Let A and B be events with $P(A) = 0.6$, $P(B) = 0.76$, and $P(B \mid A) = 0.4$.

Find $P(A \text{ and } B)$.

$P(A \text{ and } B) = \boxed{0.24}$

Let A and B be events with $P(A) = 0.9$ and $P(B) = 0.6$. Assume that A and B are independent. Find $P(A \text{ and } B)$.

$P(A \text{ and } B) = \boxed{0.54}$

Let A and B be events with $P(A)=0.1$, $P(B)=0.6$, and $P(A \text{ or } B)=0.7$.

(a) Compute $P(A \text{ and } B)$.

(b) Are A and B mutually exclusive? Explain.

(c) Are A and B independent? Explain.

Part 1 of 3

(a) Compute $P(A \text{ and } B)$.

$P(A \text{ and } B) =$ 0

Part 2 of 3

(b) Are A and B mutually exclusive? Explain.

The events A and B are mutually exclusive since $P(A \text{ and } B)=0$.

Part: 3 / 3

Part 3 of 3

(c) Are A and B independent? Explain.

The events A and B are not independent since $P(A)\cdot P(B) \neq P(A \text{ and } B)$.

Job interview: Seven people, named Anna, Bob, Chandra, Darnell, Emma, Francisco, and Gina, will be interviewed for a job. The interviewer will choose two at random to interview on the first day. What is the probability that Gina is interviewed first and Bob is interviewed second? Express your answer as a fraction or a decimal, rounded to four decimal places.

The probability that Gina is interviewed first and Bob is interviewed second is $\boxed{\frac{1}{42}}$.

Let's eat: A fast-food restaurant chain has 600 outlets in the United States. The following table categorizes them by city population size and location, and presents the number of restaurants in each category. A restaurant is to be chosen at random from the 600 to test market a new menu. Round your answers to four decimal places.

Population of City	Region NE	SE	SW	NW
Under 50,000	25	33	20	4
50,000 – 500,000	57	87	75	27
Over 500,000	150	22	35	65

Send data to Excel

(a) Given that the restaurant is located in a city with a population over 500,000, what is the probability that it is in the Northeast?

(b) Given that the restaurant is located in the Southeast, what is the probability that it is in a city with a population under 50,000?

(c) Given that the restaurant is located in the Southwest, what is the probability that it is in a city with a population of 500,000 or less?

(d) Given that the restaurant is located in a city with a population of 500,000 or less, what is the probability that it is in the Southwest?

(e) Given that the restaurant is located in the South (either SE or SW), what is the probability that it is in a city with a population of 50,000 or more?

Part 1 of 5

Given that the restaurant is located in a city with a population over 500,000, the probability that it is in the Northeast is 0.5515.

Part 2 of 5

Given that the restaurant is located in the Southeast, the probability that it is in a city with a population under 50,000 is 0.2324.

Part 3 of 5

Given that the restaurant is located in the Southwest, the probability that it is in a city with a population of 500,000 or less is 0.7308.

Part 4 of 5

Given that the restaurant is located in a city with a population of 500,000 or less, the probability that it is in the Southwest is 0.2896.

Part 5 of 5

Given that the restaurant is located in the South (either SE or SW), the probability that it is in a city with a population of 50,000 or more is 0.8051.

Genetics: A geneticist is studying two genes. Each gene can be either dominant or recessive. A sample of 100 individuals is categorized as follows. Write your answer as a fraction or a decimal, rounded to four decimal places.

		Gene 2	
		Dominant	Recessive
Gene 1	Dominant	57	28
	Recessive	11	4

Send data to Excel

(a) What is the probability that in a randomly sampled individual, gene 1 is recessive?

(b) What is the probability that in a randomly sampled individual, gene 2 is recessive?

(c) Given that gene 1 is recessive, what is the probability that gene 2 is recessive?

(d) Two genes are said to be in linkage equilibrium if the event that gene 1 is recessive is independent of the event that gene 2 is recessive. Are these genes in linkage equilibrium?

Part 1 of 4

The probability that gene 1 is recessive in a randomly sampled individual is 0.15.

Part 2 of 4

The probability that gene 2 is recessive in a randomly sampled individual is 0.32.

Part 3 of 4

The probability that gene 2 is recessive given that gene 1 is recessive is 0.2667.

Part: 4 / 4

Part 4 of 4

The event that gene 1 is recessive is not independent of the event that gene 2 is recessive.

