Assignment Exercises 8-1 through 8-5

Assignment Exercises 9-1 and 9-2

**Assignment Exercise 8–1: FIFO and LIFO Inventory**

**Required**

a1. Use the format in Exhibit 8–1 to compute the ending FIFO inventory and the cost of goods sold, assuming $90,000 in sales; beginning inventory 500 units @ $50; purchases of 400 units @ $50; 100 units @ $65; 400 units @ $80.

a2. Also compute the cost of goods sold percentage of sales.

b1. Use the format in Exhibit 8–2 to compute the ending LIFO inventory and the cost of goods sold, using same assumptions.

b2. Also compute the cost of goods sold percentage of sales.

c. Comment on the difference in outcomes.

**Exhibit 8–1**

INVENTORY METHODS

How is the inventory to be valued? The two most commonly used inventory valuation methods are First-In, First-Out (FIFO) and Last-In, First-Out (LIFO). The method chosen will affect the organization’s financial statements, as explained in the following sections.

First-In, First-Out (FIFO) Inventory Method

The First-In, First-Out, or FIFO inventory costing method, recognizes the first costs placed into inventory as the first costs moved out into cost of goods sold when a sale occurs. How will this method affect the organization’s financial statements? Under FIFO, the ending inventory figure will be higher (because when the oldest inventory moves out first, the ending inventory will be based on the costs of the latest purchases, which we assume will have cost more). Exhibit 8–1 illustrates this effect.

Last-In, First-Out (LIFO) Inventory Method

The Last-In, First-Out, or LIFO inventory costing method, recognizes the latest, or last, costs placed into inventory as the first costs moved out into cost of goods sold when a sale occurs. How will this method affect the organization’s financial statements? Under LIFO, the ending inventory figure will be lower (because when the latest inventory moves out first, the ending inventory will be based on costs of the earliest purchases, which we assume will have cost less). Exhibit 8–2 illustrates this effect.

**Other Inventory Treatments**

Two other inventory treatments deserve mention, as follows.

**Weighted Average Inventory Method**

This inventory costing method is based on the weighted average cost of inventory during the period. (The weighted average inventory method is also called the “average cost method.”) The weighted average inventory cost is determined as follows: divide the cost of goods available for sale by the number of units available for sale.

Exhibit 8–1 FIFO Inventory Effect

|  |
| --- |
| Assumptions FIFO Inventory Effect |
| Sales (Revenue) 20 units @$25 = $500 |
| Cost of Sales: |
| Beginning Inventory 10 units @$5 = $50 |
| Plus Purchases 10 units @$10 = 100 & |
| 10 units @$5 = $150 250 |
| Subtotal $300 |
| Less: Ending Inventory 10 units @$15 150 |
| Cost of Sales 150 |
| Gross Profit $350 |
| Operating Expense (50) |
| Earnings Before Tax $300 |
| Income Tax (90) |
| Earning After Tax $210 |

No Method: Inventory Never Recognized

This inventory costing method is no method at all. That is, inventory is never recognized. For example, a physician’s office may expense all drug purchases as supplies at the time of purchase and never count such drugs as inventory. This treatment might be justified when such supplies were only a small part of the practice expenses. However, if the physician is purchasing very expensive drugs and administering them in the office (infusing expensive drugs is a good example), then not recognizing any such drugs being held as inventory on the financial statements is misleading.

INVENTORY TRACKING

The two most typical inventory tracking systems are described as follows.

**Exhibit 8–2 LIFO Inventory Effect**

|  |
| --- |
| Assumptions FIFO Inventory Effect |
| Sales (Revenue) 20 units @$25 = $500 |
| Cost of Sales: |
| Beginning Inventory 10 units @$5 = $50 |
| Plus Purchases 10 units @$10 = 100 & |
| 10 units @$5 = $150 250 |
| Subtotal $300 |
| Less: Ending Inventory 10 units @$15 (50) |
| Cost of Sales 250 |
| Gross Profit $250 |
| Operating Expense (50) |
| Earnings Before Tax $200 |
| Income Tax (60) |
| Earning After Tax $140 |

**Assignment Exercise 8–2: Inventory Turnover**

Study the “Calculating Inventory Turnover” portion of the chapter closely, whereby the cost of goods sold divided by the average inventory equals the inventory turnover.

