

Solution:

(1)

In both cases, the following things are fixed:

$$\text{Sales} = \$120,000$$

$$\text{Purchase} = \$117,000$$

$$\text{Beginning Inventory} = 0$$

(a)

Under FIFO, the final inventory valuation will be

$$\text{Final Inventory} = 4,000 \times \$15 = \$60,000$$

Thus, we get the cost of goods sold as

$$\text{Cost of Goods Sold} = 117,000 + 0 - 60,000 = 57,000$$

And hence, the income before tax as

$$\text{Income Before Tax} = \text{Sales} - \text{Cost of Goods Sold} - \text{Other Expenses}$$

$$\text{Income Before Tax} = 120,000 - 57,000 - 31,000 = \$32,000$$

The income taxes would be

$$\text{Income Tax Applied} = \$12,800$$

And hence the net income would be

$$\text{Net Income} = \$19,200$$

(b)

Under LIFO, the final inventory valuation will be

$$\text{Final Inventory} = 1,000 \times (\$9 + \$10 + \$11 + \$12) = \$42,000$$

Thus, we get the cost of goods sold as

$$\text{Cost of Goods Sold} = 117,000 + 0 - 42,000 = 75,000$$

And hence, the income before tax as

$$\text{Income Before Tax} = \text{Sales} - \text{Cost of Goods Sold} - \text{Other Expenses}$$

$$\text{Income Before Tax} = 120,000 - 75,000 - 31,000 = \$14,000$$

The income taxes would be

$$\text{Income Tax Applied} = \$5,600$$

And hence the net income would be

$$\text{Net Income} = \$8,400$$

(2)

In both cases, we have the following values:

$$\text{Sales} = \$25 \times 4,000 = \$100,000$$

$$\text{Purchase} = 0, \text{Ending Inventory} = 0$$

(a)

Under FIFO, the beginning inventory was given by \$60,000.

Thus, we have cost of goods sold as:

$$\text{COGS} = 100,000 - 60,000 = \$40,000$$

And so, net income before tax is:

$$\text{Net Income Before Tax} = \$40,000 - \$30,000 = \$10,000$$

$$\text{Income Tax} = \$4,000 \Rightarrow \text{Net Income After Tax} = \$6,000$$

(a)

Under LIFO, the beginning inventory was given by \$42,000.

Thus, we have cost of goods sold as:

$$\text{COGS} = 100,000 - 42,000 = \$58,000$$

And so, net income before tax is:

$$\text{Net Income Before Tax} = \$58,000 - \$30,000 = \$28,000$$

$$\text{Income Tax} = \$11,200 \Rightarrow \text{Net Income After Tax} = \$16,800$$

(3)

If the logs were purchased in year 2, then this means that the entire 5,000 units were sold in first year. This means that both LIFO and FIFO would have given the same result, since all units were used. Additionally, in year 2, all the purchased inventory is used up once again. So, the results will again be that LIFO = FIFO.