	$2.00	$13.50
D	1,000	8.00	4.00	2.50	10.00
E	1,400	11.00	7.00	4.00	15.50
G	2,000	15.00	9.50	4.50	19.50

If Versatile sells the products after further processing, the following disposal costs will be incurred: C, $2.50; D, $1.00; E, $3.50; G, $6.00.

54. Refer to Versatile Company. Using a physical measurement method, what amount of joint processing cost is allocated to Product D?
    a. $1,748
    b. $2,447
    c. $1,311
    d. $3,495

    ANS: A
    (1,000/5,150) * $9,000 = $1,748

    DIF: Moderate OBJ: 11-4

55. Refer to Versatile Company. Using a physical measurement method, what amount of joint processing cost is allocated to Product E?
    a. $3,495
    b. $2,447
    c. $1,748
    d. $1,311

    ANS: B
    (1,400/5,150) * $9,000 = $2,447

    DIF: Moderate OBJ: 11-4

56. Refer to Versatile Company. Using a physical measurement method, what amount of joint processing cost is allocated to Product C?
    a. $3,495
    b. $2,447
    c. $1,748
    d. $1,311

    ANS: D
    (750/5,150) * $9,000 = $1,311

    DIF: Moderate OBJ: 11-4

57. Refer to Versatile Company. Using a physical measurement method, what amount of joint processing cost is allocated to Product G?
    a. $3,495
    b. $2,447
    c. $1,748
    d. $1,311

    ANS: A
    (2,000/5,150) * $9,000 = $3,495

    DIF: Moderate OBJ: 11-4

58. Refer to Versatile Company. Using sales value at split-off, what amount of joint processing cost is allocated to Product D?
    a. $4,433
    b. $2,276
    c. $1,108
    d. $1,182

    ANS: D

Product	Barrels	Sales Price at Split-Off	Total
C	750	$10.00	$ 7,500
D	1,000	$ 8.00	$ 8,000
E	1,400	$11.00	$ 15,400
G	2,000	$15.00	$30,000
			$60,900
$(8,000/60,900) * $9,000 = $1,182			

    DIF: Moderate OBJ: 11-4

59. Refer to Versatile Company. Using sales value at split-off, what amount of joint processing cost is allocated to Product C?
    a. $4,433
    b. $2,276
    c. $1,108
    d. $1,182

    ANS: C

Product	Barrels	Sales Price at Split-Off	Total
C	750	$10.00	$ 7,500
D	1,000	$ 8.00	$ 8,000
E	1,400	$11.00	$ 15,400
G	2,000	$15.00	$30,000
			$60,900
$(7,500/60,900) * $9,000 = $1,108			

    DIF: Moderate OBJ: 11-4

60. Refer to Versatile Company. Using sales value at split-off, what amount of joint processing cost is allocated to Product G?
    a. $4,433
    b. $1,182
    c. $1,108
    d. $2,276

    ANS: A

Product	Barrels	Sales Price at Split-Off	Total
C	750	$10.00	$ 7,500
D	1,000	$ 8.00	$ 8,000
E	1,400	$11.00	$ 15,400
G	2,000	$15.00	$30,000
			$60,900
$(30,000/60,900) * $9,000 = $4,433			

    DIF: Moderate OBJ: 11-4

61. Refer to Versatile Company. Using sales value at split-off, what amount of joint processing cost is allocated to Product E?
    a. $4,433
    b. $1,182
    c. $1,108
    d. $2,276

    ANS: D

Product	Barrels	Sales Price at Split-Off	Total
C	750	$10.00	$ 7,500
D	1,000	$ 8.00	$ 8,000
E	1,400	$11.00	$ 15,400
G	2,000	$15.00	$30,000
			$60,900
$(15,400/60,900) * $9,000 = $2,276			

    DIF: Moderate OBJ: 11-4

62. Refer to Versatile Company. Using net realizable value at split-off, what amount of joint processing cost is allocated to Product C?
    a. $1,550
    b. $1,017
    c. $4,263
    d. $2,170

