

## 21.4 Mutually Exclusive and Overlapping Events

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

For 1–4, determine whether the two events are mutually exclusive or overlapping.

- rolling an even number on a die; rolling a 6 on a die
- rolling an odd number on a die; rolling a 2 on a die
- drawing a face card from a deck of cards; drawing a 5 from a deck of cards
- drawing a spade from a deck of cards; drawing a 7 from a deck of cards

Use the appropriate version of the Addition Rule to find each probability.

5.  $P(\text{rolling an even number on a die or rolling a 6 on a die}) = \frac{1}{2}$

6.  $P(\text{rolling an odd number on a die or rolling a 2 on a die}) = \frac{2}{3}$

7.  $P(\text{drawing a spade from a deck of cards or drawing a 7 from a deck of cards}) = \frac{4}{13}$

8. Are the events “choosing a black card” and “choosing a 10” from a deck of playing cards mutually exclusive? Explain why or why not.

No because

9. If there are 52 cards in a deck, with 2 red suits (groups of 13 different cards) and 2 black suits, what is the probability that a card drawn will be black and a 10?

- 10a. A can of vegetables with no label has a  $\frac{1}{8}$  chance of being green beans and a  $\frac{1}{5}$  chance of being corn. Are the events “green beans” and “corn” mutually exclusive?

- b. What is the probability that an unlabeled can of vegetables is either green beans or corn?  $\frac{13}{40}$

For Problems 11–14, use the scenario described below.

Of the 400 doctors who attended a conference, 240 practiced family medicine and 130 were from countries outside the United States. One-third of the family medicine practitioners were not from the United States.

	Family Medicine	Not Family Medicine	Total
From US	160		
Not From US		50	
Total			400

11. Complete the two-way table using this information.
12. What is the probability that a doctor at the conference practices family medicine or is from the United States?

$\frac{7}{8}$

13. What is the probability that a doctor at the conference practices family medicine or is not from the United States?

$\frac{29}{40}$

14. What is the probability that a doctor at the conference does not practice family medicine or is from the United States?

$\frac{4}{5}$