**Discussion (4)**

**CHAPTER 4: BASIC PROBABILITY**

1. If two events are collectively exhaustive, what is the probability that one or the other occurs?

a) 0.

b) 0.50.

c) 1.00.

d) Cannot be determined from the information given.

1. If two events are mutually exclusive, what is the probability that both occur at the same time?

a) 0.

b) 0.50.

c) 1.00.

d) Cannot be determined from the information given.

1. If two equally likely events A and B are mutually exclusive and collectively exhaustive, what is the probability that event A occurs?

a) 0.

b) 0.50.

c) 1.00.

d) Cannot be determined from the information given.

1. If two events are independent, what is the probability that they both occur?

a) 0.

b) 0.50.

c) 1.00.

d) Cannot be determined from the information given.

1. If the outcome of event A is not affected by event B, then events A and B are said to be

a) mutually exclusive.

b) independent.

c) collectively exhaustive.

d) None of the above.

1. If event A and event B cannot occur at the same time, then events A and B are said to be

a) mutually exclusive.

b) independent.

c) collectively exhaustive.

d) None of the above.

1. The collection of all possible events is called

a) a simple probability.

b) a sample space.

c) a joint probability.

d) the null set.

1. Simple probability is also called

a) marginal probability.

b) joint probability.

c) conditional probability.

d) Bayes' theorem.

1. When using the general multiplication rule, P(A and B) is equal to

a) *P*(*A*|*B*)*P*(*B*).

b) *P*(*A*)*P*(*B*).

c) *P*(*B*)/*P*(*A*).

d) *P*(*A*)/*P*(*B*).

**SCENARIO 4-1**

Mothers Against Drunk Driving is a very visible group whose main focus is to educate the public about the harm caused by drunk drivers. A study was recently done that emphasized the problem we all face with drinking and driving. Four hundred accidents that occurred on a Saturday night were analyzed. Two items noted were the number of vehicles involved and whether alcohol played a role in the accident. The numbers are shown below:



1. Referring to Scenario 4-1, what proportion of accidents involved more than one vehicle?

a) 50/400 or 12.5%

b) 75/400 or 18.75%

c) 275/400 or 68.75%

d) 325/400 or 81.25%

1. Referring to Scenario 4-1, what proportion of accidents involved alcohol and a single vehicle?

a) 25/400 or 6.25%

b) 50/400 or 12.5%

c) 195/400 or 48.75%

d) 245/400 or 61.25%

1. Referring to Scenario 4-1, what proportion of accidents involved alcohol or a single vehicle?

a) 25/400 or 6.25%

b) 50/400 or 12.5%

c) 195/400 or 48.75%

d) 245/400 or 61.25%

1. Referring to Scenario 4-1, given alcohol was involved, what proportion of accidents involved a single vehicle?

a) 50/75 or 66.67%

b) 50/170 or 29.41%

c) 120/170 or 70.59%

d) 120/400 or 30%

1. Referring to Scenario 4-1, given that multiple vehicles were involved, what proportion of accidents involved alcohol?

a) 120/170 or 70.59%

b) 120/230 or 52.17%

c) 120/325 or 36.92%

d) 120/400 or 30%

1. Referring to Scenario 4-1, given that 3 vehicles were involved, what proportion of accidents involved alcohol?

a) 20/30 or 66.67%

b) 20/50 or 40%

c) 20/170 or 11.77%

d) 20/400 or 5%

1. Referring to Scenario 4-1, given that alcohol was not involved, what proportion of the accidents were single vehicle?

a) 50/75 or 66.67%

b) 25/230 or 10.87%

c) 50/170 or 29.41%

d) 25/75 or 33.33%

1. Referring to Scenario 4-1, given that alcohol was not involved, what proportion of the accidents were multiple vehicle?

a) 50/170 or 29.41%

b) 120/170 or 70.59%

c) 205/230 or 89.13%

d) 25/230 or 10.87%

1. The probability that a new advertising campaign will increase sales is assessed as being 0.80. The probability that the cost of developing the new ad campaign can be kept within the original budget allocation is 0.40. Assuming that the two events are independent, the probability that the cost is kept within budget and the campaign will increase sales is:

a) 0.20

b) 0.32

c) 0.40

d) 0.88

1. The probability that a new advertising campaign will increase sales is assessed as being 0.80. The probability that the cost of developing the new ad campaign can be kept within the original budget allocation is 0.40. Assuming that the two events are independent, the probability that the cost is kept within budget or the campaign will increase sales is:

a) 0.20

b) 0.32

c) 0.68

d) 0.88

1. The probability that a new advertising campaign will increase sales is assessed as being 0.80. The probability that the cost of developing the new ad campaign can be kept within the original budget allocation is 0.40. Assuming that the two events are independent, the probability that the cost is not kept within budget or the campaign will not increase sales is:

a) 0.12

b) 0.32

c) 0.68

d) 0.88

1. The probability that a new advertising campaign will increase sales is assessed as being 0.80. The probability that the cost of developing the new ad campaign can be kept within the original budget allocation is 0.40. Assuming that the two events are independent, the probability that neither the cost is kept within budget nor the campaign will increase sales is:

a) 0.12

b) 0.32

c) 0.68

d) 0.88

1. There are 47 contestants at a national dog show. How many different ways can contestants fill the first place, second place, and third place positions?

ANSWER:

1. Seven passengers are on a waiting list for an overbooked flight. As a result of cancellations, 3 seats become available. How many different ways can those 3 available seats be filled regardless of the order?

ANSWER:

1. A high school debate team of 4 is to be chosen from a class of 35. How many possible ways can the team be formed?

ANSWER:

1. An exploration team of 2 women and 3 men is to be chosen from a candidate pool of 6 women and 7 men. How many different ways can this team of 5 be formed?

ANSWER: