

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) Events E and F are independent if
 A) $\Pr(E \cap F) = 0$
 B) $\Pr(E \cap F) = \Pr(E)\Pr(F)$
 C) $\Pr(E \cup F) = 0$
 D) $\Pr(E \cup F) = \Pr(E) + \Pr(F)$
 E) none of these

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 2) If E and F are independent and $\Pr(E) = 0.3$ and $\Pr(F) = 0.6$, find $\Pr(E \cup F)$.

Let E and F be events with $\Pr(E) = 0.4$, $\Pr(F) = 0.6$, and $\Pr(E \cup F) = 0.8$.

- 3) Find $\Pr(E|F)$.
 4) Find $\Pr(F|E)$.

Enrollment statistics at a certain college show that 45% of all students are men, 10% of the student body consists of women majoring in business administration, and 35% of all students major in business administration. A student is selected at random.

- 5) What is the probability that the selected student majors in business administration if the selected student is a women?
 6) What is the probability that the selected student is a woman if the selected student is a business administration major?

A shipment of twenty radios contains six defective radios. Two radios are randomly selected from the shipment.

- 7) Find the probability that both radios selected are defective.
 8) Find the probability that neither radio selected is defective.

The probability that a person passes organic chemistry the first time he enrolls is 0.8. The probability that a person passes organic chemistry the second time he enrolls is 0.9.

- 9) Find the probability that a person fails the first time but passes the second time.

- 10) Find the probability that a person fails both times.

The table below gives crime statistics relating to the location of the crime and the type of crime.

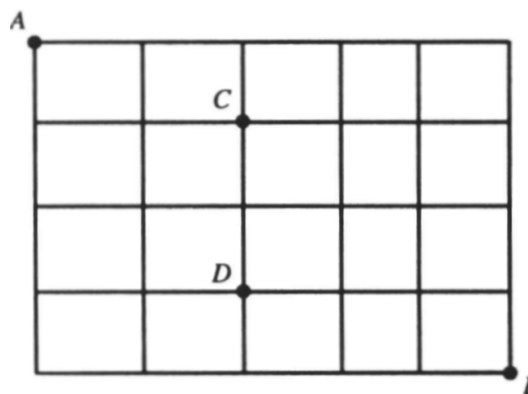
	Robbery	Murder	Assault
Residential	130	40	30
Commercial	102	28	20

- 11) Find the probability that a randomly-selected crime committed in a residential area is a murder.
 12) Find the probability that a randomly-selected crime was committed in a commercial area given that it was an assault.

Solve the problem.

- 13) Four radar systems work independently of each other. Each system can detect an approaching airplane with a probability of 0.95. Find the probability that an approaching airplane will escape all four systems.

The figure below shows a map of the streets in part of a certain city.



A tourist starts at point A and selects at random a path to point B with no backtracking.

- 14) Compute the probability that the tourist passed through point C given that he passed through point D.

Solve the problem.

- 15) A pair of dice is tossed and the numbers on the uppermost faces are observed. If the sum of the numbers is 8, what is the probability that both of them are even?