The genes are not in linkage equilibrium.

Stay in school: In a recent school year in the state of Washington, there were 323,000 high school students. Of these, 154,000 were female and 169,000 were male. Among the females, 18,900 dropped out of school, and among the males, 10,200 dropped out. A student is chosen at random. Round the answers to four decimal places.

(a) What is the probability that the student is female?

(b) What is the probability that the student dropped out?

(c) What is the probability that the student is female and dropped out?

(d) Given that the student is female, what is the probability that she dropped out?

(e) Given that the student dropped out, what is the probability that the student is female?

Part 1 of 5

The probability that the student is a female is 0.4769.

Part 2 of 5

The probability that the student dropped out is 0.0901.

Part 3 of 5

The probability that the student is a female and dropped out is 0.0585.

Part 4 of 5

The probability that the student dropped out given that the student is a female is 0.1227.

Part: 5 / 5

Part 5 of 5

The probability that the student is a female given that the student dropped out is 0.6495.

GED: In a certain high school, the probability that a student drops out is 0.06, and the probability that a dropout gets a high-school equivalency diploma (GED) is 0.24. What is the probability that a randomly selected student gets a GED? Round your answer to four decimal places, if necessary.

The probability that the randomly selected student gets a GED is $\boxed{0.0144}$.

Defective components: A lot of 11 components contains 4 that are defective. Two components are drawn at random and tested. Let A be the event that the first component drawn is defective, and let B be the event that the second component drawn is defective. Write your answer as a fraction or a decimal, rounded to four decimal places.

(a) Find $P(A)$.

(b) Find $P(B \mid A)$.

(c) Find $P(A \text{ and } B)$.

(d) Are A and B independent? Explain.

Part 1 of 4

Find $P(A) =$ 0.3636

Part 2 of 4

Find $P(B \mid A) =$ 0.3

Part 3 of 4

$P(A \text{ and } B) =$ 0.1091

Part: 4 / 4

Part 4 of 4

The events A and B are not independent because if the first component is defective, the second component is less likely to be defective.

Try Another Continue Save For Later Submit Assignment

The probability that a certain make of car will need repairs in the first six months is 0.9. A dealer sells seven such cars. What is the probability that at least one of them will require repairs in the first six months? Round your final answer to four decimal places.

$P(\text{At least one car will require repairs}) = \boxed{0.9999}$

Let A and B be events with $P(A) = 0.6$, $P(B) = 0.76$, and $P(B \mid A) = 0.4$.

Find $P(A \text{ and } B)$.

$P(A \text{ and } B) = 0.24$

Example

SAMPLE QUESTION

Let A and B be events with $P(A) = 0.7$, $P(B) = 0.44$, and $P(B \mid A) = 0.8$.

Find $P(A \text{ and } B)$.

EXPLANATION

Use the General Multiplication Rule.

The General Multiplication Rule
$P(A \text{ and } B) = P(A)P(B \mid A)$
or, equivalently,
$P(A \text{ and } B) = P(B)P(A \mid B)$

$P(A \text{ and } B) = P(A)P(B \mid A) = (0.7)(0.8) = 0.56$

ANSWER

0.56

Let A and B be events with $P(A) = 0.9$ and $P(B) = 0.6$. Assume that A and B are independent. Find $P(A \text{ and } B)$.

$P(A \text{ and } B) = 0.54$

Example

SAMPLE QUESTION

Let A and B be events with $P(A) = 0.7$ and $P(B) = 0.8$. Assume that A and B are independent. Find $P(A \text{ and } B)$.

EXPLANATION

Use the Multiplication Rule for Independent Events.

The Multiplication Rule for Independent Events
If A and B are independent events, then
$P(A \text{ and } B) = P(A)P(B)$

$$\begin{aligned} P(A \text{ and } B) &= P(A)P(B) \\ &= (0.7)(0.8) \\ &= 0.56 \end{aligned}$$

ANSWER

0.56

Let A and B be events with $P(A) = 0.1$, $P(B) = 0.6$, and $P(A \text{ or } B) = 0.7$.

(a) Compute $P(A \text{ and } B)$.

(b) Are A and B mutually exclusive? Explain.

(c) Are A and B independent? Explain.

Part 1 of 3

Example

SAMPLE QUESTION

Let A and B be events with $P(A) = 0.7$, $P(B) = 0.6$, and $P(A \text{ or } B) = 0.9$.

