

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.

1. E 2. J 3. M 4. K 5. O 6. B 7. F 8. C 9. N 10. D 11. G 12. L 13. H 14. I 15. A

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

1. C 2. C 3. E 4. S 5. S 6. E 7. C 8. S 9. E 10. S

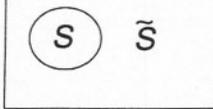
IV. The following data concerns the buying habits of people entering a retail store in relation to their gender. Please complete the chart.

Customer Buying Habits and Gender			
Customer Gender Making a Sale	Male	Female	Totals
Yes	42	14	56
No	18	6	24
Totals	60	20	80

V. Using the above data, draw a Venn diagram and determine, using a formula, the probability of each of these events.

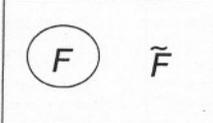
A. The probability of making a sale.

$$P(S) = \frac{S}{n} = \frac{56}{80} = .70 \rightarrow 70\%$$



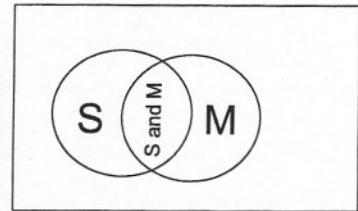
B. The probability of a customer being female.

$$P(F) = \frac{F}{n} = \frac{20}{80} = .25 \rightarrow 25\%$$



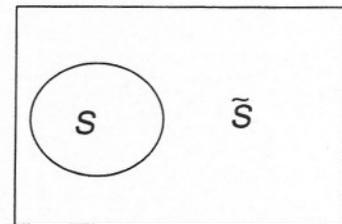
C. The probability of making a sale or a customer being male.

$$\begin{aligned} P(S \text{ or } M) &= P(S) + P(M) - P(S \text{ and } M) \\ &= P\left(\frac{56}{80}\right) + P\left(\frac{60}{80}\right) - P\left(\frac{42}{80}\right) = \frac{74}{80} = .925 = 92.5\% \end{aligned}$$



D. The probability of making a sale or not making a sale.

$$\begin{aligned} P(S \text{ or } \bar{S}) &= P(S) + P(\bar{S}) \\ &= P\left(\frac{56}{80}\right) + P\left(\frac{24}{80}\right) = \frac{80}{80} = 1.00 \rightarrow 100\% \end{aligned}$$



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.