    ANS: B

Product	Barrels	Sales Price at Split-Off	Disposal Cost at Split-Off	Net Realizable Value at Split-Off	Total
C	750	$10.00	$6.50	$3.50	$ 2,625
D	1,000	$ 8.00	$4.00	$4.00	$ 4,000
E	1,400	$11.00	$7.00	$4.00	$ 5,600
G	2,000	$15.00	$9.50	$5.50	$11,000
					$23,225
$(2,625/23,225) * $9,000 = $1,017					

    DIF: Moderate OBJ: 11-4

63. Refer to Versatile Company. Using net realizable value at split-off, what amount of joint processing cost is allocated to Product D?
    a. $1,550
    b. $1,017
    c. $4,263
    d. $2,170

    ANS: A

Product	Barrels	Sales Price at Split-Off	Disposal Cost at Split-Off	Net Realizable Value at Split-Off	Total
C	750	$10.00	$6.50	$3.50	$ 2,625
D	1,000	$ 8.00	$4.00	$4.00	$ 4,000
E	1,400	$11.00	$7.00	$4.00	$ 5,600
G	2,000	$15.00	$9.50	$5.50	$11,000
					$23,225
$(4,000/23,225) * $9,000 = $1,550					

    DIF: Moderate OBJ: 11-4

64. Refer to Versatile Company. Using net realizable value at split-off, what amount of joint processing cost is allocated to Product E?
    a. $1,017
    b. $1,550
    c. $2,170
    d. $4,263

    ANS: C

Product	Barrels	Sales Price at Split-Off	Disposal Cost at Split-Off	Net Realizable Value at Split-Off	Total
C	750	$10.00	$6.50	$3.50	$ 2,625
D	1,000	$ 8.00	$4.00	$4.00	$ 4,000
E	1,400	$11.00	$7.00	$4.00	$ 5,600
G	2,000	$15.00	$9.50	$5.50	$11,000
					$23,225
$(5,600/23,225) * $9,000 = $2,170					

    DIF: Moderate OBJ: 11-4

65. Refer to Versatile Company. Using net realizable value at split-off, what amount of joint processing cost is allocated to Product G?
    a. $1,017
    b. $1,550
    c. $2,170
    d. $4,263

    ANS: D

Product	Barrels	Sales Price at Split-Off	Disposal Cost at Split-Off	Net Realizable Value at Split-Off	Total
C	750	$10.00	$6.50	$3.50	$ 2,625
D	1,000	$ 8.00	$4.00	$4.00	$ 4,000
E	1,400	$11.00	$7.00	$4.00	$ 5,600
G	2,000	$15.00	$9.50	$5.50	$11,000
					$23,225
$(11,000/23,225) * $9,000 = $4,263					

    DIF: Moderate OBJ: 11-4

Uniflo Company

Uniflo Company produces three products from the same process that has joint processing costs of $4,100. Products R, S, and T are produced in the following quantities: 250 gallons, 400 gallons, and 750 gallons. Uniflo Company also incurred advertising costs of $60,000. The ad was used to run sales for all three products. The three products occupy floor space in the following ratio: 5:4:9. (Round all answers to the nearest dollar.)

66. Refer to Uniflo Company. Using gallons as the physical measurement, what amount of joint processing cost is allocated to Product R?
    a. $2,196
    b. $1,171
    c. $1,367
    d. $ 732

    ANS: D

    (250/1,400) * $4,100 = $732

    DIF: Easy OBJ: 11-4

67. Refer to Uniflo Company. Using gallons as the physical measurement, what amount of joint processing cost is allocated to Product S?
    a. $2,196
    b. $1,171
    c. $1,367
    d. $ 732

    ANS: B

    (400/1,400) * $4,100 = $1,171

    DIF: Easy OBJ: 11-4

68. Refer to Uniflo Company. Using gallons as the physical measurement, what amount of joint processing cost is allocated to Product T?
    a. $2,196
    b. $732
    c. $1,367
    d. $1,171