(a) Compute $P(A \text{ and } B)$.

(b) Are A and B mutually exclusive? Explain.

(c) Are A and B independent? Explain.

EXPLANATION

(a) Compute $P(A \text{ and } B)$.

We will use the General Addition Rule.

The General Addition Rule

For any two events A and B,

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$P(A \text{ and } B) = P(A) + P(B) - P(A \text{ or } B) = 0.7 + 0.6 - 0.9 = 0.4$

(b) Are A and B mutually exclusive? Explain.

If A and B are mutually exclusive, then $P(A \text{ and } B) = 0$.

DEFINITION

Two events are said to be **mutually exclusive** if it is impossible for both events to occur.

Since $P(A \text{ and } B) = 0.4$, the events A and B are not mutually exclusive.

(c) Are A and B independent? Explain.

We will use the Multiplication Rule for Independent Events to see if A and B are independent.

The Multiplication Rule for Independent Events

If A and B are independent events, then

$$P(A \text{ and } B) = P(A)P(B)$$

If A and B are independent, then

$P(A \text{ and } B) = P(A)P(B) = (0.7)(0.6) = 0.42$

Since $P(A \text{ and } B) = 0.4$, the events A and B are not independent.

ANSWER

Part 1 of 3

0.4

Part 2 of 3

The events A and B are not mutually exclusive since $P(A \text{ and } B) \neq 0$.

Part 3 of 3

The events A and B are not independent since $P(A) \cdot P(B) \neq P(A \text{ and } B)$.

Let's eat: A fast-food restaurant chain has 600 outlets in the United States. The following table categorizes them ... presents the number of restaurants in each category. A restaurant is to be chosen at random from the 600 to test ... four decimal places.

Population of City	NE	SE	SW	NW
Under 50,000	25	33	20	4

Example

SAMPLE QUESTION

Let's eat: A fast-food restaurant chain has 603 outlets in the United States. The following table categorizes them by city population size and location, and presents the number of restaurants in each category. A restaurant is to be chosen at random from the 603 to test market a new menu. Round your answers to four decimal places.

Population of City	Region NE	SE	SW	NW
Under 50,000	27	39	11	9
50,000 − 500,000	60	95	70	25
Over 500,000	145	21	34	67

Send data to Excel

(a) Given that the restaurant is located in a city with a population over 500,000, what is the probability that it is in the Northeast?

(b) Given that the restaurant is located in the Southeast, what is the probability that it is in a city with a population under 50,000?

(c) Given that the restaurant is located in the Southwest, what is the probability that it is in a city with a population of 500,000 or less?

(d) Given that the restaurant is located in a city with a population of 500,000 or less, what is the probability that it is in the Southwest?

(e) Given that the restaurant is located in the South (either SE or SW), what is the probability that it is in a city with a population of 50,000 or more?

EXPLANATION

(a) Given that the restaurant is located in a city with a population over 500,000, what is the probability that it is in the Northeast?

There are $145+21+34+67 = 267$ restaurants in cities with population over 500,000. So,

$P(\text{restaurant is in a city with a population over } 500{,}000) = \frac{267}{603} = 0.4428$ (Round the answer to four decimal places.)

$P\left(\begin{array}{l}\text{restaurant is in the Northeast and is located}\\ \text{in a city with a population over } 500{,}000\end{array}\right) = \frac{145}{603}$

$= 0.2405$ (Round the answer to four decimal places.)

We use the General Method for Computing Conditional Probabilities.

The General Method for Computing Conditional Probabilities

$$P(B \mid A) = \frac{P(A \text{ and } B)}{P(A)}$$

Note that we cannot compute $P(B \mid A)$ if $P(A) = 0$.

When the outcomes in the sample space are equally likely, then

$$P(B \mid A) = \frac{\text{Number of outcomes corresponding to } (A \text{ and } B)}{\text{Number of outcomes corresponding to } A}$$

$P(\text{restaurant is in the Northeast} \mid \text{restaurant is located in a city with a population over } 500{,}000)$

$= \frac{P(\text{restaurant is in the Northeast and restaurant is located in a city with a population over } 500{,}000)}{P(\text{restaurant is located in a city with a population over } 500{,}000)}$

$= \frac{\frac{145}{603}}{\frac{267}{603}}$

$= \frac{145}{267}$

$= 0.5431$ (Round the answer to four decimal places.)

(b) Given that the restaurant is located in the Southeast, what is the probability that it is in a city with a population under 50,000?

