

## Problem 1

Butterfly Tractors had \$22.00 million in sales last year. Cost of goods sold was \$9.60 million, depreciation expense was \$3.60 million, interest payment on outstanding debt was \$2.60 million, and the firm's tax rate was 21%. (Enter your answers in millions rounded to 2 decimal places.)

a. What was the firm's net income?

Name	Amount
Cost of Goods	\$9.6 million
Depreciation Expense	\$3.6 million
Interest Expense	\$2.6 million
<b>Total</b>	<b>\$15.8 million</b>

$$\text{Taxable Income} = 22.00 \text{ million} - 15.8 \text{ million} = 6.2 \text{ million}$$

### Income after Tax

$$\text{Net Income} = 6.2 \text{ million} \times 0.79 = 4.898 \text{ million}$$

***The final answer is: 4.90 million (2.d.p)***

b. What was the firm's cash flow?

$$\text{Cash Flow} = 4.9 \text{ million} + 3.6 \text{ million} = 8.498 \text{ million}$$

***The final answer is: 8.50 million (2.d.p)***

c. What would happen to net income and cash flow if depreciation were increased by \$2.60 million?

If the depreciation increases by \$2.60 million the cashflow will increase by 2.60 million and the net income will decrease by 2.6 million

$$\text{New depreciation} = 3.6 \text{ million} + 2.6 \text{ million} = 6.2 \text{ million}$$

### Decrease in Net income after increase in depreciation

$$\text{Taxable Income} = 22.00 \text{ million} - 18.4 \text{ million} = 3.6 \text{ million}$$

$$\text{Net Income} = 3.6 \text{ million} \times 0.79 = 2.84 \text{ million}$$

### Increase in Cash Flow after increase in depreciation

$$\text{Cash Flow} = 2.84 \text{ million} + 6.2 \text{ million} = 9.04 \text{ million}$$

***The final answer is: Cash Flow: 9.04 million and Net Income: 2.84 million (2.d.p)***

d. What would be the impact on cash flow if depreciation was \$2.60 million and interest expense was \$3.60 million?

$$\text{Change in Cash Flow} = 2.6 \text{ million} - 3.6 \text{ million} = -1 \text{ million}$$

***The final answer is: The cashflow will decrease by \$1.00 million dollar making \$7.5 million***

## Problem 2

Sheryl's Shipping had sales last year of \$10,500. The cost of goods sold was \$6,600, general and administrative expenses were \$1,100, interest expenses were \$600, and depreciation was \$1,100. The firm's tax rate is 21%.

a. What are earnings before interest and taxes?

$$\$10,500 - \$6,600 - \$1,100 - \$1,100 = \$1,700$$

***The final answer is: \$1,700***

b. What is net income?

$$\text{Taxable Income} = \$10,500 - \$6,600 - \$1,100 - \$1,100 - \$600 = \$1,100$$

$$\text{Net Income} = \$1,100 \times 0.79 = \$869$$

***The final answer is: \$869***

c. What is cash flow from operations?

$$\$869 + \$1100 = \$1,969$$

***The final answer is: \$1,969***

## Problem 3

During the last year of operations, Theta's accounts receivable increased by \$23,000, accounts payable increased by \$11,500, and inventories decreased by \$2,400. What is the total impact of these changes on the difference between profits and cash flow?

$$\text{Change In Cash Flow} = (\$ - 23,000) + \$11,500 + \$2,400 = -\$9,100$$

- Accounts Receivable Increased by \$23,000. Cash Flow decreased by \$23,000
- Accounts Payable Increased by \$11,500. Cash Flow increase by \$11,500
- Inventories Decreased by \$2,400. Cash Flow increase by \$2,400

***The final answer is: The total impact is \$-9,100 compared to the profits hence the cash flow is reduced by \$9,100***

## Problem 4

You have set up your tax preparation firm as an incorporated business. You took \$79,000 from the firm as your salary. The firm's taxable income for the year (net of your salary) was \$30,200. Assume you pay personal taxes as an unmarried taxpayer. Use the tax rates presented in lecture slides.

a. How much tax must be paid to the federal government, including both your personal taxes and the firm's taxes? (Round your answer to 2 decimal places.)

$$\text{Personal Tax} = (\$9,525 \times 0.10) + (\$29,175 \times 0.12) + (\$40,300 \times 0.22) = \$13,319.50$$

$$\text{Firm's Tax} = \$30,200 \times 0.21 = \$6,342$$

$$\text{Tax paid to federal government} = \$13,319.50 + \$6,342 = \$19,661.50$$

***The final answer is: \$19,661.50***

b. By how much will you reduce the total tax bill if you cut your salary to \$54,600, thereby leaving the firm with taxable income of \$54,600? (Round your intermediate calculations and final answers to the nearest whole dollar amount.)

$$\text{Personal Tax} = (\$9,525 \times 0.10) + (\$29,175 \times 0.12) + (\$15,900 \times 0.22) = \$7,951.50$$

$$\text{Firm's Tax} = \$54,600 \times 0.21 = \$11,466$$

$$\text{Reduction in total tax} = \$19,661.50 - (\$11,466 + \$7,951.50) = \$244$$

***The final answer is: \$244***

c. What allocation will minimize the total tax bill? Hint: Think about marginal tax rates and the ability to shift income from a higher marginal bracket to a lower one. (Round your intermediate calculations and final answers to the nearest whole dollar amount.)

The most effective way to minimize the total tax bill is to reduce personal tax to a rate lower than the corporate tax rate of 21%. The optimal approach is to set the salary at \$38,700, which is the maximum income within the 12% personal tax bracket, ensuring a lower tax burden.

$$\text{Company's taxable income} = \$30,200 + (\$79,000 - \$38,700) = \$70,500$$

$$\text{Personal Tax} = (\$9,525 \times 0.10) + (\$29,175 \times 0.12) = \$4,453.50$$

$$\text{Firm's Tax} = \$70,500 \times 0.21 = \$14,805$$

$$\text{Total Saving} = \$19,661.50 - \$14,805 - \$4,453.50 = \$403$$

***The final answer is: Allocate \$38,700 to personal salary and \$70,5000 in firm's taxable income. Saving a total of \$403***

## Problem 5

State whether each of the following events would increase or decrease the ratio of market value to book value.

a. Big oil announces the discovery of a major new oil field in Costaguana.

The discovery of a new oil field increases the company's future earnings potential, making the company more valuable to investors. The stock price increases, but the accounting value of assets remains unchanged initially.

***The final answer is: The ratio of market value to book value increase***

b. Big Autos increases its depreciation provision.

Increasing depreciation lowers the book value of assets, as assets are written off faster. Market value is unaffected or may even rise because depreciation is a non-cash expense, and reducing taxable income can sometimes be seen as beneficial.

***The final answer is: The ratio of market value to book value increase***

## Problem 6

Will the following actions increase or decrease the firm's cash balance?

a. The firm sells some goods from inventory.

When a firm sells goods, it receives cash in exchange for inventory. Since inventory is converted into cash, the cash balance increases.

***The final answer is: The firm's cash balance will increase***

b. The firm sells some machinery to a bank and leases it back for a period of 20 years.

The firm receives immediate cash from selling the machinery. Even though it now has a leasing cost, this does not affect the immediate cash inflow.

***The final answer is: The firm's cash balance will increase***

c. The firm buys back 1 million shares of stock from existing shareholders.

Stock buybacks require the firm to pay cash to shareholders, reducing the company's cash reserves. Since the firm is spending money to repurchase shares, its cash balance decreases.

***The final answer is: The firm's cash balance will decrease***