

**15.501/15.516 Corporate Financial Accounting  
2021 Fall**

**Homework Set 3**

Your name:

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Your section (A or B):

A

For TA's Use:

| Question | Max score | Youf djsf njkdGkjdsntjfe |  |
|----------|-----------|--------------------------|--|
| 1        | 6         |                          |  |
| 2        | 9         |                          |  |
| Total    | 15        |                          |  |

**Notes:**

1. Please show your answers in the answer boxes where provided. Please also show your work below the answer boxes.
2. If you do any of your work outside Microsoft Word, you can paste your answer from that app as a picture in the answer spaces provided here.

**Question 1 starts on next page**

### Question 1

The following are the data for wholesale inventory from Ace Hardware Corporation's 2019 annual report. **Note: All data are in \$ millions.**

| <u>Income statement, for the year</u>     | <u>2019</u> | <u>2018</u> |
|---|-------------|-------------|
| Revenue                                   | \$5,564.5   | \$5,341.6   |
| Cost of goods sold                        | \$4,898.6   | \$4,707.4   |
| <br>                                      |             |             |
| <u>Balance sheet data, as of year-end</u> | <u>2019</u> | <u>2018</u> |
| Inventory (LIFO basis)                    | \$773.9     | \$824.5     |

The 2019 annual report had the following note: "Inventories are valued on the LIFO method. The excess of replacement cost over the LIFO value of inventory was \$104.5 million and \$85.7 million at the end of FY 2019 and FY 2018, respectively."

- a. Using the above data, complete the information requested below for Ace's wholesale inventory. Note: Write your answers in millions of dollars, e.g., \$773.9.

1. Inventory value as of year-ends **2019** re-measured under FIFO method:

\$ 878.4

$$\begin{aligned} \text{Inventory under FIFO} &= \text{Inventory under LIFO} + \text{LIFO reserve} \\ 878.4 &= 773.9 + 104.5 \end{aligned}$$

2. Inventory value as of year-end **2018** re-measured under FIFO method:

\$ 910.2

$$\begin{aligned} \text{Inventory under FIFO} &= \text{Inventory under LIFO} + \text{LIFO reserve} \\ 910.2 &= 824.5 + 85.7 \end{aligned}$$

3. Cost of goods sold for the year **2019** remeasured under FIFO method:

\$ 4879.8

$$\begin{aligned} \text{FIFO COGS} &= \text{LIFO COGS} - \text{change in LIFO reserve} \\ 4879.8 &= 4898.6 - (104.5 - 85.7) \end{aligned}$$

- b. For the year **2019**, calculate the company's i) Gross profit margin, and ii) Days inventory using LIFO data as reported as well as the re-measured FIFO data computed above in part a. (Note: To calculate Days inventory, you will have to first calculate inventory turnover.)

|                          | Using LIFO data as provided | Using remeasured FIFO data |
|--------------------------|-----------------------------|----------------------------|
| i) Gross profit margin % | 11.97 %                     | 12.30 %                    |
| ii a) Inventory turnover | 6.13                        | 5.46                       |
| ii b) Days inventory     | 59.54                       | 66.85                      |

$$\text{gross profit margin \%} = \frac{\text{Revenue} - \text{COGS}}{\text{Revenue}}$$