There are $39+95+21 = 155$ restaurants in cities located in the Souteast. So,

$P(\text{restaurant is in the Southeast}) = \frac{155}{603} = 0.2570$ (Round the answer to four decimal places.)

$P\left(\begin{array}{l}\text{restaurant is in the Southeast and is located}\\ \text{in a city with a population under } 50{,}000\end{array}\right) = \frac{39}{603}$

$= 0.0647$ (Round the answer to four decimal places.)

We use the General Method for Computing Conditional Probabilities.

The General Method for Computing Conditional Probabilities

$$P(B \mid A) = \frac{P(A \text{ and } B)}{P(A)}$$

Note that we cannot compute $P(B \mid A)$ if $P(A) = 0$.

When the outcomes in the sample space are equally likely, then

$$P(B \mid A) = \frac{\text{Number of outcomes corresponding to } (A \text{ and } B)}{\text{Number of outcomes corresponding to } A}$$

$P(\text{restaurant is located in a city with a population under } 50{,}000 \mid \text{restaurant is located in the Southeast})$

$= \frac{P(\text{restaurant is located in the Southeast and restaurant is located in a city with a population under } 50{,}000)}{P(\text{restaurant is located in the Southeast})}$

$= \frac{\frac{39}{603}}{\frac{155}{603}}$

$= \frac{39}{155}$

$= 0.2516$ (Round the answer to four decimal places.)

(c) Given that the restaurant is located in the Southwest, what is the probability that it is in a city with a population of 500,000 or less?

There are $11+70+34 = 115$ restaurants in cities located in the Southwest. So,

$P(\text{restaurant is in the Southwest}) = \frac{115}{603} = 0.1907$ (Round the answer to four decimal places.)

There are $11+70 = 81$ restaurants in cities with a population of 500,000 or less located in the Southwest.

$P\left(\begin{array}{l}\text{restaurant is in the Southwest and is located}\\ \text{in a city with a population of } 500{,}000 \text{ or less}\end{array}\right) = \frac{81}{603}$

$= 0.1343$ (Round the answer to four decimal places.)

We use the General Method for Computing Conditional Probabilities.

The General Method for Computing Conditional Probabilities

$$P(B \mid A) = \frac{P(A \text{ and } B)}{P(A)}$$

Note that we cannot compute $P(B \mid A)$ if $P(A) = 0$.

When the outcomes in the sample space are equally likely, then

$$P(B \mid A) = \frac{\text{Number of outcomes corresponding to } (A \text{ and } B)}{\text{Number of outcomes corresponding to } A}$$

$P(\text{restaurant is located in a city with a population under } 50{,}000 \mid \text{restaurant is located in the Southwest})$

$= \frac{P(\text{restaurant is located in the Southwest and restaurant is located in a city with a population of } 500{,}000 \text{ or less})}{P(\text{restaurant is located in the Southwest})}$

$= \frac{\frac{81}{603}}{\frac{115}{603}}$

$= \frac{81}{115}$

$= 0.7043$ (Round the answer to four decimal places.)

(d) Given that the restaurant is located in a city with a population of 500,000 or less, what is the probability that it is in the Southwest?

There are $27+60+39+95+11+70+9+25 = 336$ restaurants in cities with a population of 500,000 or less. So,

$P(\text{restaurant is located in a city with a population of } 500{,}000 \text{ or less}) = \frac{336}{603} = 0.5572$ (Round the answer to four decimal places.)

There are $11+70 = 81$ restaurants in cities with a population of 500,000 or less located in the Southwest.

$P\left(\begin{array}{l}\text{restaurant is in the Southwest and is located}\\ \text{in a city with a population of } 500{,}000 \text{ or less}\end{array}\right) = \frac{81}{603}$

$= 0.1343$ (Round the answer to four decimal places.)

We use the General Method for Computing Conditional Probabilities.

The General Method for Computing Conditional Probabilities

$$P(B \mid A) = \frac{P(A \text{ and } B)}{P(A)}$$

Note that we cannot compute $P(B \mid A)$ if $P(A) = 0$.

