

## Probability with a Deck of Cards



These questions are based on a 52 card deck without Jokers.

1 ) Find the probability of drawing a face card that is a Heart.

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2 ) Find the probability of drawing a face card that is red.

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3 ) Find the probability of drawing a Club.

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4 ) Find the probability of drawing a face card.

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5 ) Find the probability of drawing a 10 of Spades.

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6 ) Find the probability of drawing a King.

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7 ) Find the probability of drawing a black card.

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8 ) Find the probability of drawing cards 6 through 9.

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9 ) Find the probability of drawing a Spade 7 through 10.

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10 ) Find the probability of drawing red cards 4 through 9.

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**LESSON**  
**12-4**

**Making Predictions with Experimental Probability**

**Practice and Problem Solving: A/B**

*\* Use the percentage to make the prediction. Turn percentage to decimal form (move 2 places left) and multiply.*

Make a prediction based on experimental probability.

1. A bowler knocks down at least 6 pins 70 percent of the time. Out of 200 rolls, how many times can you predict the bowler will knock down at least 6 pins?

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2. A tennis player hits a serve that cannot be returned 45 percent of the time. Out of 300 serves, how many can you predict will not be returned?

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3. West Palm Beach, Florida, gets rain about 16 percent of the time. On how many days out of 400 can residents of West Palm Beach predict they will get rain?

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4. Rob notices that 55 percent of the people leaving the supermarket choose plastic bags instead of paper bags. Out of 600 people, how many can Rob predict will carry plastic bags?

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5. A baseball player reaches base 35 percent of the time. How many times can he expect to reach base in 850 at-bats?

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6. Fredericka can make 65 percent of her shots from the free-throw line. If she shoots 75 times, how many shots can she expect to make?

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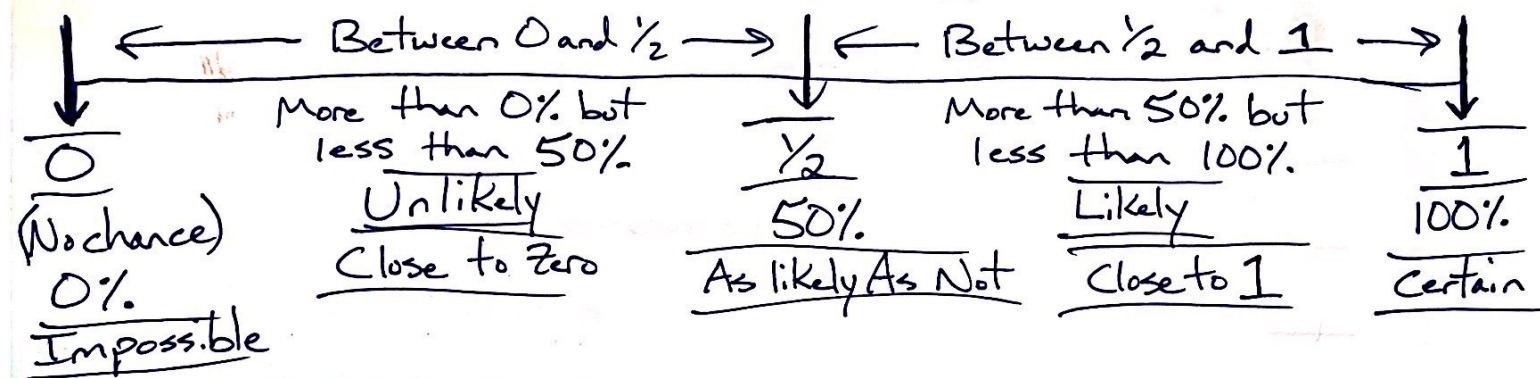
7. In a current-events class, a professor predicted that at least 78 percent of students prefer getting their news from a digital source rather than from a print source. He polled 3 classes. The results are shown in the table below.

	Class 1	Class 2	Class 3
Digital	20	14	30
Print	5	10	7

In which class(es) did his prediction hold true? Explain.



\* Determine whether each event is impossible, unlikely, as likely as not, likely, or certain. Also state whether the probability is 0, close to 0,  $\frac{1}{2}$ , close to 1, or 1. Remember to base your answers on this:



- ① Randomly picking a green card from a standard deck of playing cards.
- ② Randomly picking a red card from a standard deck of playing cards.
- ③ Picking a number less than 15 from a jar with papers labeled from 1 to 12.
- ④ Picking a number greater than 3 from a jar with papers labeled from 1 to 15.
- ⑤ Randomly picking a Queen from a standard deck of playing cards.
- ⑥ Rolling a number greater than 2 on a standard number cube (dice).



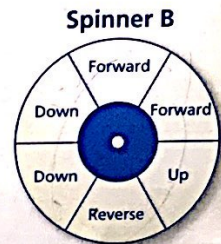
 **Vocabulary and Concept Check**

- 7. **VOCABULARY** Is rolling an even number on a number cube an *outcome* or an *event*? Explain.
- 8. **REASONING** Can the probability of an event be 1.5? Explain.
- 9. **OPEN-ENDED** Give a real-life example of an event that is impossible. Give a real-life example of an event that is certain.

 **Practice and Problem Solving**

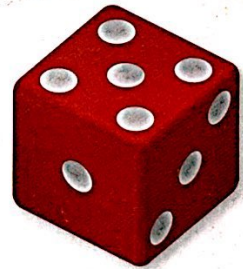
Use the spinners shown.

- 10. You want to move down. Which spinner should you spin? Explain.
- 11. You want to move forward. Does it matter which spinner you spin? Explain.



A number cube is rolled. Determine if the game is fair. If it is *not* fair, who has the greater probability of winning?

- 3. 12. You win if the number is odd. Your friend wins if the number is even.
- 13. You win if the number is less than 3. If it is not less than 3, your friend wins.
- 14. **SCORING POINTS** You get one point if a 1 or a 2 is rolled on the number cube. Your friend gets one point if a 5 or a 6 is rolled. The first person to 5 points wins.
  - a. Is the number cube fair? Is the game fair? Explain.
  - b. Predict the number of turns it will take you to win!



- 2. 15. **BOARD GAME** There are 105 lettered tiles in a board game. You choose the tiles shown. How many of the 105 tiles would you expect to be vowels?



- 16. **CARDS** You have a package of 20 assorted thank-you cards. You pick the four cards shown. How many of the 20 cards would you expect to have flowers on them?

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