Name _____ Date _____ Class _____

Practice C
Compound Events

Cards numbered 1–25 are placed in a bag and one is drawn at random. Find each probability.

1. Drawing an odd number or a multiple of 7.   _____

2. Drawing an even number or a perfect square.   _____

A drug company is testing the side effects of different doses of a new drug on three different groups of volunteers.

Group	Volunteers	Daily Amount (mg)
A	353	150
B	467	200
C	310	250

3. If a volunteer is chosen randomly, what is the probability that this person receives the highest amount per day?   _____

4. If a volunteer is chosen randomly, what is the probability that this person receives more than 150 mg per day?   _____

5. If a volunteer is chosen randomly, what is the probability that this person does NOT receive 200 mg per day?   _____

Mr. Rodney's English class is made up of 28 students. He has 6 ESL students, 10 remedial students, and 5 advanced learners. ESL students make up $\frac{1}{5}$ of the remedial students and $\frac{3}{5}$ of the advanced learners.

6. What is the probability that a student is ESL and remedial?   _____

7. What is the probability that a student is ESL and an advanced learner?   _____

8. What is the probability that a student is remedial and NOT ESL?   _____

Solve.

9. A student is collecting a population of laboratory mice to be used in an experiment. He finds that of the 236 mice in the lab, 173 mice are female and 99 have pink eyes. Just 10 of the pink-eyed mice are male. What is the probability that a mouse is female or has pink eyes?

_____

10. A group of 4 friends buys a CD of computer screen savers. If there are a total of 12 screen savers on the CD, what is the probability that at least 2 of the friends will choose the same screen saver for their computer?

_____

Holt Algebra 2

Practice A
11-4 Compound Events

Determine which event(s) are mutually exclusive.

1. Students are forming 4 softball teams by each picking one of four different-color cards from a bag. Are the events "choosing a red card" and "choosing a blue card" mutually exclusive? Explain why or why not.

   These events are mutually exclusive since each student can choose only one card.

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

   These events are not mutually exclusive since a card can be both black and a 10.

Solve.

3. Apples are in $\frac{1}{4}$ of all of the lunch bags that are distributed at a school picnic, and bananas are in $\frac{1}{3}$ of the bags. What is the probability of randomly choosing a lunch bag that contains either an apple or a banana? $\frac{7}{12}$

4. A group of senior citizens have won free vacation packages. The vacation to Bermuda is chosen by 25% of them, 60% choose Alaska, and 15% choose Costa Rica. What is the probability that one randomly selected senior citizen chooses to vacation in Costa Rica or Bermuda? $\frac{2}{5}$

Pam rolls a 1–6 number cube. Find each probability.

5. Pam rolls a 3 or a 6. $\frac{1}{3}$

6. Pam rolls an even number. $\frac{1}{2}$

7. Pam rolls an odd or even number. 1

8. Pam rolls an odd number or a 3. $\frac{1}{2}$

9. Pam rolls an odd number or a number greater than 4. $\frac{2}{3}$
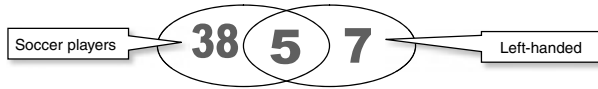
Use the data to fill in the Venn diagram. Then solve.

10. Of the 65 students going on the soccer trip, 43 are players and 12 are left-handed. Only 5 of the left-handed students are soccer players. What is the probability that one of the students on the trip is a soccer player or is left-handed? $\frac{10}{13}$ or 0.77

   Soccer players **38 5 7** Left-handed

Practice B
11-4 Compound Events

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.

1. Explain why the events "green beans" or "corn" are mutually exclusive.

   These events are mutually exclusive because each can contains only one type of vegetable.

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

Ben rolls a 1–6 number cube. Find each probability.

3. Ben rolls a 3 or a 4. $\frac{1}{3}$

4. Ben rolls a number greater than 2 or an even number. $\frac{5}{6}$

5. Ben rolls a prime number or an odd number. $\frac{2}{3}$

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.

6. What is the probability that a doctor practices family medicine or is from the United States? $\frac{7}{8}$

7. What is the probability that a doctor practices family medicine or is not from the United States? $\frac{29}{40}$

8. What is the probability that a doctor does not practice family medicine or is from the United States? $\frac{4}{5}$

Use the data to fill in the Venn diagram. Then solve.