$$\text{inventory turnover ratio} = \frac{\text{COGS}}{\text{Avg. inventory}}$$

$$\text{Days of inventory} = \frac{365}{\text{inventory turnover}}$$

$$\text{gross profit margin LIFO} = \frac{5564.5 - 4898.6}{5564.5} = 12\%$$

$$\text{gross profit margin FIFO} = \frac{5564.5 - 4879.8}{5564.5} = 12.30\%$$

$$\text{inventory turnover LIFO} = \frac{4898.6}{(773.9 + 824.5)/2} = 6.13$$

$$\text{inventory turnover FIFO} = \frac{4879.8}{(878.4 + 910.2)/2} = 5.46$$

$$\text{days inventory LIFO} = \frac{365}{6.13} = 59.54$$

$$\text{days inventory FIFO} = \frac{365}{5.46} = 66.85$$

$$SL \text{ rate} = \frac{1}{\text{useful life}} \Rightarrow \frac{1}{5}$$

$$DDB \text{ year 1 depreciation} = 42(40\%) = 16.8$$

$$DDB \text{ rate} = 2 \cdot 20 = 40\% \text{ of BV}$$

$$BV = \text{acquisition cost} - \text{accumulated depreciation}$$

### Question 2

On 1/1/20X1 Silver Truck Inc. bought a truck for \$42,000 by paying \$20,000 cash and by issuing its common stock for the remainder. The truck was estimated to have a useful life of 5 years and a \$4,000 salvage value at the end of the useful life. Full-year depreciation was recorded for years 20X1 and 20X2. Depreciation for the first three months was recorded on March 31, 20X3, equal to one-fourth of whatever would have been recorded as the 3rd year depreciation. The company sold the truck on April 1, 20X3 for \$23,800 cash.

**Part a)** For this part of the question, assume that the truck's depreciation was based on the double-declining method. Answer the following questions. (values in thousands of dollars)

1) Purchase of truck on January 1, 20X1 for cash and common stock:

| A         | - Contra Asset | = L | + CC            | + Retained Earnings |
|-----------|----------------|-----|-----------------|---------------------|
| - 20 Cash | 42 PPE         |     | 22 Common stock |                     |

2) BSE entry for depreciation on December 31, 20X1 under the double-declining method:

| A | - Contra Asset | = L | + CC | + Retained Earnings         |
|---|----------------|-----|------|-----------------------------|
|   | 16.8 Acc Depr. |     |      | - 16.8 depreciation expense |

3) Depreciation expense for the year 20X2, recorded on December 31, 20X2, using the double-declining method:

(in thousands)

Your answer:

\$10.080

Explanation:

$$DDB \text{ rate} = 40\% \quad BV = 42 - 16.8 = 25.2$$

$$DDB \text{ year 2 depreciation} = 25.2(40\%) = 10.08$$

4) Depreciation expense for the first three months of 20X3, recorded on March 31, 20X3, equal to one-fourth of the 3rd year depreciation under the double-declining method:

(in thousands)

Your answer:

\$1.512

Explanation:

$$DDB \text{ rate} = 40\% \quad BV = 25.2 - 10.08 = 15.12$$

$$DDB \text{ year 3 depreciation} = 15.12(40\%) = 6.048$$

$$\frac{1}{4}(6.048) = 1.512$$

5) Book value of the truck as of the end of March 31, 20X3:  
(in thousands)

Your answer:

\$ 13.608

Explanation:

$$BV = 15.12 - 1.512 = 13.608$$

6) BSE entry for the sale of truck on April 1, 20X3 for \$23,800 cash: (values in thousands of dollars)

| A            | - Contra Asset | = L                     | + CC | + Retained Earnings           |
|--------------|----------------|-------------------------|------|-------------------------------|
| 23.8<br>Cash | -42<br>PPE     | -28.392<br>Accum. Depr. |      | 10.192 gain on<br>Sale of PPE |

**Part b)** For this part of the question, assume that the truck's depreciation was based on the straight-line method. What would have been the gain or loss reported on April 1, 20X3 for the sale of the truck for \$23,800 cash? (in thousands)

Your answer (give the amount and indicate gain or loss):

\$ 1.100 Loss

$$\text{total depr} = 2(7.6) + \frac{1}{4}(7.6)$$

$$\text{total depr} = 17.1$$

$$BV = 42 - 17.1 = 24.9$$

$$SL \text{ depreciation} = (\text{cost} - \text{salvage value}) / \text{useful life}$$

$$SL \text{ depreciation} = (42 - 4) / 5$$

$$SL \text{ depreciation} = 7.6$$

$$\text{Loss} = 1.1 = 23.8 \text{ selling Price} - 24.9 \text{ BV}$$

**Part c)** Compared to the actual change in the market value of the truck, which of the above two depreciation rate methods (the double-declining method used in part a or the straight-line method used in part b) more accurately reflected the change in market value? Why? (Answer below in five or six sentences or less.)

The double decline method because a car does not depreciate in value linearly. For example, when you buy a new car and drive it once, it automatically loses a significant amount of value. Moreover, in DD method, the amount a car depreciates every year is less relative to previous year, which makes sense. Also, the BV for DD method is 13,608 and selling price is \$23,800, so the company can report a gain on the sale of the truck.