**Required**

Compute two inventory turnover calculations as follows:

1. Use the LIFO information in the previous assignment to first compute the average inventory and then to compute the inventory turnover.
2. Use the FIFO information in the previous assignment to first compute the average inventory and then to compute the inventory turnover.

Example 8A: Depreciation Concept

Assume that Metropolis Health System (MHS) purchased equipment for $200,000 cash on April 1 (the first day of its fiscal year). This equipment has an expected life of 10 years. The salvage value is 10% of cost. No equipment was traded in on this purchase.

Straight-line depreciation is a method that charges an equal amount of depreciation for each year the asset is in service. In the case of this purchase, straight-line depreciation would amount to $18,000 per year for 10 years. This amount is computed as follows:

Step 1. Compute the cost net of salvage or trade-in value: 200,000 less 10% salvage value or 20,000 equals 180,000.

Step 2. Divide the resulting figure by the expected life (also known as estimated useful life): 180,000 divided by 10 equals 18,000 depreciation per year for 10 years.

Accelerated depreciation represents methods that are speeded up, or accelerated. In other words a greater amount of depreciation is taken earlier in the life of the asset. One example of accelerated depreciation is the double-declining balance method. Unlike straight-line depreciation, trade-in or salvage value is not taken into account until the end of the depreciation schedule. This method uses book value, which is the net amount remaining when cumulative previous depreciation is deducted from the asset’s cost. The computation is as follows:

Step 1.Compute the straight-line rate: 1 divided by 10 equals 10%.

Step 2. Now double the rate (as in double-declining method): 10% times 2 equals 20%.

Step 3. Compute the first year’s depreciation expense: 200,000 times 20% equals 40,000.

Step 4. Compute the carry-forward book value at the beginning of the second year: 200,000 book value beginning Year 1 less Year 1 depreciation of 40,000 equals book value at the beginning of the second year of 160,000.

Step 5.Compute the second year’s depreciation expense: 160,000 times 20% equals 32,000.

Step 6. Compute the carry-forward book value at the beginning of the third year: 160,000 book value beginning Year 2 less Year 2 depreciation of 32,000 equals book value at the beginning of the third year of 128,000.

— Continue until the asset’s salvage or trade-in value has been reached.

* Do not depreciate beyond the salvage or trade-in value

Practice Exercise 8–I: Depreciation Concept

Assume that MHS purchased equipment for $600,000 cash on April 1 (the first day of its fiscal year). This equipment has an expected life of 10 years. The salvage value is 10% of cost. No equipment was traded in on this purchase.

Required

1. Compute the straight-line depreciation for this purchase.

2. Compute the double-declining balance depreciation for this purchase.

**Assignment Exercise 8–3: Depreciation Concept**

Assume that MHS purchased two additional pieces of equipment on April 1 (the first day of its fiscal year), as follows:

1. The laboratory equipment cost $300,000 and has an expected life of = years. The salvage value is 5% of cost. No equipment was traded in on this purchase.

2. The radiology equipment cost $800,000 and has an expected life of 7 years. The salvage value is 10% of cost. No equipment was traded in on this purchase.

**Required**

For both pieces of equipment:

1. Compute the straight-line depreciation.

2. Compute the double-declining balance depreciation.

**Example 8B: Depreciation**

This example shows straight-line depreciation computed at a five-year useful life with no salvage value. Straight-line depreciation is the method commonly used for financing projections and funding proposals.

