

Appendix A

Accounting Effects In Engineering Economies

A-1

The following information is has been taken from the financial statements available for the ABC Company:

Accounts payable	\$ 4,000
Accounts receivable	12,000
Income taxes	6,000
Owner's equity	75,000
Cost of goods sold	42,000
Selling expense	10,000
Sales revenue	80,000

Determine the net income.

Solution

$$\begin{aligned}\text{Net income} &= \text{Sales revenue} - \text{Cost of goods sold} - \text{Selling expense} - \text{Income taxes} \\ &= 80,000 - 42,000 - 10,000 - 6,000 \\ &= \$22,000\end{aligned}$$

A-2

Billy Bob's Towing and Repair Service has provided the following financial information:

Cash	\$80,000
Accounts receivable	120,000
Accounts payable	200,000
Securities	75,000
Parts Inventories	42,000
Prepaid expenses	30,000
Accrued expense	15,000

Determine the (a) current ratio, (b) the quick ratio, and the (c) available working capital.

Solution

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$$(a) \text{ Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{80,000 + 120,000 + 75,000 + 42,000}{200,000 + 15,000} = 1.47$$

$$(b) \text{ Quick ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}} = \frac{80,000 + 120,000 + 75,000}{200,000 + 15,000} = 1.28$$

$$(c) \text{ Working capital} = \text{Current assets} - \text{Current liabilities} = \$102,000$$

A-3

The following financial information was taken from the income statement of Firerock Industries

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Revenues	
Sales	\$3,200,000
Operating revenue	2,000,000
Nonoperating revenue	3,400,000
Expenses	
Total operating expenses	6,700,000
Interest payments	500,000
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Taxes paid for the year equaled \$110,000. Determine the (a) net income before taxes, (b) net profit (loss), (c) interest coverage and (d) net profit ratio.

Solution

$$(a) \text{ Net income before taxes} = 3.2\text{M} + 2.0\text{M} + 3.4\text{M} - 6.7\text{M} - .5\text{M} = \$1,400,000$$

$$(b) \text{ Net profit} = 1.4\text{M} - .11\text{M} = \$1,290,000$$

$$(c) \text{ Interest coverage} = \frac{\text{Total Income}}{\text{Interest Payments}} = \frac{1.9\text{M}}{.5\text{M}} = 3.8$$

$$(d) \text{ Net profit ratio} = \frac{\text{Net Profit}}{\text{Net Sales Revenue}} = \frac{1.29\text{M}}{3.2\text{M}} = .4031$$

A-4

Determine value of the retained earnings for Lavelle Manufacturing.

Current liabilities	\$4,000,000
Current assets	6,500,000

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Fixed assets	4,000,000
Common stock	2,500,000
Long-term liabilities	2,000,000
Preferred stock	500,000
Other assets	1,500,000
Capital surplus	1,000,000

Solution

Equity = Common stock + Preferred stock + Capital surplus + Retained earnings

Equity = 2.5M + .5M + 1M + Retained earnings
= 4M + Retained earnings

Assets = Liabilities + Equity

6.5M + 4M + 1.5M = 4M + 2M + 4M + Retained earnings

Retained earnings = \$2,000,000

A-5

Abby Manufacturing produces numerous children's toys. The Dr. Dolittle Farm is one of the most popular sellers. Indirect cost to be allocated to production of the toy is to be calculated based on direct materials allocation. The total production overhead for the facility where the toy is produced is \$750,000. The direct material total for the facility is \$8,350,000.

The cost of the direct materials used in production of the Dr. Dolittle is \$7.45 per unit. The total labor (both direct and indirect) for the production of the toy is \$9.35 per unit. The production schedule for the coming year calls for 300,000 units to be produced. If Abby desires a 35% profit on the toy, what should the wholesale price be?

Solution

Total labor = 9.35 x 300,000 = 2,805,000
Total materials = 7.45 x 300,000 = 2,235,000
Overhead = (2,235,000/8,350,000) x 750,000 = \$200,748.50

Total production cost = 2,805,000 + 2,235,000 + 200,748.50 = \$5,240,748.50
Cost per unit = 5,240,748.50/300,000 = \$17.47

Wholesale price = 17.47(1.35) = \$23.58

A-6

Brown Box Inc manufactures shipping boxes for a wide variety of industries. Their model XLLong has the following direct manufacturing costs per unit:

Direct materials costs	\$0.25
Direct labor costs	2.75

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Overhead for the entire manufacturing plant is \$4,000,000 per year. Direct labor costs are used to allocate the overhead. The total direct labor costs are estimated to be \$5,500,000. The expected demand for this particular model is 200,000 boxes for the year. Determine the cost per unit.

Solution

Cost per unit = Direct materials cost + Direct labor costs + Overhead costs

Overhead costs

$$\text{Direct labor cost} = 200,000 \times \$2.75 = 550,000$$

$$\text{Allocation of overhead} = 4,000,000 \times \frac{550,000}{5,500,000} = 400,000/200,000 = \$2/\text{box}$$

$$\text{Cost per unit} = .25 + 2.75 + 2.00 = \$5.00$$

A-7

The following financial information is known about Rapid Delivery Inc.:

Acid-test ratio	1.3867
Cash on hand	\$ 72,000
Accounts receivable	102,000
Market value of securities held	34,000
Inventories	143,000
Other assets	16,000
Fixed assets	215,000
Total liabilities	400,000

Determine the (a) current assets, (b) current liabilities, (c) total assets, and (d) owner's equity.

Solution

$$(a) \text{ Current assets} = 72,000 + 102,000 + 34,000 + 143,000 = \$351,000$$

$$(b) \text{ Acid-test ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$$

$$\text{Current liabilities} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Acid-test ratio}} = \frac{72,000 + 102,000 + 34,000}{1.3867} = \$149,996$$

$$(c) \text{ Total assets} = 351,000 + 215,000 + 16,000 = \$582,000$$

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$$\begin{aligned} \text{(d) Owner's equity} &= \text{Total assets} - \text{Total liabilities} \\ &= 582,000 - 400,000 \\ &= \$182,000 \end{aligned}$$

A-8

Determine the current and quick ratios for Harbor Master Boats Inc. Does the company appear to be reasonably sound from a financial viewpoint based on these two ratios?

Harbor Master Boats Inc.
Balance Sheet, January 1, 200X

Assets		Liabilities	
Current Assets		Current Liabilities	
Cash	900,000	Accounts Payable	2,400,000
Accounts Receivable	1,100,000	Notes Payable	2,000,000
Inventory	<u>2,000,000</u>	Accrued Expense	<u>900,000</u>
Total Current Assets	4,000,000	Total Current Liabilities	5,300,000
Fixed Assets		Long Term Debt	<u>3,000,000</u>
Land	300,000	Total Liabilities	8,300,000
Plant	2,500,000	Equity	
Equipment	<u>6,000,000</u>	Stock	2,000,000
Total Fixed Assets	8,800,000	Retained Earnings	<u>2,500,000</u>
		Total Net Worth	4,500,000
<hr/> Total Assets		<hr/> Total Liabilities and Net Worth	
	12,800,000		12,800,000

Solution

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{4,000,000}{5,300,000} = .755$$

$$\text{Quick ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}} = \frac{4,000,000 - 2,000,000}{5,300,000} = .377$$

Based on these two ratios the company is not sound financially. The current typically should be greater than 2. The quick ratio indicates the company's inability to pay off current liabilities with "quick" capital.