9. Of the 220 people who came into the Italian deli on Friday, 104 bought pizza and 82 used a credit card. Half of the people who bought pizza used a credit card. What is the probability that a customer bought pizza or used a credit card?

   52 52 30

   Bought Pizza   Used credit card $\frac{67}{110}$ or 0.61

Solve.

10. There are 6 people in a gardening club. Each gardener orders seeds from a list of 11 different types of seeds available. What is the probability that 2 gardeners will order the same type of seeds?   0.81

Practice C
11-4 Compound Events

Cards numbered 1–25 are placed in a bag and one is drawn at random. Find each probability.

1. Drawing an odd number or a multiple of 7. $\frac{14}{25}$

2. Drawing an even number or a perfect square. $\frac{3}{5}$

A drug company is testing the side effects of different doses of a new drug on three different groups of volunteers.

Group	Volunteers	Daily Amount (mg)
A	353	150
B	467	200
C	310	250

3. If a volunteer is chosen randomly, what is the probability that this person receives the highest amount per day? $\frac{31}{113}$ or 0.27

4. If a volunteer is chosen randomly, what is the probability that this person receives more than 150 mg per day? $\frac{777}{1130}$ or 0.69

5. If a volunteer is chosen randomly, what is the probability that this person does NOT receive 200 mg per day? $\frac{663}{1130}$ or 0.59

Mr. Rodney's English class is made up of 28 students. He has 6 ESL students, 10 remedial students, and 5 advanced learners. ESL students make up $\frac{1}{5}$ of the remedial students and $\frac{3}{5}$ of the advanced learners.

6. What is the probability that a student is ESL and remedial?   0.07

7. What is the probability that a student is ESL and an advanced learner?   0.11

8. What is the probability that a student is remedial and NOT ESL?   0.29

Solve.

9. A student is collecting a population of laboratory mice to be used in an experiment. He finds that of the 236 mice in the lab, 173 mice are female and 99 have pink eyes. Just 10 of the pink-eyed mice are male. What is the probability that a mouse is female or has pink eyes? $\frac{183}{236}$ or 0.78

10. A group of 4 friends buys a CD of computer screen savers. If there are a total of 12 screen savers on the CD, what is the probability that at least 2 of the friends will choose the same screen saver for their computer?   0.43

Reteach
11-4 Compound Events

A **simple event** is an event that cannot be broken down any further. A **compound event** is an event made up of two or more simple events.

Rolling a 6 on a number cube is a simple event, while rolling an even number is a compound event.

Mutually exclusive events are events that cannot occur at the same time.

Tossing heads and tossing tails are mutually exclusive events. They cannot happen on the same toss of a coin.

Addition Rule for the Probability of Mutually Exclusive Events
A and B are mutually exclusive events.

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

A card is drawn from the deck. What is the probability of drawing a 5 or a face card from the deck?

Step 1 Decide whether the events are mutually exclusive.
A card cannot be both 5 and a face card.
The events are mutually exclusive.

Step 2 Find the probability of drawing a 5.   *There are four 5's in a deck of 52 cards.*
$P(5) = \frac{4}{52} = \frac{1}{13}$

Step 3 Find the probability of drawing a face card.   *There are 12 face cards in a deck of 52 cards.*
$P(\text{face card}) = \frac{12}{52} = \frac{3}{13}$

Step 4 Use the rule for the probability of mutually exclusive events.
$P(5 \text{ or face card}) = P(5) + P(\text{face card})$
$= \frac{1}{13} + \frac{3}{13} = \frac{4}{13}$

Toni draws a card from a deck. Find each probability.

1. She draws a number card or a king.
   a. $P(\text{number card})$ $\frac{10}{13}$
   b. $P(\text{king})$ $\frac{1}{13}$
   c. $P(\text{number card or king}) = P(\text{number card}) + P(\text{king})$ $\frac{11}{13}$

2. She draws an ace or a queen.
   a. $P(\text{ace})$ $\frac{1}{13}$
   b. $P(\text{queen})$ $\frac{1}{13}$
   c. $P(\text{ace or queen}) = P(\text{ace}) + P(\text{queen})$ $\frac{2}{13}$