**Depreciation Expense Computation: Straight Line**

Five year useful life; no salvage value

|  |
| --- |
| Year # Annual Depreciation Remaining Balance |
| Beginning Balance = 60,000 |
| 1 12,000 48,000 |
| 2 12,000 36,000 |
| 3 12,000 24,000 |
| 4 12,000 12,000 |
| 5 12,000 -0- |

**Example 8C: Depreciation**

This example shows straight-line depreciation computed at a five-year useful life with a remaining salvage value of $10,000. Note the difference in annual depreciation between Example 8B and Example 8C.

**Depreciation Expense Computation: Straight Line**

Five year useful life; $10,000 salvage value

|  |
| --- |
| Year # Annual Depreciation Remaining Balance |
| Beginning Balance = 60,000 |
| 1 10,000 40,000 |
| 2 10,000 40,000 |
| 3 10,000 30,000 |
| 4 10,000 20,000 |
| 5 10,000 10,000 |

Example 8D: Depreciation

This example shows double-declining depreciation computed at a five-year useful life with no salvage value. As is often the case with a five-year life, the double-declining method is used for the first three years and the straight-line method is used for the remaining two years. The double-declining method first computes what the straight-line percentage would be. In this case 100% divided by five years equals 20%. The 20% is then doubled. In this case 20% times 2 equals 40%. Then the 40% is multiplied by the remaining balance to be depreciated. Thus 60,000 times 40% for year one equals 24,000 depreciation, with a remaining balance of 36,000. Then 36,000 times 40% for year two equals 14,400 depreciation, and 36,000 minus 14,400 equals 21,600 remaining balance, and so on.

Now note the difference in annual depreciation between Example 8B, using straight-line for all five years, and Example 8D, using the combined double-declining and straight-line methods.

**Depreciation Expense Computation: Double-Declining-Balance**

Five year useful life; $10,000 salvage value

|  |
| --- |
| Year # Annual Depreciation Remaining Balance |
| Beginning Balance = 60,000 |
| 1 24,000\* 40,000 |
| 2 14,000\* 40,000 |
| 3 8,640\* 30,000 |
| 4 6,480\*\* 20,000 |
| 5 6,480\*\* 10,000 |

\*double-declining balance depreciation

\*\*straight-line depreciation for remaining two years (12,960 divided by 2 = 6,480/yr)

**Practice Exercise 8–II: Depreciation**

Compute the straight-line depreciation for each year for equipment with a cost of $50,000, a five-year useful life, and a $5,000 salvage value.

**Assignment Exercise 8–4: Depreciation**

Set up a purchase scenario of your own and compute the depreciation with and without salvage value.

**Assignment Exercise 8–5: Depreciation Computation: Units-of-Service**

Study the “Units of Service” portion of the chapter closely.

**Required**

1. Using the format in Table 8–A-5, compute units of service depreciation using the following assumptions:

Cost to be depreciated = $50,000

Salvage value = zero

Total units of service = 10,000

Units of service per year: Year 1 = 2,200; Year 2 = 2,100; Year 3 = 2,300; Year 4 = 2,200; Year 5 = 200

1. Using the same format, compute units of service depreciation using adjusted assumptions as follows:

Cost to be depreciated = $50,000

Salvage value = $5,000

Total units of service = 10,000

Units of service per year: Year 1 = 2,200; Year 2 = 2,100; Year 3 = 2,300; Year 4 = 2,200; Year 5 = 200

Table 8-A–5 Units of Service (Units of Production) Depreciation: 5-Years of Service with No Salvage Value

|  |
| --- |
| Depreciation Computation |
| Cost (to Be Units of X Depreciation = Annual Accumulated Depreciation Net Remaining  Depreciated) Service per per unit Depreciation Reserve for Depreciation) Undepreciated Cost  Year Expense (Net Book Value) |
| $10,000 |
| year $1,000 $2,00\* $2,000 $2,000 $8,000  1 |
| Year 900 2,00 1,800 3,800 6,200  2 |
| Year 800 2,00 1,600 5,400 4,600  3 |
| Year 1,100 2,00 2,200 7,000 2,400  4 |
| Year 1,200 2,00 2,400 10,000 -0-  5 |
| Total Units 5,000 |

\*$10,000 divided by total units (5,000) equals depreciation per unit of $2.00.

