Determine if the scenario involves mutually exclusive or overlapping events. Then find the probability.

1) A box of chocolates contains four milk chocolates, three dark chocolates, and five white chocolates. You randomly select a chocolate. It is a milk chocolate or a dark chocolate.

2) A jar contains six blue marbles numbered one to six. The jar also contains five red marbles numbered one to five. You randomly pick a marble. It is red or has an odd number.

3) There are thirteen shirts in your closet, five blue, five green, and three red. You randomly select one to wear. It is blue or green.

4) You roll a fair six-sided die. The die shows an even number or a number less than five.

5) A box contains five red playing cards numbered one to five. The box also contains four black playing cards numbered one to four. You randomly pick a playing card. It is red or has a number greater than two.

6) A spinner has an equal chance of landing on each of its seven numbered regions. After spinning, it lands in region three or seven.

7) A litter of kittens consists of two gray females, one gray male, one black female, and two black males. You randomly pick one kitten. The kitten is gray or female.

8) There are ten shirts in your closet, six blue and four green. One of the blue shirts and three of the green shirts fit well. The others are too big. You randomly select a shirt to wear. It is green or fits well.

9) A cooler contains twelve bottles of sports drink: four lemon-lime flavored, four orange flavored, and four fruit-punch flavored. You randomly grab a bottle. It is a lemon-lime or an orange.

10) A basket contains five apples, five peaches, and four pears. You randomly select a piece of fruit. It is an apple or a peach.
Determine whether the scenario involves independent or dependent events. Then find the probability.

11) You roll a fair six-sided die twice. The first roll shows a two and the second roll shows a six.

12) A basket contains eight apples and eight peaches. You randomly select one piece of fruit and eat it. Then you randomly select another piece of fruit. Both pieces of fruit are apples.

13) Your sock drawer has two white socks, six brown socks, and two black socks. You randomly pick a sock and put it on your left foot and then pick another sock and put it on your right foot. You leave the house with a white sock on your left foot and a brown sock on your right foot.

14) A bag contains three red marbles and six blue marbles. You randomly pick a marble and then return it to the bag before picking another marble. Both the first and second marbles are red.

15) There are four nickels and eight dimes in your pocket. You randomly pick a coin out of your pocket and place it on a counter. Then you randomly pick another coin. Both coins are nickels.

16) You select two cards from a standard shuffled deck of 52 cards. Both selected cards are diamonds. (Note that 13 of the 52 cards are diamonds.)

17) A cooler contains fifteen bottles of sports drink: seven lemon-lime flavored and eight orange flavored. You randomly grab a bottle and give it to your friend. Then, you randomly grab a bottle for yourself. Your friend gets a lemon-lime and you get an orange.

18) There are fifteen shirts in your closet, seven blue and eight green. You randomly select one to wear on Monday and then a different one on Tuesday. You wear blue shirts both days.

19) You select a card from a standard shuffled deck of 52 cards. You return the card, shuffle, and then select another card. Both times the card is a diamond. (Note that 13 of the 52 cards are diamonds.)

20) You flip a coin and then roll a fair six-sided die. The coin lands heads-up and the die shows an even number.
Determine if the scenario involves mutually exclusive or overlapping events. Then find the probability.

1) A box of chocolates contains four milk chocolates, three dark chocolates, and five white chocolates. You randomly select a chocolate. It is a milk chocolate or a dark chocolate.

Mutually exclusive; \( \frac{7}{12} \approx 0.583 \)

2) A jar contains six blue marbles numbered one to six. The jar also contains five red marbles numbered one to five. You randomly pick a marble. It is red or has an odd number.

Not mutually exclusive; \( \frac{8}{11} \approx 0.727 \)

3) There are thirteen shirts in your closet, five blue, five green, and three red. You randomly select one to wear. It is blue or green.

Mutually exclusive; \( \frac{10}{13} \approx 0.769 \)

4) You roll a fair six-sided die. The die shows an even number or a number less than five.

Not mutually exclusive; \( \frac{5}{6} \approx 0.833 \)

5) A box contains five red playing cards numbered one to five. The box also contains four black playing cards numbered one to four. You randomly pick a playing card. It is red or has a number greater than two.

Not mutually exclusive; \( \frac{7}{9} \approx 0.778 \)

6) A spinner has an equal chance of landing on each of its seven numbered regions. After spinning, it lands in region three or seven.

Mutually exclusive; \( \frac{2}{7} \approx 0.286 \)

7) A litter of kittens consists of two gray females, one gray male, one black female, and two black males. You randomly pick one kitten. The kitten is gray or female.

Not mutually exclusive; \( \frac{2}{3} \approx 0.667 \)

8) There are ten shirts in your closet, six blue and four green. One of the blue shirts and three of the green shirts fit well. The others are too big. You randomly select a shirt to wear. It is green or fits well.

Not mutually exclusive; \( \frac{1}{2} = 0.5 \)

9) A cooler contains twelve bottles of sports drink: four lemon-lime flavored, four orange flavored, and four fruit-punch flavored. You randomly grab a bottle. It is a lemon-lime or an orange.

Mutually exclusive; \( \frac{2}{3} \approx 0.667 \)

10) A basket contains five apples, five peaches, and four pears. You randomly select a piece of fruit. It is an apple or a peach.

Mutually exclusive; \( \frac{5}{7} \approx 0.714 \)
Determine whether the scenario involves independent or dependent events. Then find the probability.

11) You roll a fair six-sided die twice. The first roll shows a two and the second roll shows a six.

Independent; $\frac{1}{36} \approx 0.028$

12) A basket contains eight apples and eight peaches. You randomly select one piece of fruit and eat it. Then you randomly select another piece of fruit. Both pieces of fruit are apples.

Dependent; $\frac{7}{30} \approx 0.233$

13) Your sock drawer has two white socks, six brown socks, and two black socks. You randomly pick a sock and put it on your left foot and then pick another sock and put it on your right foot. You leave the house with a white sock on your left foot and a brown sock on your right foot.

Dependent; $\frac{2}{15} \approx 0.133$

14) A bag contains three red marbles and six blue marbles. You randomly pick a marble and then return it to the bag before picking another marble. Both the first and second marbles are red.

Independent; $\frac{1}{9} \approx 0.111$

15) There are four nickels and eight dimes in your pocket. You randomly pick a coin out of your pocket and place it on a counter. Then you randomly pick another coin. Both coins are nickels.

Dependent; $\frac{1}{11} \approx 0.091$

16) You select two cards from a standard shuffled deck of 52 cards. Both selected cards are diamonds. (Note that 13 of the 52 cards are diamonds.)

Dependent; $\frac{1}{17} \approx 0.059$

17) A cooler contains fifteen bottles of sports drink: seven lemon-lime flavored and eight orange flavored. You randomly grab a bottle and give it to your friend. Then, you randomly grab a bottle for yourself. Your friend gets a lemon-lime and you get an orange.

Dependent; $\frac{4}{15} \approx 0.267$

18) There are fifteen shirts in your closet, seven blue and eight green. You randomly select one to wear on Monday and then a different one on Tuesday. You wear blue shirts both days.

Dependent; $\frac{1}{5} = 0.2$

19) You select a card from a standard shuffled deck of 52 cards. You return the card, shuffle, and then select another card. Both times the card is a diamond. (Note that 13 of the 52 cards are diamonds.)

Independent; $\frac{1}{16} \approx 0.063$

20) You flip a coin and then roll a fair six-sided die. The coin lands heads-up and the die shows an even number.

Independent; $\frac{1}{4} = 0.25$