When the outcomes in the sample space are equally likely, then

$$P(B \mid A) = \frac{\text{Number of outcomes corresponding to } (A \text{ and } B)}{\text{Number of outcomes corresponding to } A}$$

$P(\text{restaurant is located in the Southwest} \mid \text{restaurant is located in a city with a population of } 500{,}000 \text{ or less})$

$= \frac{P(\text{restaurant is located in the Southwest and restaurant is located in a city with a population of } 500{,}000 \text{ or less})}{P(\text{restaurant is located in a city with a population of } 500{,}000 \text{ or less})}$

$= \frac{\frac{81}{603}}{\frac{336}{603}}$

$= \frac{81}{336}$

$= 0.2411$ (Round the answer to four decimal places.)

(e) Given that the restaurant is located in the South (either SE or SW), what is the probability that it is in a city with a population of 50,000 or more?

There are $39+95+21+11+70+34 = 270$ restaurants in cities located in the South.

$P(\text{restaurant is in the South}) = \frac{270}{603} = 0.4478$ (Round the answer to four decimal places.)

There are $95+21+70+34 = 220$ restaurants in cities located in the South in a city with a population of 50,000 or more.

$P\left(\begin{array}{l}\text{restaurant is in the South and is located in a}\\ \text{city with a population of } 50{,}000 \text{ or more}\end{array}\right) = \frac{220}{603}$

$= 0.3648$ (Round the answer to four decimal places.)

We use the General Method for Computing Conditional Probabilities.

The General Method for Computing Conditional Probabilities

$$P(B \mid A) = \frac{P(A \text{ and } B)}{P(A)}$$

Note that we cannot compute $P(B \mid A)$ if $P(A) = 0$.

When the outcomes in the sample space are equally likely, then

$$P(B \mid A) = \frac{\text{Number of outcomes corresponding to } (A \text{ and } B)}{\text{Number of outcomes corresponding to } A}$$

$P(\text{restaurant is located in a city with population of } 50{,}000 \text{ or more} \mid \text{restaurant is located in the South})$

$= \frac{P(\text{restaurant is located in the South and restaurant is located in a city with a population of } 50{,}000 \text{ or more})}{P(\text{restaurant is located in the South})}$

$= \frac{\frac{220}{603}}{\frac{270}{603}}$

$= \frac{220}{270}$

$= 0.8148$ (Round the answer to four decimal places.)

ANSWER

Part 1 of 5

0.5431

Part 2 of 5

0.2516

Part 3 of 5

0.7043

Part 4 of 5

0.2411

Part 5 of 5

0.8148

Part 3 of 5

Given that the restaurant is located in the Southwest, the probability that it is in a city with a population of 5...

Part 4 of 5

Given that the restaurant is located in a city with a population of 500,000 or less, the probability that it is in t...

Part 5 of 5

Given that the restaurant is located in the South (either SE or SW), the probability that it is in a city with a p...

Try Another Continue

ANSWER

Part 1 of 5

0.5431

Part 2 of 5

0.2516

Part 3 of 5

0.7043

Part 4 of 5

0.2411

Part 5 of 5

0.8148

Part 3 of 5

Given that the restaurant is located in the Southwest, the probability that it is in a city with a population of 5...

Part 4 of 5

Given that the restaurant is located in a city with a population of 500,000 or less, the probability that it is in t...

Part 5 of 5

Given that the restaurant is located in the South (either SE or SW), the probability that it is in a city with a p...

Try Another Continue

GED: In a certain high school, the probability that a student drops out is 0.06, and the probability that a dropout gets a high-school equivalency diploma (GED) is 0.24. What is the probability that a randomly selected student gets a GED? Round your answer to four decimal places, if necessary.

The probability that the randomly selected student gets a GED is 0.0144.

Example

SAMPLE QUESTION

GED: In a certain high school, the probability that a student drops out is 0.03, and the probability that a dropout gets a high-school equivalency diploma (GED) is 0.27. What is the probability that a randomly selected student gets a GED? Round your answer to four decimal places, if necessary.

EXPLANATION

Getting a GED involves two events. First, a student must drop out; then, given that the student dropped out, the student must get a GED.

Use the General Multiplication Rule.

The General Multiplication Rule

$$P(A \text{ and } B) = P(A)P(B \mid A)$$

or, equivalently,

$$P(A \text{ and } B) = P(B)P(A \mid B)$$

$$\begin{aligned} P(\text{Gets a GED}) &= P(\text{Drops out})P(\text{Gets a GED} \mid \text{Drops out}) \\ &= (0.03)(0.27) \\ &= 0.0081 \end{aligned}$$

ANSWER

0.0081

Try Another | Continue | Save For Later | Submit Assignment

Defective components: A lot of 11 components contains 4 that are defective. Two components are drawn at random and tested. Let A be the event that the first component drawn is defective, and let B be the event that the second component drawn is defective. Write your answer as a fraction or a decimal, rounded to four decimal places.