• Units of Service in Year 2 total 900. Thus 900 units times $2.00 per unit equals $1,800 Year 2 depreciation.

The computation continues in this manner until the total 5,000 units of service are exhausted. The equipment is then fully depreciated.

**Assignment Exercise 9–1: FTEs to Annualize Staffing**

The Metropolis Health System managers are also working on their budgets for next year. Each manager must annualize his or her staffing plan, and thus must convert staff net paid days worked to a factor. Each manager has the MHS worksheet, which shows 9 holidays, 7 sick days, 15 vacation days, and 3 education days, equaling 34 paid days per year not worked.

The Laboratory is fully staffed 7 days per week and the 34 paid days per year not worked is applicable for the lab. The Medical Records department is also fully staffed 7 days per week. However, Medical Records is an outsourced department so the employee benefits are somewhat different. The Medical Records employees receive 9 holidays plus 21 personal leave days, which can be used for any purpose.

**Required**

1. Compute net paid days worked for a full-time employee in the Laboratory and in Medical Records.

2. Convert n et paid days worked to a factor for the Laboratory and for Medical Records so these MHS managers can annualize their staffing plans.

**Example 9A**

Review the chapter text about annualizing positions. In particular review Exhibit 9–2, which contains the annualizing calculations.

|  |
| --- |
| Exhibit 9–2 Basic Calculation for Annualizing Master Staffing Plan  Step 1: How Many Net Paid Days Are Worked?  (a) A business year has 364 days.  (b) In this example the employee works five days per week. The other two days off are not paid for. Thus two days off per week times 52 weeks equals 104 non-paid days.  (c) Therefore the number of paid days per year equals 364 less 104, or 260 days.  (d) But not all paid days per year are worked. In this example each employee (RN, LPN, & Nurse Assistant [NA]) receives 35 personal leave days. (The personal leave days are intended to include holidays, sick leave, and vacation days.)  (e) In addition these employees are entitled to continuing professional education (CPE) days. These are also paid days not worked, as follows: RNs = 5 days; LPNs = 3 days; NAs = 2 days.  (f) Therefore the net paid days worked are as follows:  RN = 260 days (35)(5) = 220  LPN = 260 days (35)(5) = 220  NA = 260 days (35) (5) = 223  Step 2: How Are Net Paid Days Worked Converted to a Factor?  The factor is calculated by dividing total days in the business year (364) by the net paid days worked, as follows:  RN = 364 / 220 = 1.6545  LPN = 364 / 222 = 1.6396  NA = 364 / 223 = 1.6323    Courtesy of J.J. Baker and R.W. Baker, Dallas, Texas |

Exhibit 9–2 contains a two-step process to perform the staffing calculation by the annualizing method. The first step computes the net paid days worked. In this step, the number of paid days per year is first arrived at; then paid days not worked are deducted to arrive at net paid days worked. The second step of the staffing calculation converts the net paid days worked to a factor. In the example in Exhibit 9–2, the factor averages out to about 1.6

**Example 9B**

Review the chapter text about staffing requirements to fill a position. In particular review Exhibit 9–4, which contains (at the bottom of the exhibit) the staffing calculations. Remember this method uses a basic work week as the standard.

**Practice Exercise 9–II: FTEs to Fill a Position**

Metropolis Health System (MHS) uses a basic work week of 40 hours throughout the system. Thus, one full-time employee works 40 hours per week. MHS also uses a standard 24-hour scheduling system of three 8-hour shifts. The Admissions manager needs to compute the staffing requirements to fill his departmental positions. He has more than one Admissions office staffed within the system. The West Admissions office typically has two Admissions officers on duty during the day shift, one Admissions officer on duty during the evening shift, and one Admissions officer on duty during the night shift. The day shift also has one clerical person on duty. Staffing is identical for all seven days of the week.