    ANS: A

    (750/1,400) * $4,100 = $2,196

    DIF: Easy OBJ: 11-4

69. Refer to Uniflo Company. Assume that Uniflo chooses to allocate its advertising cost among the three products. What amount of advertising cost is allocated to Product R using the floor space ratio?
    a. $30,000
    b. $17,806
    c. $1,139
    d. $16,667

    ANS: D

    $60,000 * 5/18 = $16,667

    DIF: Easy OBJ: 11-4

70. Refer to Uniflo Company. Assume that Uniflo chooses to allocate its advertising cost among the three products. What amount of advertising cost is allocated to Product S using the floor space ratio?
    a. $911
    b. $14,244
    c. $13,333
    d. $30,000

    ANS: C

    4/18 * $60,000 = $13,333

    DIF: Easy OBJ: 11-4

71. Refer to Uniflo Company. Assume that Uniflo chooses to allocate its advertising cost among the three products. What amount of advertising cost is allocated to Product T using the floor space ratio?
    a. $911
    b. $14,244
    c. $13,333
    d. $30,000

    ANS: D

    9/18 * $60,000 = $30,000

    DIF: Easy OBJ: 11-4

72. Courtney Company manufactures products A and B from a joint process. Sales value at split-off was $700,000 for 10,000 units of A, and $300,000 for 15,000 units of B. Using the sales value at split-off approach, joint costs properly allocated to A were $140,000. Total joint costs were
    a. $ 98,000.
    b. $200,000.
    c. $233,333.
    d. $350,000.

    ANS: B

    $(700,000/1,000,000) * X = $140,000
    .70X = $140,000
    X = $200,000

    DIF: Easy OBJ: 11-4

Whalen Company manufactures products X and Y from a joint process that also yields a by-product, Z. Revenue from sales of Z is treated as a reduction of joint costs. Additional information is as follows:

	Products			
	X	Y	Z	Total
Units produced	20,000	20,000	10,000	50,000
Joint costs	?	?	?	$262,000
Sales value at split-off	$300,000	$150,000	$10,000	$460,000

Joint costs were allocated using the sales value at split-off approach.

73. Refer to Whalen Company. The joint costs allocated to product X were
    a. $ 84,000
    b. $100,800.
    c. $150,000.
    d. $168,000.

    ANS: D

$262,000 * $(300,000/450,000) = $174,667 preliminary allocation to Product X $10,000 * $(300,000/450,000) = $6,667 reduction in joint cost from sales of Product Z $(174,667 - 6,667) = $168,000

    DIF: Easy OBJ: 11-5

74. Refer to Whalen Company. The joint costs allocated to product Y were
    a. $ 84,000
    b. $100,800.
    c. $150,000.
    d. $168,000.

    ANS: A

$262,000 * $(150,000/450,000) = $87,333 preliminary allocation to Product X $10,000 * $(150,000/450,000) = $3,333 reduction in joint cost from sales of Product Z $(87,333 - 3,333) = $84,000

    DIF: Easy OBJ: 11-5

75. In joint-product costing and analysis, which of the following costs is relevant in the decision when a product should be sold to maximize profits?
    a. Separable costs after the split-off point
    b. Joint costs to the split-off point
    c. Sales salaries for the production period
    d. Costs of raw materials purchased for the joint process.

    ANS: A DIF: Easy OBJ: 11-3

Tropical Company

Tropical Company manufactures three products in a joint process which costs $25,000. Each product can be sold at split-off or processed further and then sold. 10,000 units of each product are manufactured. The following information is available for the three products:

Product	Sales Value at Split-off	Separable Processing Costs after Split-off	Sales Value at Completion
A	$12	$9	$21
B	10	4	17
C	15	6	19

76. Refer to Tropical Company. If Product A is processed beyond the split-off point, profit will:
a. increase by $210,000
b. increase by $120,000
c. increase by $ 90,000
d. remain unchanged

ANS: D

Increase in value:	$9 per unit
Separable processing costs:	$9 per unit
No increase in profit	

