

12-7 Reteaching

Theoretical and Experimental Probability

You can find **theoretical probability** by using the following formula.

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

Experimental probability relies on data from repeated trials. You can find experimental probability by using the following formula.

$$P(\text{event}) = \frac{\text{number of times the event occurs}}{\text{number of times the experiment is done}}$$

Problem

You choose a crayon at random from a bag containing 4 green crayons, 1 red crayon, 2 blue crayons, and 5 yellow crayons. What is the probability that your crayon will be blue?

There are $4 + 1 + 2 + 5$, or 12 crayons. Two crayons are blue.

$$\begin{aligned} P(\text{blue}) &= \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}} \\ &= \frac{2}{12} \text{ or } \frac{1}{6} \end{aligned}$$

Exercises

You spin a spinner that has 12 equal-sized sections numbered 1 to 12. Find the theoretical probability of landing on the given section(s) of the spinner.

1. $P(6)$

2. $P(\text{odd number})$

3. $P(\text{greater than } 8)$

4. $P(\text{less than } 9)$

5. $P(\text{multiple of } 3)$

6. $P(\text{multiple of } 5)$

7. $P(\text{greater than } 10)$

8. $P(\text{less than } 4)$

9. $P(\text{not } 1)$

Kisha is memorizing vocabulary words. She has learned 35 out of 80 words. What is the probability that she knows one word selected at random from 80?

$$P(\text{event}) = \frac{\text{number of times the event occurs}}{\text{number of times the experiment is done}}$$
$$= \frac{35}{80} \text{ or } \frac{7}{16}$$

Exercises

10. The manufacturer of video games checks 2000 games for defects. They find 12 defective games. What is the probability that a game selected at random is defective?

Exercises

You choose a jellybean at random from a bag containing 4 orange jellybeans, 2 green jellybeans, 5 yellow jellybeans, and 3 black jellybeans. Find the probability.

11. P(orange)

12. P(green)

13. P(yellow or black)

14. P(orange or black)