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- Assignment Exercises 8-1 through 8-5 on pages 365 through 369
- Assignment Exercises 9-1 and 9-2 on pages 370 through 371

**Required**

Compute the contribution margin for Greenside Clinic.

**Assignment Exercise 7-2: Calculating the Contribution Margin**

The Mental Health program for the Community Center has just completed its fiscal year end. The program director determines that his program has revenue for the year of \$210,000. He believes his variable expense amounts to \$205,000 and he knows his fixed expense amounts to \$1,100,000.

**Required**

1. Compute the contribution margin for the Community Center Mental Health Program.
2. What does the result tell you about the program?

**Example 7C: Cost-Volume-Profit (CVP) Ratio and Profit-Volume (PV) Ratio**

Closely review the examples of ratio calculations in the chapter text. Also note that examples are presented in visuals as well as text.

**Practice Exercise 7-III: Calculating the PV Ratio**

The profit-volume (PV) ratio is also known as the contribution margin (CM) ratio. Use the same assumptions for the Community Center Mental Health Program. In addition to the contribution margin figures already computed, now compute the PV ratio (also known as the CM ratio).

**Assignment Exercise 7-3: Calculating the PV Ratio and the CVP Ratio**

Use the same assumptions for the Greenside Clinic. One more assumption will be added: the clinic had 35,000 visits.

**Required**

1. In addition to the contribution margin figures already computed, now compute the PV ratio (also known as the CM ratio).
2. Add another column to your worksheet and compute the clinic's per-visit revenue and costs.
3. Create a Cost-Volume-Profit chart. Refer to the chapter text along with Figure 7-6.

**CHAPTER 8****Assignment Exercise 8-1: FIFO and LIFO Inventory**

Study the FIFO and LIFO explanations in the chapter.

*Required*

- a.1. Use the format in Exhibit 8-1 "FIFO Inventory Effect" 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.
- a.2. Also compute the cost of goods sold percentage of sales.
- b.1. Use the format in Exhibit 8-2 "LIFO Inventory Effect" to compute the ending LIFO inventory and the cost of goods sold, using same assumptions.
- b.2. Also compute the cost of goods sold percentage of sales.
- c. Comment on the difference in outcomes.

**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 MHS purchased equipment for \$200,000 cash on April 1st (the first day of its fiscal year). This equipment has an expected life of 10 years. The salvage value is 10 percent 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 percent 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 percent.
- Step 2. Now double the rate (as in *double declining method*): 10 percent times 2 equals 20 percent.

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- Step 3. Compute the first year's depreciation expense: 200,000 times 20 percent 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 percent 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 1st (the first day of its fiscal year). This equipment has an expected life of 10 years. The salvage value is 10 percent 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 1st (the first day of its fiscal year), as follows:

- (1) The laboratory equipment cost \$300,000 and has an expected life of 5 years. The salvage value is 5 percent 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 percent 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

5-year useful life; no salvage value

| Year #              | Annual<br>Depreciation | Remaining<br>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 8B and 8C.

**Depreciation Expense Computation: Straight Line**

5-year useful life; \$10,000 salvage value

| Year #              | Annual<br>Depreciation | Remaining<br>Balance |
|---------------------|------------------------|----------------------|
| Beginning Balance = |                        | 60,000               |
| 1                   | 10,000                 | 50,000               |
| 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 percent divided by five years equals 20 percent. The 20 percent is then doubled. In this case 20 percent times 2 equals 40 percent. Then the 40 percent is multiplied by the remaining balance to be depreciated. Thus 60,000 times 40 percent for year one equals 24,000 depreciation, with a remaining balance of 36,000. Then 36,000 times 40 percent 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 8B, using straight-line for all five years, and 8D, using the combined double declining and straight-line methods.

**Depreciation Expense Computation: Double Declining Balance**

5-year useful life; \$10,000 salvage value

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| Year #              | Annual<br>Depreciation | Remaining<br>Balance |
|---------------------|------------------------|----------------------|
| Beginning Balance = |                        | 60,000               |
| 1                   | 24,000*                | 36,000               |
| 2                   | 14,400*                | 21,600               |
| 3                   | 8,640*                 | 12,960               |
| 4                   | 6,480**                | 6,480                |
| 5                   | 6,480**                | 6,480                |

\* = 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 5-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

- 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

- 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

## CHAPTER 9

## Example 9A

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

## Practice Exercise 9-I: FTEs to Annualize Staffing

The office manager for a physicians' group affiliated with Metropolis Health System is working on her budget for next year. She wants to annualize her staffing plan. To do so she needs to convert her staff's net paid days worked to a factor. Their office is open and staffed seven days a week, per their agreement with two managed care plans.

The office 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 physicians' group allows 8 holidays, 5 sick days, and 1 education day. An employee must work one full year to earn 5 vacation days. An employee must have worked full time for three full years before earning 10 annual vacation days. Because the turnover is so high, nobody on staff has earned more than 5 vacation days.

*Required*

1. Compute net paid days worked for a full-time employee in the physicians' group.
2. Convert net paid days worked to a factor so the office manager can annualize her staffing plan.

## 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 seven 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 seven 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 net paid days worked to a factor for the Laboratory and for Medical Records so these MHS managers can annualize their staffing plans.

## Example 9B

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

## Practice Exercise 9-II: 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 Metropolis Health System allows 8 holidays, 5 sick days, and 1 education day. An employee must work one full year to earn 5 vacation days. An employee must have worked full time for three full years before earning 10 annual vacation days. Because the turnover is so high, nobody on staff has earned more than 5 vacation days.

*Required*

1. Set up a staffing plan for the Metropolis Health System.
2. Compute the net paid days worked for the Metropolis Health System.

## Assignment Exercise 9-2: 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 Metropolis Health System allows 8 holidays, 5 sick days, and 1 education day. An employee must work one full year to earn 5 vacation days. An employee must have worked full time for three full years before earning 10 annual vacation days. Because the turnover is so high, nobody on staff has earned more than 5 vacation days.

The Operating Room is fully staffed seven days per week and the 34 paid days per year not worked is applicable for the OR. The Operating Room is an outsourced department so the employee benefits are somewhat different. The Operating Room employees receive 9 holidays plus 21 personal leave days which can be used for any purpose.

*Required*

1. Set up a staffing plan for the Operating Room.
2. Compute the net paid days worked for the Operating Room.

**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 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 seven 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.