**Homework Exercises (Chapter 15)**

Star Products, Inc. faces uncertain demand conditions in 2012. Management at Star Products is considering three different levels of output for 2012: 1, 1.5, or 2 million units. Management has determined that the following profit levels will occur under weak and
strong demand conditions:

|  |
| --- |
| *Profit (in $millions) if Demand is* |
|  |
| Output Level Weak Strong |
| 1 million units60 175 |
| 1.5 million units50 200 |
| 2.0 million units –50 400 |

1. Using each of the four rules for decision making under uncertainty, determine the output level of 2012.

Maximax rule \_\_\_\_\_\_\_\_\_\_\_\_\_\_ units of output

Maximin rule \_\_\_\_\_\_\_\_\_\_\_\_\_\_ units of output

Minimax regret rule \_\_\_\_\_\_\_\_\_\_\_\_\_\_ units of output

Equal probability rule \_\_\_\_\_\_\_\_\_\_\_\_\_\_ units of output

1. Now suppose that management believes the probability of weak demand in 2012 is 25% and the probability of strong demand is 75%. Compute the expected profit, variance, standard deviation, and coefficient of variation for each level of output:

**Output E (π) σ 2** **σ**  **υ**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 million units |  | \_\_\_\_\_\_\_\_ |  |  \_\_\_\_\_\_\_\_ |  |  \_\_\_\_\_\_\_\_  |  | \_\_\_\_\_\_\_\_ |
| 1.5 million units |  | \_\_\_\_\_\_\_\_ |  | \_\_\_\_\_\_\_ |  |  \_\_\_\_\_\_\_\_ |  |  \_\_\_\_\_\_\_\_ |
| 2.0million units |  | \_\_\_\_\_\_\_\_ |  |  \_\_\_\_\_\_\_\_ |  |  \_\_\_\_\_\_\_\_ |  |  \_\_\_\_\_\_\_\_ |
|  |  |  |  |  |  |  |  |  |

1. Based on the expected value rule, Star Products should produce \_\_\_\_\_\_\_\_ units in

2012.

1. Using mean-variance analysis, which level of output should be chosen? Explain your answer.
2. Using the coefficient of variation rule, Star Products should produce \_\_\_\_\_\_ units in 2012. Explain briefly.