

CAE

CBE Selected-Response Questions

Sample items aligned to Economics and Accounting courses



Copyright © 2015 Council for Aid to Education

Economics Objective

Evaluate supply and demand information and apply principles of price sensitivity to determine a firm's production and profit potential.

Item #1

An electronics distributor sold 10 units of a product at \$100 per unit. To improve profits, the distributor raised the price to \$125 and sold 8 units. What is the price elasticity of demand for the product at the point where the price was changed to \$125?

- A. 1.25
- B. 1.00
- C. 0.80
- D. 0.08

Correct Answer: A

Price elasticity of demand at the new price point can be determined with the end-point formula:

$$\frac{\text{Percentage Change in Quantity Demanded}}{\text{Percentage Change in Price}}$$

$$\frac{[(8-10)/8]}{[(125-100)/125]} = \frac{(-2/8)}{(25/125)} = \frac{(-1/4)}{(1/5)} \text{ or } \frac{(-5/20)}{(4/20)} = -1.25$$

The negative sign is dropped.

The mid-point formula is simpler, but tells us arc elasticity between the two prices.

$$\frac{(Q2 - Q1)/[(Q2 + Q1)/2]}{(P2 - P1)/[(P2 + P1)/2]}$$

In this case, the mid-point formula yields the answer of 1.00.

The other two answers are simply $\frac{100}{125}$ or 0.80 or $\frac{(8-10)}{(125-100)}$ or 0.08.

Item #2

Executives at a manufacturing company must increase sales. They know that the demand for the company's only product is price elastic. The CFO has proposed lowering the price to encourage sales activity and to increase total revenue. The CEO is concerned that total revenue will stay the same or decline. Who is correct and why?

- A. The CEO is correct because the percentage increase in quantity demanded will be less than the percentage decrease in price.
- B. The CFO is correct because the increase in quantity sold will be large enough to offset the lower price.
- C. The CEO is correct because customers will buy the same number of units in spite of the price decrease.
- D. The CFO is correct because the percentage change in quantity demanded will be equal to the percentage change in price.

Correct Answer: B

When demand is price elastic, a decrease in price leads to a larger increase in purchases on a percentage basis. Answers A and C describe inelasticity and perfect inelasticity respectively. Answer D describes unitary elasticity, which is when revenue remains unchanged at every price level and corresponding demand.

Item #3

A large manufacturing company commissioned an economic analysis of its business and market. The report states that demand for the company's goods can be described by the formula $Q = 100 - 4P^2$, where Q stands for quantity demanded and P stands for the price of each unit. The company's signature product is priced at \$4.00 per unit. The CEO wants to know how sensitive demand is to a 25% decrease in the product's price. What is the price elasticity of demand (absolute value) at the new price point?

- A. 18.0
- B. 1.2
- C. 0.4
- D. 0.3

Correct Answer: C

To determine price elasticity, it is necessary to have two pairs of data points: price and quantity demanded. First, solve for the quantity that would be demanded at the \$4.00 price level. $Q = 100 - 4(\$4.00)^2$ or $100 - 4(16.00)$ or $100 - 64$ or 46 units. Next, solve for quantity demanded at the new proposed price of \$3.00. Using the demand function, it is determined that, at \$3.00 per unit, there would be demand for 64 units. Since the question asks for elasticity at an end point, use the formula for point elasticity

of demand: $\frac{[(Q2-Q1)/Q1]}{[(P2-P1)/P2]}$ or $\frac{[(64-46)/46]}{[(3-4)/3]}$ or $\frac{0.3913}{-0.3333}$ or -1.174. As an absolute value rounded to the nearest tenth, this

would be 1.2. The other options are intermediate calculations in the steps to the final answer.

Accounting Objective

Given historic balances and income data, apply DuPont analysis to determine quality and direction of a firm's earning power.

Item #1

The table below shows financial results for three companies during the recent accounting period. Apply DuPont analysis to determine the Growth Rate for each of the three companies, and rank the companies with the fastest Growth Rate first.

