AxM: Curso SOA P
Tarea 2

Ejercicio 1

An actuary studying the insurance preferences of automobile owners makes the following conclusions:

      (i)   An automobile owner is twice as likely to purchase collision coverage as disability coverage.

      (ii)   The event that an automobile owner purchases collision coverage is independent of the event that he or she purchases disability coverage.

      (iii)   The probability that an automobile owner purchases both collision and disability coverages is 0.15.

Calculate the probability that an automobile owner purchases neither collision nor disability coverage.

(A)   0.18
(B)   0.33
(C)   0.48
(D)   0.67
(E)   0.82

Ejercicio 2

Suppose B and C are mutually exclusive events. Also, assume the following:

$$P(A) = 0.58$$
$$P(B) = 2P(C)$$
$$P(A \cap B) + P(A \cap C) = 0.40$$
$$P(A^C \cap B) = 0.14$$
$$P(A^C \cap B^C \cap C^C) = 0.16.$$

Calculate $P(A \cap C)$.

(A) 0.10
(B) 0.16
(C) 0.21
(D) 0.27
(E) 0.30

Ejercicio 3

An urn contains four fair dice. Two have faces numbered 1, 2, 3, 4, 5, and 6; one has faces numbered 2, 2, 4, 4, 6, and 6; and one has all six faces numbered 6. One of the dice is randomly selected from the urn and rolled. The same die is rolled a second time.

Calculate the probability that a 6 is rolled both times.

(A)   0.174
(B)   0.250
(C)   0.292
(D)   0.380
(E)   0.417

Ejercicio 4

A health study tracked a group of persons for five years. At the beginning of the study, 20% were classified as heavy smokers, 30% as light smokers, and 50% as nonsmokers.

Results of the study showed that light smokers were twice as likely as nonsmokers to die during the five-year study, but only half as likely as heavy smokers.

A randomly selected participant from the study died during the five-year period.

Calculate the probability that the participant was a heavy smoker.

(A)   0.20
(B)   0.25
(C)   0.35
(D)   0.42
(E)   0.57

Ejercicio 5

A restaurant offers a choice of sides with each meal. There are three sides available: A, B, and C. Customers can choose exactly two sides or decide to have none at all. The probabilities of each side being chosen are as follows:

· Side A : $\frac{1}{2}$ of the customers

· Side B : $\frac{1}{4}$ of the customers

· Side C : $\frac{1}{3}$ of the customers

Calculate the probability that a customer chooses not to have any sides with their meal.

(A) 0

(B) $\frac{1}{24}$

(C) $\frac{1}{12}$

(D) $\frac{11}{24}$

(E) $\frac{13}{24}$
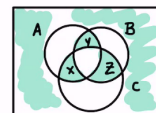
Ejercicio 6

Let A, B and C be three events such that $P(A|C) = 0.05$, $P(B|C) = 0.05$, and A and B are mutually exclusive.

If $P(A \cup B) = P(C) = 0.40$, calculate $P(C|A \cup B)$.

(A) 0.05
(B) 0.10
(C) 0.15
(D) 0.20
(E) 0.25

Respuestas

1. B
2. A
3. C
4. D
5. D
6. B

Práctica adicional

Ejercicios de la guía gratuita de la SOA para el examen Probability :

4, 6, 7, 8, 9, 11, 12, 19, 20, 22, 24, 25, 26, 99, 100, 120, 127, 130, 132, 133, 135, 138, 151, 154, 182, 184, 188, 191, 192, 194, 195, 198, 210, 258, 259, 263, 265, 274, 288, 296, 309, 312, 313, 316, 318, 323, 325, 329, 331, 334, 346, 349, 351, 354, 359, 363, 365, 367, 368, 369, 370, 377, 398, 408, 415, 418, 422, 423, 437, 445, 468, 486, 487, 490, 498, 528, 531, 532, 536, 537, 540, 544, 546, 547, 590, 607, 620