

P6-1

a

|                          |              |                        |                      |
|--------------------------|--------------|------------------------|----------------------|
| Beginning inventory      | 40,000       | units @ \$20           | \$800,000            |
| Purchases                | 300,000      | units @ \$20           | 6,000,000            |
| Goods available for sale | 340,000      | units @ \$20           | \$6,800,000          |
| Units sold               | -310,000     | units @ \$20           | 6,200,000            |
|                          |              |                        | (Cost of goods sold) |
| Sales                    | \$11,780,000 | (310,000 units @ \$38) |                      |
| Cost of goods sold       | 6,200,000    |                        |                      |
| Gross Profit             | \$5,580,000  |                        |                      |

b.

|                          |          |              |                      |
|--------------------------|----------|--------------|----------------------|
| Beginning inventory      | 40,000   | units @ \$20 | \$800,000            |
| Purchases                | 300,000  | units @ \$20 | 6,000,000            |
| Goods available for sale | 340,000  | units @ \$20 | \$6,800,000          |
| Units sold               | -310,000 | units @ \$20 | 6,200,000            |
|                          |          |              | (Cost of goods sold) |
| Ending inventory         | 30,000   | units @ \$20 | \$600,000            |

c.  
Ending inventory = 28,000 @ \$20 = \$560,000

d.

|                          |         |              |             |
|--------------------------|---------|--------------|-------------|
| Beginning inventory      | 40,000  | units @ \$20 | \$800,000   |
| Purchases                | 300,000 | units @ \$20 | 6,000,000   |
| Goods available for sale | 340,000 | units @ \$20 | \$6,800,000 |
| Ending inventory         | 28,000  | units @ \$20 | 560,000     |
| Cost of goods sold       |         |              | \$6,240,000 |

e. The value of the inventory in b was determined by computing the amount of cost of goods sold based on the amount of units that were sold. The ending balance for inventory was "plugged" based on the computed cost of goods sold. This is an allocation approach; the cost of goods available for sale was allocated between ending inventory and cost of goods sold based on the estimated amount of expense. The amount of cost of goods sold in d was determined by determining the value of the balance sheet account and "plugging" the cost of goods sold. This is known as the balance sheet approach. Possible causes for the difference include theft and/or obsolescence.

f. Currently, the FASB favors a balance sheet approach to adjustment.

P6-2

Note to instructor: Students have not yet been introduced to bad debt expense and the allowance for doubtful accounts (Chapter 8). The problem has been simplified by eliminating any existing balance in the allowance for doubtful accounts and giving the students the account names.

a.

|                                 |        |        |
|---------------------------------|--------|--------|
| Bad debt expense                | 15,000 |        |
| Allowance for doubtful accounts |        | 15,000 |

b.

|                            |           |           |
|----------------------------|-----------|-----------|
| Sales                      | \$600,000 | .03       |
| Estimated bad debt expense |           | \$ 18,000 |

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|                                 |        |        |
|---------------------------------|--------|--------|
| Bad debt expense                | 18,000 |        |
| Allowance for doubtful accounts |        | 18,000 |

c. Entry a uses the balance sheet approach. The expense is determined by estimating the remaining asset value. Valuation of the asset accounts receivable is being emphasized here.

Entry b uses the income statement approach. The estimate attempts to match the bad debt expense with sales recorded during the accounting period.

d. Under the income statement approach, expenses will be \$3,000 more than under the balance sheet approach. Assets and equity will be \$3,000 less. Cash flows are the same regardless of which method is used.

P6-3

a.

|                             |        |                    |
|-----------------------------|--------|--------------------|
| Vacation expense.           | 32,000 |                    |
| Accrued vacation liability. |        | 32,000 (160@\$200) |

b.

|                            |        |                      |
|----------------------------|--------|----------------------|
| Accrued vacation liability | 32,320 |                      |
| Cash.....                  |        | 32,320 (160 @ \$202) |

c.

|                    |         |                       |
|--------------------|---------|-----------------------|
| Vacation expense.. | 163,620 |                       |
| Cash.....          |         | 163,620 (810 @ \$202) |

d.