(a) Find $P(A)$.

(b) Find $P(B \mid A)$.

(c) Find $P(A \text{ and } B)$.

Example

SAMPLE QUESTION

Defective components: A lot of 10 components contains 2 that are defective. Two components are drawn at random and tested. Let A be the event that the first component drawn is defective, and let B be the event that the second component drawn is defective. Write your answer as a fraction or a decimal, rounded to four decimal places.

(a) Find $P(A)$.

(b) Find $P(B \mid A)$.

(c) Find $P(A \text{ and } B)$.

(d) Are A and B independent? Explain.

EXPLANATION

(a) Find $P(A)$.

$$P(A) = P(\text{First component is defective}) = \frac{2}{10} = 0.2000$$

(b) Find $P(B \mid A)$.

$$\begin{aligned} P(B \mid A) &= P(\text{Second component is defective} \mid \text{First component is defective}) \\ &= \frac{1}{9} \\ &= 0.1111 \end{aligned}$$

(c) Find $P(A \text{ and } B)$.

The event that the first and second component are both defective involves two events. First, the first component must be defective; then, given that the first component is defective, the second component must be defective.

Use the General Multiplication Rule.

The General Multiplication Rule	
	$P(A \text{ and } B) = P(A)P(B \mid A)$
or, equivalently,	
	$P(A \text{ and } B) = P(B)P(A \mid B)$

$$\begin{aligned} P(A \text{ and } B) &= P(A)P(B \mid A) \\ &= \left(\frac{2}{10}\right)\left(\frac{1}{9}\right) \\ &= \frac{1}{45} \\ &= 0.0222 \end{aligned}$$

(d) Are A and B independent? Explain.

The events A and B are not independent. If the first component is defective, the probability that the second component is defective is $\frac{1}{9}$. If the first component is not defective, the probability that the second component is defective is $\frac{2}{9}$.

ANSWER

Part 1 of 4

0.2000

Part 2 of 4

0.1111

Part 3 of 4

0.0222

Part 4 of 4

The events A and B are not independent because if the first component is defective, the second component is less likely to be defective.

Part: 4 / 4

Part 4 of 4

The events A and B [are not] independent because if the first component is defective, the second component is [less] likely to be defective.

Try Another Continue Save For Later Submit Assignment

The probability that a certain make of car will need repairs in the first six months is 0.9. A dealer sells seven such cars. What is the probability that at least one of them will require repairs in the first six months? Round your final answer to four decimal places.

P(At least one car will require repairs) $=$ 0.9999

Example

SAMPLE QUESTION

The probability that a certain make of car will need repairs in the first four months is 0.6. A dealer sells six such cars. What is the probability that at least one of them will require repairs in the first four months? Round your final answer to four decimal places.

EXPLANATION

To compute the probability that an event occurs at least once, we find the probability of the complement. That is, we find the probability that it does not occur at all and subtract from 1. Therefore, to find the probability that at least one of the cars will require repairs, we find the probability that none of the cars requires repairs and subtract from 1.

It is reasonable to assume that the cars that require repairs are independent so we may use the Multiplication Rule for Independent Events.

The Multiplication Rule for Independent Events

If A and B are independent events, then

$$P(A \text{ and } B) = P(A)P(B)$$

This rule can be extended to the case where there are more than two independent events. If $A,\ B,\ C,\ \ldots$ are independent events, then

$$P(A \text{ and } B \text{ and } C \text{ and } \ldots) = P(A)P(B)P(C)\ldots$$

Therefore,

P(None of the six cars require repairs)

$$= P(1^{\text{st}} \text{ car does not require repairs})P(2^{\text{nd}} \text{ car does not require repairs})\ldots P(6^{\text{th}} \text{ car does not require repairs});$$

$$= (1-0.6)(1-0.6)(1-0.6)(1-0.6)(1-0.6)(1-0.6)$$

$$= (0.4)^6 = 0.004096$$

The probability that at least one of the cars will require repairs is then

$P(\text{At least one car will require repairs}) = 1 - 0.004096 = 0.9959$

ANSWER

$P(\text{At least one car will require repairs}) = 0.9959$

Try Another

Save For Later | Submit Assignment