DIF: Easy OBJ: 11-4

77. Refer to Tropical Company. To maximize profits, which products should Tropical process further?
a. Product A only
b. Product B only
c. Product C only
d. Products A, B, and C

ANS: B

Product	Incremental Revenues	Separable Processing Costs after Split-off	Incremental profit Increase
A	$9	$9	$0
B	7	4	3
C	4	6	(2)

DIF: Moderate OBJ: 11-4

SHORT ANSWER

1. Briefly discuss the four decisions that management must make concerning joint processes.

   ANS:
   The four decisions that managers must make regarding joint processes are as follows. They must try to determine what joint costs, selling costs, and separate processing costs are expected to occur when certain products are manufactured. Next, management must decide on the best use of resources that are available. Managers must next classify, as joint products and/or by-products/scrap, the output of production. The last decision that must be made is whether some or all of the products will be processed further or sold at split-off. This decision is made based on the incremental costs that would be incurred to process further and the incremental revenue if processed further. Joint production costs are irrelevant to this decision.

   DIF: Moderate OBJ: 11-3

2. Briefly discuss the six steps in the allocation process.

   ANS:
   The six steps are as follows:
   1. Choose the basis on which to allocate joint cost.
   2. List all values that comprise the basis.
   3. Add up all the values in the list (#2).
   4. Determine the percentage of the total each item in #2 is.
   5. Multiply the percentage by the cost being allocated.
   6. For valuation purposes, divide the prorated cost by equivalent units of production.

   DIF: Moderate OBJ: 11-4

3. Discuss briefly the three monetary measurement techniques of joint cost allocation.

   ANS:
   The sales value at split-off method assigns costs based only on the weighted proportions of the total sales values of the joint products without consideration of disposal costs at the split-off point. To use this method, all products must be salable at the split-off point. The net realizable value method assigns costs based on the product's proportional net realizable value at the split-off point. Net realizable value is equal to product sales revenue at split-off minus any costs necessary to prepare and dispose of the product.

   Approximated net realizable value at split-off method requires that a simulated net realizable value at split-off be calculated. This is equal to final sales price minus incremental separate costs. Incremental separate costs refer to all costs that are incurred between split-off and the point of sale.

   DIF: Moderate OBJ: 11-4

4. Briefly discuss the restrictions and requirements on service organizations and not for-profits that relate to joint cost allocation.

   ANS:
   Service and not-for-profit organizations incur costs that may be considered joint in nature, such as advertising and printing of multipurpose documents. Service organizations are not required to allocate these costs to the items worked on, delivered, or advertised but may choose to do so for a better matching of revenues and expenses. Not-for-profits are required by the AICPA to allocate these costs among the activities of fundraising, accomplishing an organizational program, or conducting an administrative function.

   DIF: Moderate OBJ: 11-6

5. Briefly discuss the net realizable value at split-off point method of allocating joint costs.

   ANS:
   The net realizable value at split-off method assigns joint costs based on each product's proportional NRV at the split-off point. NRV is equal to sales price minus costs that are necessary to prepare and dispose of the product. To use this method, all products must be salable at the split-off point.

   DIF: Moderate OBJ: 11-4

6. Why is the net realizable value of scrap used to lower estimated overhead costs in setting a predetermined overhead rate in a job order costing situation in which scrap is expected on most jobs?

   ANS:
   The net realizable value of scrap is used in this way because the amount received from the sale of scrap is considered to be a reduction of the total cost incurred in the production process. This process is similar to the treatment of sales values of assets purchased and then sold in a "basket" of goods. The estimated cost of scrap is used in setting overhead rates; therefore, when the scrap is sold the amount received should be a reduction of total overhead.

   DIF: Moderate OBJ: 11-5

PROBLEM

Wallace Company

Wallace Company produces only two products and incurs joint processing costs that total $3,750. Products Alpha and Beta are produced in the following quantities during each month: 4,500 and 6,000 gallons, respectively. Wallace Company also runs one ad each month that advertises both products at a cost of $1,500. The selling price per gallon for the two products are $20 and $17.50, respectively.