	A	B	C
Profit Margin	0.03	0.05	0.08
Asset Turnover	2.40	2.20	1.80
Equity Multiplier	2.60	2.40	2.00
Earnings per Share	\$2.78	\$3.30	\$4.90
Dividends per Share	\$1.67	\$1.50	\$1.20

A. A with a Growth Rate of 60.0%, B with a Growth Rate of 45.5%, and C with a Growth Rate of 24.5%

B. C with a Growth Rate of 28.8%, B with a Growth Rate of 26.4%, and A with a Growth Rate of 7.5%

C. C with a Growth Rate of 75.5%, B with a Growth Rate of 54.5%, and A with a Growth Rate of 40%

D. A with a Growth Rate of 7.5%, C with a Growth Rate of 6.1%, and B with a Growth Rate of 2.5%

Correct Answer: B

Growth Rate is calculated using Return on Equity (ROE) and the company's Payout Ratio (PoR) in the formula $ROE(1 - PoR) = \text{Growth Rate}$. Neither ROE nor PoR are provided, so they must be determined from the data in the table. The formula for the DuPont analysis tells us that $ROE = \text{Total Asset Turnover} \cdot \left(\frac{\text{Total Assets}}{\text{Equity}}\right) \cdot \text{Net Profit Margin}$. For company A, $ROE = 2.40 \cdot 2.60 \cdot 0.03$ or 18.7%.

The $PoR = \frac{\text{Dividends Per Share}}{\text{Earnings Per Share}}$ or $\frac{1.67}{2.78}$ or 0.60. Thus, the Growth Rate for A is $(1 - 0.60) \cdot 0.187 = 0.0748$ or 7.5%. Applying the

same formulas to each of the other two companies delivers a Growth Rate of 14.4% for B and 21.9% for C.

Use the data in the following table to answer the next two questions.

	20X3	20X2
Cost of Goods Sold	1,210	2,167
Operating Expenses	302	542
Operating Income	114	228
Depreciation	9	27
Interest Expense	9	0
Income Taxes	39	111
Fixed Assets	123	210
Total Assets	735	873
Working Capital	369	471
Total Debt	48	0
Shareholders' Equity	477	660

Item #2

What is the Asset Turnover in each year?

- A. 13.22 in 20X3 and 13.99 in 20X2
- B. 10.76 in 20X3 and 11.40 in 20X2
- C. 2.21 in 20X3 and 3.36 in 20X2
- D. 1.80 in 20X3 and 2.74 in 20X2

Correct Answer: C

Asset Turnover is calculated as Sales/Assets. Assets are provided on the table, but Sales or Revenue must be determined by adding Cost of Goods Sold and Operating Expenses to Operating Income. Thus, Sales are \$1,626 and \$2,937 in 20X3 and 20X2, respectively. Each can be divided by Total Assets to determine the Asset Turnover: $1,626/735 = 2.21$ and $2,937/873 = 3.36$. The other answers are possible miscalculations for the same exercise (adding only Cost of Goods to Operating Income or using Fixed Assets rather than Total Assets).

Item #3

Using the formula for DuPont analysis, determine if Return on Equity (ROE) increased or decreased in 20X3 compared to 20X2, and indicate which of the three major components of ROE led to this change.

- A. ROE increased in 20X3 to 23.9%, because of an increase in profitability.
- B. ROE decreased in 20X3 to 12.0%, because of a decline in asset efficiency.
- C. ROE decreased in 20X3 to 23.9%, because of an increase in the equity multiplier.
- D. ROE increased in 20X3 to 12.0%, because of an increase in leverage.

Correct Answer: B

First, determine if ROE increased or decreased by computing Net Income/Equity. Net Income is not given, so it must be calculated by subtracting Depreciation, Interest Expense, and Income Tax from Operating Income. This operation yields a Net Income of \$57 in 20X3 and \$90 in 20X2. Equity is provided so ROE in 20X3 is $57/477$ or 12.0% and in 20X2 $90/660$ or 13.6%. Thus, ROE decreased to 12.0%. To choose the correct pair, calculation of each of the components for each of the two years is required. The components of ROE according to the DuPont formula are Net Profit Margin (Profitability), Asset Turnover (Efficiency), and Financial Leverage (Equity Multiplier). Those ratios are Net Income/Sales, Sales/Assets, and Assets/Equity. Calculating these ratios for each of the two years reveals that Profitability and Equity Multiplier both improved in 20X3. Only the Sales/Assets ratio declined. Thus, the decline in ROE in 20X3 should be attributed to a decline in asset efficiency.

Using Operating Income rather than Net Income to determine ROE yields 23.9% in 20X3 and 34.6% in 20X2.