unfavorable, Ken will suffer a loss of $200,000. But Ken has always been a very optimistic decision maker.

(a) What type of decision is Ken facing?
(b) What decision criterion should he use?
(c) What alternative is best?

3-18 Although Ken Brown (discussed in Problem 3-17) is the principal owner of Brown Oil, his brother Bob is credited with making the company a financial success. Bob is vice president of finance. Bob attributes his success to his pessimistic attitude about business and the oil industry. Given the information from Problem 3-17, it is likely that Bob will arrive at a different decision. What decision criterion should Bob use, and what alternative will he select?

3-19 The *Lubricant* is an expensive oil newsletter to which many oil giants subscribe, including Ken Brown (see Problem 3-17 for details). In the last issue, the letter described how the demand for oil products would be extremely high. Apparently, the American consumer will continue to use oil products even if the price of these products doubles. Indeed, one of the articles in the *Lubricant* states that the chances of a favorable market for oil products was 70%, while the chance of an unfavorable market was only 30%. Ken would like to use these probabilities in determining the best decision.

(a) What decision model should be used?
(b) What is the optimal decision?
(c) Ken believes that the $300,000 figure for the Sub 100 with a favorable market is too high. How much lower would this figure have to be for Ken to change his decision made in part *b*?

3-20 Mickey Lawson is considering investing some money that he inherited. The following payoff table gives the profits that would be realized during the next year for each of three investment alternatives Mickey is considering:

	STATE OF NATURE	
DECISION ALTERNATIVE	**GOOD ECONOMY**	**POOR ECONOMY**
Stock market	80,000	−20,000
Bonds	30,000	20,000
CDs	23,000	23,000
Probability	0.5	0.5

(a) What decision would maximize expected profits?
(b) What is the maximum amount that should be paid for a perfect forecast of the economy?

3-21 Develop an opportunity loss table for the investment problem that Mickey Lawson faces in Problem 3-20. What decision would minimize the expected opportunity loss? What is the minimum EOL?

3-22 Allen Young has always been proud of his personal investment strategies and has done very well over the past several years. He invests primarily in the stock market. Over the past several months, however, Allen has become very concerned about the stock market as a good investment. In some cases it would have been better for Allen to have his money in a bank than in the market. During the next year, Allen must decide whether to invest $10,000 in the stock market or in a certificate of deposit (CD) with an interest rate of 9%. If the market is good, Allen believes that he could get a 14% return on his money. With a fair market, he expects to get an 8% return. If the market is bad, he will most likely get no return at all—in other words, the return would be 0%. Allen estimates that the probability of a good market is 0.4, the probability of a fair market is 0.4, and the probability of a bad market is 0.2, and he wants to maximize his long-run average return.

(a) Develop a decision table for this problem.
(b) What is the best decision?

3-23 In Problem 3-22, you helped Allen Young determine the best investment strategy. Now, Young is thinking about paying for a stock market newsletter. A friend of Young said that these types of letters could predict very accurately whether the market would be good, fair, or poor. Then, based on these predictions, Allen could make better investment decisions.

(a) What is the most that Allen would be willing to pay for a newsletter?
(b) Young now believes that a good market will yield a return of only 11% instead of 14%. What effect does this information change the amount that Allen would be willing to pay for the newsletter? If your answer is yes, determine the most that Allen would be willing to pay, given this new information.

3-24 Today's Electronics specializes in manufacturing modern electronic components. It also builds the equipment that produces the components. Bill Weinberger, who is responsible for advising the president of Today's Electronics on electronic manufacturing equipment, has developed the following table concerning a proposed facility:

	PROFIT ($)		
	STRONG MARKET	**FAIR MARKET**	**POOR MARKET**
Large facility	550,000	110,000	−330,000
Medium-sized facility	300,000	129,000	−180,000
Small facility	200,000	100,000	−20,000
No facility	0	0	0

(a) Develop an opportunity loss table.
(b) What is the minimax regret decision?