1. Refer to Wallace Company. What amount of joint processing costs is allocated to each product based on gallons produced?

   ANS:
   A = 4,500/10,500 × $3,750 = $1,607
   I = 6,000/10,500 × $3,750 = $2,143

   DIF: Easy OBJ: 11-4

2. Refer to Wallace Company. What amount of advertising cost is allocated to each product based on sales value?

ANS:

```
A = 4,500 × $20.00 =     $ 90,000/$195,000 × $1,500 = $692
I = 6,000 × $17.50 =      105,000/$195,000 × $1,500 = $808
                         $195,000
```

DIF: Moderate OBJ: 11-4

Wyman Company

Wyman Company produces three products from the same process and incurs joint processing costs of $3,000.

	Gallons	Sales price per gallon at split-off	Disposal cost per gallon at split-off	Further processing costs	Final sales price per gallon
M	2,300	$ 4.50	$1.25	$1.00	$ 7.00
N	1,100	6.00	3.00	2.00	10.00
Q	500	10.00	8.00	2.00	15.00

Disposal costs for the products if they are processed further are:

M, $3.00; N, $5.50; Q, $1.00.

3. Refer to Wyman Company. What amount of joint processing cost is allocated to the three products using sales value at split-off?

ANS:

```
M = 2,300 × $ 4.50 =     $10,350/$21,950 × $3,000 = $1,415
N = 1,100 × $ 6.00 =     $ 6,600/$21,950 × $3,000 = $902
Q = 500 × $10.00 =       $ 5,000/$21,950 × $3,000 = $683
                         $21,950
```

DIF: Moderate OBJ: 11-4

4. Refer to Wyman Company. What amount of joint processing cost is allocated to the three products using net realizable value at split-off?

   ANS:

   Sales price minus disposal cost*

```
$4.50 - $1.25 = $3.25
$6.00 - $3.00 = 3.00
$10.00 - $8.00 = 2.00

M = 2,300 × $ 3.25* =        $ 7,475/$11,775 × $3,000 = $1,904
N = 1,100 × $ 3.00* =        $ 3,300/$11,775 × $3,000 = $ 841
Q = 500 × $ 2.00* =          $ 1,000/$11,775 × $3,000 = $ 255
                             $11,775
```

   DIF: Moderate OBJ: 11-4

5. Gable Company produces two main products jointly, A and B, and C, which is a by-product of B. A and B are produced form the same raw material. C is manufactured from the residue of the process creating B.

   Costs before separation are apportioned between the two main products by the net realizable value method. The net revenue realized from the sale of C is deducted from the cost of B. Data for April were as follows:

Costs before separation		$200,000
Costs after separation:		
A		50,000
B		32,000
C		4,000
Production for April, in pounds:		
A		800,000
B		200,000
C		20,000
Sales for April:		
A	640,000 pounds @	$.4375
B	180,000 pounds @	.65
C	20,000 pounds @	.30

   Required: Determine the gross profit for April.

ANS:

NRV C	REVENUE	20,000 × .30 =	$6,000
	COST		(4,000)
	NRV		$2,000

NRV:

A	(800,000 × $.4375) = $350,000 - $50,000 =		$300,000
B	(200,000 × $.65) = $130,000 - ($32,000 - $2,000) =		100,000
			$400,000

ALLOCATION:

A	($300,000/$400,000 × $200,000 =	$150,000
B	($100,000/$400,000 × $200,000 =	50,000

UNIT COST:

A	($150,000 + $50,000)/800,000 = $ .25
B	($50,000 + $30,000)/200,000 = $ .40

GROSS PROFIT:

A	($ .4375 - $.25) × 640,000 =		$120,000
B	($ .65 - $.40) × 180,000 =		45,000
			$165,000

DIF: Difficult OBJ: 11-4

6. Leigh Manufacturers produces three products from a common manufacturing process. The total joint cost of producing 2,000 pounds of Product A; 1,000 pounds of Product B; and 1,000 pounds of Product C is $7,500. Selling price per pound of the three products are $15 for Product A; $10 for Product B; and $5 for Product C. Joint cost is allocated using the sales value method.

