

# Make Predictions Using Experimental Probability



Experimental probability is based on the results of an experiment, or real-world data. You can find experimental probability using the following fraction:

$$\text{Experimental probability} = \frac{\text{number of times an event occurs}}{\text{total number of trials}}$$

**Think about this example.** Eliza has taken 12 penalty shots, and 3 of her shots resulted in goals. Find the experimental probability that Eliza scores a goal on a penalty shot. Make sure to simplify your fraction!

$$\frac{3}{12} = \frac{1}{4} \quad \text{So, the experimental probability that Eliza scores a goal on a penalty shot is } \frac{1}{4}.$$

**You can use experimental probability to make predictions!** Out of Eliza’s next 20 penalty shots, how many goals would you expect her to score?

$$\frac{1}{4} = \frac{n}{20}$$

*Write a proportion that sets the two ratios equal to each other.*

$$\frac{1}{4} \cdot 20 = \frac{n}{20} \cdot 20$$

*Multiply both sides by 20.*

$$5 = n$$

*Simplify. So, you can expect that Eliza would score 5 goals out of her next 20 penalty shots.*

Use experimental probability to make each prediction.

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| <p><b>1.</b> Pizza Paradise recently sold 10 pizzas, 5 of which were pepperoni pizzas. Considering this data, how many of the next 16 pizzas sold would you expect to be pepperoni pizzas?</p> | <p><b>2.</b> Victor is playing cards with his uncle. So far, Victor has won 6 out of 8 games. Out of the next 12 games, how many could Victor expect to win given the past data?</p> |
| <p><b>3.</b> Of the 9 birds that came to the bird feeder this morning, 3 were blue jays. Based on this data, how many of the next 24 birds would you expect to be blue jays?</p>               | <p><b>4.</b> At the skating rink, 3 of the last 5 customers rented skates. Considering this data, how many of the next 20 customers would you expect to rent skates?</p>             |