MGT 2250 Management Statistics

Sample Test 1

1. Darwin Head, a 35-year-old sawmill worker, won $1 million and a Chevrolet Malibu Hybrid by scoring 15 goals within 24 seconds at the Vancouver Canucks National Hockey League game (B. Ziemer, "Darwin Evolves into an Instant Millionaire," *Vancouver Sun*, February 28, 2008, p. 1). Head said he would use the money to pay off his mortgage and provide for his children, and he had no plans to quit his job. The contest was part of the Chevrolet Malibu Million Dollar Shootout, sponsored by General Motors Canadian Division. Did GM-Canada risk the $1 million? No! GM-Canada purchased event insurance from a company specializing in promotions at sporting events such as a half-court basketball shot or a hole-in-one giveaway at the local charity golf outing. The event insurance company estimates the probability of a contestant winning the contest, and for a modest charge, insures the event. The promoters pay the insurance premium but take on no added risk as the insurance company will make the large payout in the unlikely event that a contestant wins. To see how it works, suppose that the insurance company estimates that the probability a contestant would win a Million Dollar Shootout is 0.001, and that the insurance company charges $4,000.

a. Calculate the expected value of the profit made by the insurance company.

b. Many call this kind of situation a win–win opportunity for the insurance company and the promoter. Do you agree? Explain.

2. You are trying to develop a strategy for investing in two different stocks. The anticipated annual return for a $1,000 investment in each stock under four different economic conditions has the following probability distribution:

		Returns	
Probability	**Economic Condition**	**Stock *X***	**Stock *Y***
0.1	Recession	−100	50
0.3	Slow growth	0	150
0.3	Moderate growth	80	−20
0.3	Fast growth	150	−100

Compute the

a. expected return for stock *X* and for stock *Y*.

b. standard deviation for stock *X* and for stock *Y*.

c. covariance of stock *X* and stock *Y*.

d. Would you invest in stock *X* or stock *Y*? Explain.

3. Consumers spend an average of $21 per week in cash without being aware of where it goes. (Data extracted from "A Hole in Our Pockets," *USA Today*, January 18, 2010, p. 1A.) Assume that the amount of cash spent without being aware of where it goes is normally distributed and that the standard deviation is $5.

a. What is the probability that a randomly selected person will spend more than $25?

b. What is the probability that a randomly selected person will spend between $10 and $20?

c. Between what two values will the middle 95% of the amounts of cash spent fall?

4. Thirty companies comprise the DJIA. How big are these companies? One common method for measuring the size of a company is to use its market capitalization, which is computed by multiplying the number of stock shares by the price of a share of stock. On June 27, 2012, the market capitalization of these companies ranged from Alcoa's $8.9 billion to ExxonMobil's $379.9 billion. The entire population of market capitalization values is stored in **DowMarketCap**. (Data extracted from money.cnn.com, June 27, 2012.) Decide whether the market capitalization of companies in the DJIA appears to be approximately normally distributed by

a. comparing data characteristics to theoretical properties.

b. constructing a normal probability plot.

c. constructing a histogram.