Required:

a. Compute the unit cost of Product A if all three products are main products.

b. Compute the unit cost of Product A if Products A and B are main products and Product C is a by-product for which the cost reduction method is used.

ANS:

a.

	SALES VALUE		UNIT COST
A	2,000 × $15 =	$30,000/$45,000 × $7,500 =	$5,000/2,000 = $2.50
B	1,000 × $10 =	$10,000/$45,000 × $7,500 =	$1,667/1,000 = $1.67
C	1,000 × $5 =	$ 5,000/$45,000 × $7,500 =	$ 833/1,000 = $ .83
		$45,000	$7,500

b. TO ALLOCATE: $7,500 - $5,000 = $2,500

	SALES VALUE		UNIT COST
A	2,000 × $15 =	$30,000/$40,000 × $2,500 =	$1,875/2,000 = $.9375
B	1,000 × $10 =	$10,000/$40,000 × $2,500 =	$ 625/1,000 = $.625
		$40,000	$2,500

DIF: Easy OBJ: 11-4

7. Butler Manufacturing Company makes three products: A and B are considered main products and C a by-product.

Production and sales for the year were:

220,000 lbs. of Product A, salable at $6.00
180,000 lbs. of Product B, salable at $3.00
50,000 lbs. of Product C, salable at $.90

Production costs for the year:

Joint costs	$276,600
Costs after separation:	
Product A	320,000
Product B	190,000
Product C	6,900

Required: Using the by-product revenue as a cost reduction and net realizable value method of assigning joint costs, compute unit costs (a) if C is a by-product of the process and (b) if C is a by-product of B.

ANS:

a.

JOINT COST	$276,600	
- NRV C	(38,100)	(50,000 - $.90) - $ 6,900
TO ALLOCATE	$238,500	

SALES VALUE - COST AFTER SEPARATION = NRV

220,000 × $6 = $1,320,000 - $320,000 =	$1,000,000
180,000 × $3 = $ 540,000 - $190,000 =	350,000
	$1,350,000

ALLOCATION

$1,000,000/$1,350,000 × $238,500 =	$176,667
$ 350,000/$1,350,000 × $238,500 =	61,833
	$238,500

UNIT COST:

A ($176,667 + $320,000)/220,000 =	$2.26
B ($61,833 + $190,000)/180,000 =	$1.40

b. NRV

A $1,000,000 =	$1,000,000/$1,388,100 × $276,600 =	$199,265
B $350,000 + $38,100 =	388,100/$1,388,100 × $276,600 =	$ 77,335
	$1,388,100	

UNIT COST

A ($199,265 + $320,000)/220,000 = $2.36
B ($77,335 + $151,900)/180,000 = $1.27

DIF: Moderate OBJ: 11-4

8. McQueen Company processes raw material in Department 1 from which come two main products, A and B, and a by-product, C. A is further processed in Department 2, B in Department 3, and C in Department 4. The value of the by-product reduces the cost of the main products, and sales value is used to allocate joint costs.

	Dept 1	Dept 2	Dept 3	Dept 4
Cost Incurred:	$90,000	$10,000	$8,000	$10,000
Production:				
A	10,000 lbs.			
B	20,000 lbs.			
C	10,000 lbs.			
Selling Price:				
A	$10/lb.			
B	$5/lb.			
C	$2/lb.			

Required:

a. Compute unit costs for A and B.

b. Ending inventory consists of 5,000 lbs. of B and 1,000 lbs. of C. What is the value of the inventory?

c. Recompute a and b allocating cost based on net realizable value.

