

1. Define mutually exclusive events, and give an example of two events that are mutually exclusive and two that are not mutually exclusive.

2. Determine whether the events are mutually exclusive.
 - a. Roll a die: Get a sum of 7 or get doubles.
 - b. Select a student in your college: The student is a sophomore and the student is a business major.
 - c. Select a course: It is a calculus course and it is an English course.
 - d. Select a registered voter: The voter is a Republican and the voter is a Democrat.

3. The following doctors were observed on staff at a local hospital.

	MD	Doctor of Osteopathy
Pathology	6	1
Pediatrics	7	2
Orthopedics	20	2

Choose a doctor at random: what is the probability that

- a. She is a pathologist?
 - b. He is an orthopedist or an MD?
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4. A media rental store rented the following number of movie titles in each of these categories: 170 horror, 230 drama, 120 mystery, 310 romance, and 150 comedy. If a person selects a movie to rent, find the probability that it is a romance or a comedy? Is this event likely or unlikely to occur? Explain your answer.
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5. At a used-book sale, 100 books are adult books and 160 are children's books. Of the adult books, 70 are nonfiction while 60 of the children's books are nonfiction. If a book is selected at random, find the probability that it is
 - a. Fiction
 - b. Not a children's nonfiction book
 - c. An adult book or a children's nonfiction book
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6. Two dice are rolled. Find the probability of getting
 - a. A sum of 8, 9, or 10
 - b. Doubles or a sum of 7
 - c. A sum greater than 9 or less than 4
 - d. Based on the answers to a, b, and c, which is least likely to occur?

7. The chart below shows the numbers of endangered and threatened species both here in the United States and abroad.

	Endangered		Threatened	
	US	Foreign	US	Foreign
Mammals	68	251	10	20
Birds	77	175	13	6
Reptiles	14	64	22	16
Amphibians	11	8	10	1

Choose one species at random. Find the probability that it is

- Threatened and in the US
 - An endangered foreign bird
 - A mammal or a threatened foreign species
8. If one card is selected is drawn from an ordinary deck of cards, find the probability of getting the following.
- A king or a 3
 - A spade or a heart
 - A face card or a diamond
 - A red ace or heart
 - A 9 or a club
9. The probability that a customer selects a pizza with mushrooms or pepperoni is 0.55, and the probability that that the customer selects mushrooms is 0.32. If the probability that he or she selects pepperoni is 0.47, find the probability of the customer selecting both items.
10. In building new homes, a contractor finds that the probability of a home buyer selecting a two-car garage is 0.70 and of selecting a one-car garage is 0.20.
- Find the probability that the buyer will select no garage. The builder does not build houses with three-car or more garages.
 - Find the probability that the buyer will not want a two-car garage.
11. Suppose that $P(A)=0.42$, $P(B)=0.38$, and $P(A \text{ or } B)=0.70$. Are A and B mutually exclusive? Explain.
12. Events A and B are mutually exclusive with $P(A)=0.392$ and $P(A \text{ or } B)=0.653$. Find
- $P(B)$
 - $P(\text{not } A)$
 - $P(A \text{ and } B)$