|                            |        |                      |
|----------------------------|--------|----------------------|
| Vacation expense..         | 39,900 |                      |
| Accrued vacation liability |        | 39,900 (190 @ \$210) |

e. Total vacation expense recognized in 2002 is \$163,620 + \$39,900, a total of \$203,520. The liability account appears as follows:

| Accrued vacation liability |                |
|----------------------------|----------------|
| 0                          | Beg. Bal. 2001 |
| 32,000                     | (a)            |
| 32,000                     | Beg bal. 2002  |

|  |            |  |                       |
|--|------------|--|-----------------------|
|  | (b) 32,320 |  | 39,900 (d)            |
|  |            |  | 39,580 End. Bal. 2002 |

f. The ending balance in the Accrued vacation liability account would be \$39,900, which is 190 days at \$210. That would imply that the "plug" for expense would have to be \$40,220.

Vacation expense. 40,220  
 Accrued vacation liability. 40,220  
 Total vacation expense for 2002 would be \$40,220 + \$163,620 = \$203,840

|                            |                       |
|----------------------------|-----------------------|
| Accrued vacation liability |                       |
|                            | 0 Beg. Bal. 2001      |
|                            | 32,000 (a)            |
|                            | 32,000 Beg. Bal. 2002 |
| (b) 32,320                 | 40,220 "PLUG"         |
|                            | 39,900 End. Bal. 2002 |

g. The vacation expense differs by \$320 under the two approaches. The first approach focused solely on the income statement and estimated the expenses directly. The second approach in (f) focused on having the most accurate estimate of the ending balance in the liability account. The liability created in 2001 mis-estimated the actual cash outflow to pay the accrued vacation days in the next year. (In 2001 a wage rate of \$200 per day was assumed; but when the vacation days were actually taken, \$202 per day was paid.) The \$230 error is corrected if the ending liability value is corrected. It is not corrected when we continue to focus only on the income statement expense estimation. Of course, next year the opposite could happen and the first approach would have been self-correcting. Also note that, unless the actual wage rate for 2003 is the one estimated in 2002, there could still be an actual error in the next year when the vacation days are paid, even when the second "balance sheet" approach is used.

P6-4

- a. Amortization expense equals Cost/Life = \$120,000/4 = \$30,000  
 b. Balance sheet value at 12/31/2001 = \$120,000 - \$30,000 = \$90,000.

P6-5

- a. Expected Value of cash flows  
 2002 \$20,000 (.25) + \$32,000 (.75) = \$29,000  
 2003 \$25,000 (.25) + \$36,000 (.75) = \$33,250  
 2004 \$30,000 (.25) + \$40,000 (.75) = \$37,500

b. Expected value equals present value of future cash flows discounted at 6%.

Present Value at 12/31/2001

$$PV = \$29,000 \times (1/1.06) + \$33,250 \times (1/1.06)^2 + \$37,500 \times (1/1.06)^3$$

$$PV = \$27,358 + \$29,592 + \$31,486$$

$$PV = \$88,436$$

Present Value at 12/31/2002

$$PV = \$33,250 \times (1/1.06) + \$37,500 \times (1/1.06)^2$$

$$PV = \$31,368 + \$33,375 = \$64,743$$

c. Amortization expense for 2002 equals \$88,436 - \$64,743 = \$23,693, or the change in the Present Value of the expected future cash flows from 12/31/2001 to 12/31/2002.

P6-6 a.

|                                       |           |
|---------------------------------------|-----------|
| Accumulated amortization at 12/31/01: | \$572,460 |
| Accumulated amortization at 12/31/00: | 454,433   |
| Amortization expense in 2001:         | \$118,027 |

|                      |         |         |
|----------------------|---------|---------|
| Amortization expense | 118,027 |         |
| Goodwill             |         | 118,027 |
| b. Impairment loss   | 162,785 |         |
| Goodwill             |         | 162,785 |

c. Entry a was made by estimating the amount of expense for the period. Note 1 describes that existing intangibles are amortized over lives ranging from two to four years. Amazon.com would have divided the original goodwill by the estimated useful life to arrive at the amortization expense for the period.

