Quick Questions 7  Understanding Probability

I. List the three types of probability.
   A. Classical
   B. Empirical
   C. Subjective

II. Place the letter of the appropriate definition, formula, or expression next to the concept it defines.

III. Identify these probability situations by placing in the space provided a C for Classical, E for Empirical, or S for Subjective.

IV. The following data concerns the buying habits of people entering a retail store in relation to their gender. Please complete the chart.

V. Using the above data, draw a Venn diagram and determine, using a formula, the probability of each of these events.
   A. The probability of making a sale.
   \[ P(S) = \frac{S}{n} = \frac{56}{80} = .70 \rightarrow 70\% \]

   B. The probability of a customer being female.
   \[ P(F) = \frac{F}{n} = \frac{20}{80} = .25 \rightarrow 25\% \]

   C. The probability of making a sale or a customer being male.
   \[ P(S \text{ or } M) = P(S) + P(M) - P(S \text{ and } M) = P(S) + P(M) - P(S \text{ and } M) = \frac{56}{80} + \frac{60}{80} - \frac{42}{80} = \frac{74}{80} = .925 = 92.5\% \]

   D. The probability of making a sale or not making a sale.
   \[ P(S \text{ or } \bar{S}) = P(S) + P(\bar{S}) = \frac{56}{80} + \frac{24}{80} = \frac{80}{80} = 1.00 \rightarrow 100\% \]

E. State the rule used to answer questions C and D. What condition is necessary to apply each rule?
   1. C was done with the general rule of addition because the events are not mutually exclusive.
   2. D was done with the special rule for addition because the events are mutually exclusive.