**Required**

1. Set up a staffing requirements worksheet, using the format in Exhibit 9–4.

2. Compute the number of FTEs required to fill the Admissions officer position and the clerical position at the West Admissions office.

**Assignment Exercise 9–2: FTEs to Fill a Position**

Metropolis Health System (MHS) uses a basic work week of 40 hours throughout the system. Thus, one full-time employee works 40 hours per week. MHS also uses a standard 24-hour scheduling system of three 8-hour shifts. The Director of Nursing needs to compute the staffing requirements to fill the Operating Room (OR) positions. Since MHS is a trauma center, the OR is staffed 24 hours a day, 7 days a week. At present, staffing is identical for all 7 days of the week, although the Director of Nursing is questioning the efficiency of this method.

The Operating Room department is staffed with two nursing supervisors on the day shift and one nursing supervisor apiece on the evening and night shifts. There are two technicians on the day shift, two technicians on the evening shift, and one technician on the night shift. There are three RNs on the day shift, two RNs on the evening shift, and one RN plus one LPN on the night shift. In addition, there is one aide plus one clerical worker on the day shift only.

**Required**

1. Set up a staffing requirements worksheet, using the format in Exhibit 9–4.

2. Compute the number of FTEs required to fill the Operating Room staffing positions.

**Exhibit 9–4 Staffing Requirements Example**

Emergency Department Scheduling for 8-Hour Shifts:

|  |
| --- |
| Shift 1 Day Shift 2 Evening Shift 3 Night = 24-Hour Scheduling Total |
| Position: |
| Emergency Room Intake 1 1 1 = 3 8-hour shifts |
| To Cover Position |
| 7 Days per Week |
| Equals FTEs of: 1.4 1.4 1.4 = 4.2 FTEs |

One full-time employee works 40 hours per week. One 8-hour shift per day times 7 days per week equals 56 hours on duty. Therefore, to cover 7 days per week or 56 hours requires 1.4 times a 40-hour employee (56 hours divided by 40 hours equals 1.4), or 1.4 FTEs.

**Staffing Calculations to Fill Scheduled Positions**

The term “staffing,” as used here, means the assigning of staff to fill scheduled positions. The staffing measure used to compute coverage is also called the FTE. It measures what proportion of one single full-time employee is required to equate the hours required (i.e., full-time equivalent) for a particular position. For example, the cast room has to be staffed 24 hours a day, 7 days a week because it supports the emergency room and therefore has to provide service at any time. In this example, the employees are paid for an 8-hour shift. The three shifts required to fill the position for 24 hours are called the day shift (7:00 am to 3:00 pm), the evening shift (3:00 pm to 11:00 pm), and the night shift (11:00 pm to 7:00 am).

One 8-hour shift times 5 days per week equals a 40-hour work week. One 40-hour work week times 52 weeks equals a person-year of 2,080 hours. Therefore, one person-year of 2,080 hours equals a full-time position filled for one full year. This measure is our baseline.

It takes seven days to fill the day shift cast room position from Monday through Sunday, as required. Seven days is 140% of five days (seven divided by five equals 140%), or, expressed another way, is 1.4. The FTE for the day shift cast room position is 1.4. If a seven-day schedule is required, the FTE will be 1.4.

This method of computing FTEs uses a basic 40-hour work week (or a 37-hour work week, or whatever is the case in the particular institution). The method computes a figure that will be necessary to fill the position for the desired length of time, measuring this figure against the standard basic work week. For example, if the standard work week is 40 hours and a receptionist position is to be filled for just 20 hours per week, then the FTE for that position would be 0.5 FTE (20 hours to fill the position divided by a 40-hour standard work week). Table 9–1 illustrates the difference between a standard work year at 40 hours per week and a standard work year at 37.5 hours per week.