Entry b was made by estimating the remaining asset value. Note 1 describes that an impairment loss is taken when the estimated fair value of the asset is less than its recorded amount. The impairment loss would be the difference between the estimated fair value of the asset and its recorded amount.

d. It is highly unlikely that Amazon.com would have an impairment charge related to enterprise-level goodwill. Note 1 indicates that such a charge will be taken if the company's net book value were to exceed the Company's market capitalization. At December 31, 2001, Amazon.com has a negative book value of \$1,440,000,000. On August 9, 2002, the market capitalization of Amazon.com's common stock was \$5,322,088,680. ( $373,218,000 \times \$14.26$ ). Amazon.com's market capitalization exceeded its book value by \$6,762,088,680!

## 2 Solution-06-Problems

P6-7

a. Expected value of the note at time of purchase equals  $\$200,000(.6) + \$40,000(.40)$ .

Expected value equals  $\$120,000 + \$16,000 = \$136,000$ .

b. Purchase price equals Present Value of expected payment of  $\$136,000$  at 12% in 3 years.

$$PV = \$136,000(1/1.12)^3 = \$136,000(.7118) = \$96,804.80$$

P6-8

a. Expected value equals  $\$200,000(.8) + \$150,000(.2)$ .

Expected value equals  $\$160,000 + \$30,000$  equals  $\$190,000$ .

b. Economic value equals Present Value of expected payment of  $\$190,000$  at 12% in 2 years.

$$PV = \$190,000(1/1.12)^2 = PV = \$190,000(.7972) = \$151,468$$

c.

|  |              |
|--|--------------|
| Discounted expected value one year after purchase  | \$151,468.00 |
| Discounted expected value at time of purchase      | 96,804.80    |
| Total increase in value over the year              | \$54,663.20  |
| Total increase in value over the year              | \$54,663.20  |
| Effect of interest only (normal economic earnings) | (11,616.58)  |
| $\$96,804.80 \times .12$                           |              |

Abnormal economic earnings \$43,046.62

Abnormal economic earnings is the value increase attributable to the favorable change in the probability of collection of the note.

P6-9

Cash flows:  $\$10,000 \times .06 = \$600$  annually for 5 years.

Return of principal:  $\$10,000$  at the end of 5 years.

Cash flow:

Time 1:  $\$600$

Time 2:  $\$600$

Time 3:  $\$600$

Time 4:  $\$600$

Time 5:  $\$10,600$

a.

$$PV = \begin{array}{r} \$600(1/1.06) \\ + \$600(1/1.06)^2 \\ + \$600(1/1.06)^3 \\ + \$600(1/1.06)^4 \\ + \$600(1/1.06)^5 \end{array} + \begin{array}{r} + \$600(1/1.06)^2 \\ + \$10,600(1/1.06)^5 \end{array} + \begin{array}{r} + \$600(1/1.06)^3 \\ \\ \\ \\ \\ \end{array}$$

$$PV = \begin{array}{r} \$566 \\ + \$475 \end{array} + \begin{array}{r} + \$534 \\ + \$7,921 \end{array} + \begin{array}{r} + \$503 \\ \\ \\ \\ \\ = \$10,000 \end{array}$$

b.

$$PV = \begin{array}{r} \$600(1/1.08) \\ + \$600(1/1.08)^2 \\ + \$600(1/1.08)^3 \\ + \$600(1/1.08)^4 \\ + \$600(1/1.08)^5 \end{array} + \begin{array}{r} + \$600(1/1.08)^2 \\ + \$10,600(1/1.08)^5 \end{array} + \begin{array}{r} + \$600(1/1.08)^3 \\ \\ \\ \\ \\ \end{array}$$

$$PV = \begin{array}{r} \$556 \\ + \$441 \end{array} + \begin{array}{r} + \$514 \\ + \$7,214 \end{array} + \begin{array}{r} \\ \\ \\ \\ \\ = \$9,201 \end{array}$$

c.

$$PV = \begin{array}{r} \$600(1/1.04) \\ + \$600(1/1.04)^2 \\ + \$600(1/1.04)^3 \\ + \$600(1/1.04)^4 \\ + \$600(1/1.04)^5 \end{array} + \begin{array}{r} + \$600(1/1.04)^2 \\ + \$10,600(1/1.04)^5 \end{array} + \begin{array}{r} + \$600(1/1.04)^3 \\ \\ \\ \\ \\ \end{array}$$

$$PV = \begin{array}{r} \$577 \\ + \$513 \end{array} + \begin{array}{r} + \$555 \\ + \$8,712 \end{array} + \begin{array}{r} + \$533 \\ \\ \\ \\ \\ = \$10,890 \end{array}$$

d. If the rate offered on the bond is the same as the investors' desired rate of return, investors should be willing to pay face value of the bond. If the investors' desired rate of return is greater than the rate offered in the bond, investors will bid the bond's price below its face value. If the investors' desired rate of return is less than that offered on the bond, investors will bid the bond's price above its face value.