ANS:

a. JOINT COST $90,000
- SALES VALUE (20,000) (10,000 × $2)
$70,000

SALES VALUE
A 10,000 × $10 = $100,000/$200,000 × $70,000 = $35,000
B 20,000 × $ 5 = 100,000/$200,000 × $70,000 = $35,000
$200,000

UNIT COST
A ($35,000 + $10,000)/10,000 = $4.50
B ($35,000 + $8,000)/20,000 = $2.15

b. ENDING INVENTORY
B 5,000 × $2.15 = $10,750
C 1,000 × $2.00 = 2,000
$12,750

c. NRV

A $100,000 - $10,000 =	$ 90,000/$182,000 × $70,000 =	$34,615
B $100,000 - $8,000 =	92,000/$182,000 × $70,000 =	35,385
	$182,000	$70,000

UNIT COST
A ($34,615 + $10,000)/10,000 = $4.46
B ($35,385 + $8,000)/20,000 = $2.17

ENDING INVENTORY
B 5,000 × $2.17 = $10,850
C 1,000 × $2.00 = 2,000
$12,850

DIF: Moderate OBJ: 11-4

9. Gibson Corporation manufactures three identifiable product lines, Products A, B, and C, from a basic processing operation. The cost of the basic operation is $320,000 for a yield of 5,000 tons of Product A; 2,000 tons of Product B; and 1,000 tons of Product C. The basic processing cost is allocated to the product lines in proportion to the relative weight produced.

   Gibson Corporation does both the basic processing work and the further refinement of the three product lines. After the basic operation, the products can be sold at the following prices per metric ton:

   Product A—$60

   Product B—$53

   Product C—$35

   Costs to refine each of the three product lines follow:

	Product Lines		
	A	B	C
Variable cost per metric ton	$8	$7	$4
Total fixed cost	$20,000	$16,000	$6,000

   The fixed cost of the refining operation will not be incurred if the product line is not refined.

   The refined products can be sold at the following prices per metric ton:

   Product A—$75

   Product B—$65

   Product C—$40

   Required:

   a. Determine the total unit cost of each product line in a refined state.
   b. Which of the three product lines, if any, should be refined and which should be sold after the basic processing operation? Show computations.

ANS:

a.

	WT	ALLOCATION	
A	5,000	5,000/8,000 × $320,000 =	$200,000
B	2,000	2,000/8,000 × $320,000 =	80,000
C	1,000	1,000/8,000 × $320,000 =	40,000
	8,000		$320,000

UNIT COST

A	($200,000 + $20,000)/5,000 + $8 =	$52
B	($80,000 + $16,000)/2,000 + $7 =	$55
C	($40000 + $6,000)/1,000 + $4 =	$50

b. CHANGE IN REVENUE - CHANGE IN COST = CHANGE IN PROFIT

A	$75-$60 = $15 - ($20,000/5,000) + $8 =	+ $3
B	$65-$53 = $12 - ($16,000/2,000) + $7 =	- $3
C	$40-$35 = $5 - ($6,000/1,000) + $4 =	- $5

Therefore, process only Product A.

DIF: Moderate OBJ: 11-4

10. Reed Company produced three joint products at a joint cost of $100,000. These products were processed further and sold as follows:

Product	Sales	Additional Processing Costs
A	$245,000	$200,000
B	330,000	300,000
C	175,000	100,000

The company has had an opportunity to sell at split-off directly to other processors. If that alternative had been selected, sales would have been: A, $56,000; B, $28,000; and C, $56,000.

The company expects to operate at the same level of production and sales in the forthcoming year.

Required: Consider all the available information and assume that all costs incurred after split-off are variable.

a. Could the company increase net income by altering its processing decisions? If so, what would be the expected overall net income?

b. Which products should be processed further and which should be sold at split-off?

ANS:

a.	Currently NI is	Sales	$750,000
		Additional Processing Costs	(600,000)
			$150,000
		- JC	(100,000)
			$ 50,000

NI can be increased by $11,000 if A is not processed.

		A	B	C
b.	Δ Sales	$189,000	$302,000	$119,000
	- Δ Cost	(200,000)	(300,000)	(100,000)
	NI/(LOSS)	$(11,000)	$ 2,000	$ 19,000

DIF: Easy OBJ: 11-4