Study Problems:

1. In 2010 Terry Brady, the legendary athlete from Indiana, decided to leave his job as head football coach at Mattoon High School to open Brady Advantage, his own sporting goods store, in Terre Haute. By locating Brady Advantage halfway between St. Louis and Indianapolis, Brady hoped to attract customers from both large metropolitan markets. A partial income statement for Brady Advantage follows:

	2010
Revenues	
Revenue from sales of goods and services	$210,000
Operating costs and expenses	
Costs of products and services sold	$82,000
Selling expenses	$6,000
Administrative expenses	$12,000
Total Operating Costs & Expenses	$100,000
Income from operations	$110,000
Interest expense (bank loan)	$14,000
Non-recurring expenses to start business	$8,000
Income taxes	$16,000
Net income	$72,000

Terry Brady's coaching job at Mattoon High paid $45,000 of annual salary and benefits. To get the sporting goods store opened, Brady used $50,000 of his personal savings, which was earning a guaranteed 12 percent annual rate of return. Brady opened his store in a building that he owned in Terre Haute. Prior to opening his store, the building was rented for $24,000 per year.

a. In 2010, Brady Advantage incurs $_____ of total explicit costs for using market-supplied resources.

b. In 2010, the opportunity cost of Brady's equity capital is $_____.

c. The total implicit cost of using owner-supplied resources in 2010 is $_____.

d. The total opportunity cost of resources used by Brady Advantage in 2010 is $_____. The total economic cost in 2010 is $_____.

e. The accounting profit for Brady Advantage in 2010 is $_____.

f. Based on his profit in 2010, did Terry Brady increase his wealth by quitting his job at Mattoon High and opening Brady Advantage? Explain your answer carefully. [Hint: Compute economic profit in 2010].

2. During a year of operation, a firm collects $5,000,000 in revenue and spends $3,500,000 on labor expense, raw materials, rent, and utilities. The firm's owner has provided $1,000,000 of her own money instead of investing the money and earning a 12 percent annual rate of return.

   a. The explicit costs of the firm are $_____. The implicit costs are $_____. Total economic cost is $_____.

   b. The firm earns accounting profit of $_____.

   c. The firm's economic profit is $_____.

   d. If the owner could earn 15 percent annually on the money she has invested in the firm, the economic profit of the firm would be _____ (when revenue is $5,000,000).

3. Over the next three years, a firm is expected to earn economic profit of $700,000 in the first year, $800,000 in the second year, and $500,000 in the third year. After the end of the third year, the firm goes out of business.

   a. If the risk-adjusted discount rate is 16 percent for each of the next three years, the value of the firm is $_____. The firm can be sold today for a price of $_____.

   b. If the risk-adjusted discount rate is 10 percent for each of the next three years, the value of the firm is $_____. The firm can be sold today for a price of $_____.

Answers:

1. a. $138,000 = $82,000 + $6,000 + $12,000 + $14,000 + $8,000 + $16,000

   b. $6,000 = $50,000 × 0.12 (Note that the *amount* of equity capital is $50,000 while the *opportunity cost* of using the $50,000 of equity capital is the forgone return caused by removing the $50,000 from its present investment earning 12 percent annually–i.e., $6,000 per year.)

   c. There are three owner-supplied resources in this problem: Brady's time away from his high school coaching job, his equity capital, and his building that he could have rented. The total implicit cost = $75,000 (= $45,000 + $6,000 + $24,000).

   d. $213,000 (= $138,000 + $75,000); $213,000. (Note: Total economic cost is defined as the opportunity cost of *all* resources used by the firm.)

   e. $72,000 = Total revenue – explicit costs = $213,000 – $138,000. Note that accounting profit is frequently called "net income" in financial statements (as in this problem.)

   f. Terry Brady's wealth decreased in 2010 because economic profit is –$3,000 (= $210,000 – $138,000 – $75,000). Only when the owners of businesses earn positive economic profits do they experience an increase in their wealth. Remember, the value of their firm, which is part (or perhaps all) of their wealth, depends on the future stream of economic profit earned by the firm. A year in which profit is zero adds nothing to owner wealth. A year in which profit is negative reduces owner wealth. The value of economic profit, –$3,000, indicates Brady would have been $3,000 better off had he NOT owned and operated Brady Advantage in 2007 but instead collected salary as high school coach of $45,000, interest of $6,000, and rent of $24,000 (which totals $75,000). As you can see, accounting profit in this example must exceed $75,000 in order for Brady to break even.

2. a. $3,500,000; $120,000; $3,620,000
   b. $1,500,000
   c. $1,380,000
   d. $1,350,000

3. a. Value of the firm:

$$\frac{\$700,000}{(1.16)^1}+\frac{\$800,000}{(1.16)^2}+\frac{\$500,000}{(1.16)^3}$$

$$=\$603,448+\$594,530+\$320,329$$

$$=\$1,518,307=\text{price of the firm}$$

   b. Value of the firm:

$$\frac{\$700,000}{(1.10)^1}+\frac{\$800,000}{(1.10)^2}+\frac{\$500,000}{(1.10)^3}$$

$$=\$636,364+\$661,157+\$375,657$$

$$=\$1,673,178=\text{price of the firm}$$