P6-10

a.  $PV = \$600(1/1.06) + \$10,600(1/1.06)^2$   
 $PV = \$566 + \$9,434 = \$10,000$

b.  $PV = \$600(1/1.08) + \$10,600(1/1.08)^2$   
 $PV = \$555 + \$9,087 = \$9,642$

c.  $PV = \$600(1/1.04) + \$10,600(1/1.04)^2$   
 $PV = \$577 + \$9,801 = \$10,378$

d. If interest rates remain the same as they were when the bond was issued, the bond will sell for its face value throughout its life. If rates rise, investors will bid the price of the bond down below its face value. If rates fall, investors will bid the price of the bond up above its face value. The economic value of the bond will rise and fall with changes in market interest rates.

P6-11

a. Cash flows:  $\$1,000 \times .08 = \$80$  annually for 3 years plus  $\$1,000$  return of principal at the end of three years. Sally should be willing to pay for the

### 3 Solution-06-Problems

present value of these cash flows discounted at a required rate of return of 10%.

|  |          |            |            |            |
|--|----------|------------|------------|------------|
| Date   | 0        | 1          | 2          | 3          |
| Cash flow:                                     |          | \$80       | \$80       | \$1,080    |
| Present value of year 1 cash flow as of date 0 | \$ 72.72 | $1.1^{-1}$ |            |            |
| Present value of year 2 cash flow as of date 0 | 66.12    |            | $1.1^{-2}$ |            |
| Present value of year 3 cash flow as of date 0 | 811.42   |            |            | $1.1^{-3}$ |
| Total present value of Cash flows as of date 0 | <hr/>    |            |            |            |
|  | \$950.26 |            |            |            |

= Price that Sally would be willing to pay for the bond.

b.

|                                   |                       |                              |
|-----------------------------------|-----------------------|------------------------------|
| Cash flows:                       | Present value factor: | Present value of cash flows: |
| Year 1: \$80                      | 0.909                 | \$ 72.72                     |
| Year 2: \$80                      | 0.826                 | 66.08                        |
| Year 3: \$1,080                   | 0.751                 | 811.08                       |
| <hr/>                             |                       |                              |
| Total present value as of date 0: |                       | \$949.88                     |

ALTERNATIVE 2:

Since the interest is the same in the three years, the factors for years 1, 2 and 3 can be added together. It can be pointed out to students that this is how single sum factors can be converted into annuity factors:

|                      |       |           |                            |
|----------------------|-------|-----------|----------------------------|
| Year 1               | 0.909 |           |                            |
| Year 2               | 0.826 |           |                            |
| Year 3               | 0.751 |           |                            |
| <hr/>                |       |           |                            |
| Total:               | 2.486 | × \$80    | =\$198.88(PV of interest)  |
| Plus                 | 0.751 | × \$1,000 | = 751.00 (PV of Principal) |
| <hr/>                |       |           |                            |
| Total present value: |       |           | \$949.88                   |

c.

|   |                |             |                        |                                |                                |
|---|----------------|-------------|------------------------|--------------------------------|--------------------------------|
|   |                | A           | B                      | C                              | D                              |
| 1 | Date           | 0           | 1                      | 2                              | 3                              |
| 2 | Cash flow      |             | \$80                   | \$80                           | \$1,080                        |
| 3 | Pre-sent value | =SUM(B3:D3) | =B2/1.10 <sup>^1</sup> | =C2/1.10 <sup>^(\$D1-B1)</sup> | =D2/1.10 <sup>^(\$D1-A1)</sup> |

Present value = A3

d.

(Instructions are for the TI-BA-II-Plus Model Financial Mode Calculator)

Keys used will be FV, N, I/Y, PMT and PV (On some calculators I/Y will be I )

Key strokes (in any order)

1,000 FV

3 N

80 PMT

10 I/Y

CPT PV