# Develop Understanding of Probability

Model It: Describe Probabilities with Words

➤ **Try these two problems about describing probabilities with words.**

1 A bag contains 6 red marbles, 6 green marbles, and 12 blue marbles. Paloma reaches into the bag and selects a marble without looking.

   a. What is the total number of marbles in the bag? 24

   b. What is half the number of marbles in the bag? 12

   c. Name an event that is impossible. Selecting a yellow marble

   d. Name an event that is unlikely. Selecting a red marble

   e. Name an event that is equally likely as not. Selecting a blue marble

   f. Name an event that is likely. Selecting a green or blue marble

   g. Name an event that is certain. Selecting a marble

2 Consider the experiment from problem 1.

   a. Draw a line from each event to show the probability of that event.
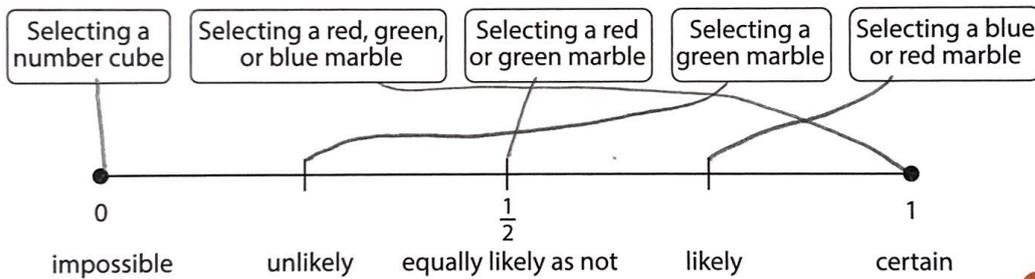
   b. Explain why an event that is equally likely as not has a probability of $\frac{1}{2}$.

   Since $\frac{1}{2}$ means 1 out of 2 equal parts, it means the probability of the event happening is equal to the probability of the event not happening

DISCUSS IT

Ask: How do you know an event is equally likely as not?

Share: Equally likely as not and as likely as not mean the same thing because . . .

Model It: Describe Probabilities with Numbers

➤ **Try this problem about describing probabilities with numbers.**

3 You can also use numbers to describe probabilities. Imagine that the cards shown are facedown and you select one card at random.
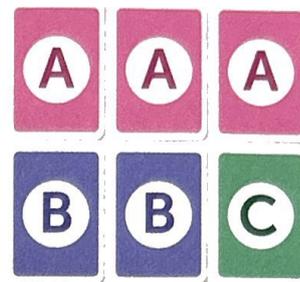
a. Name an event that has a probability of 0.

Select a card with D

b. Name an event that has a probability of 1.

Select a letter card

c. Name an event that has a probability of $\frac{1}{2}$.

Select a card with A

d. Name an event that has a probability between 0 and $\frac{1}{2}$.

Select a card with B

e. Name an event that has a probability between $\frac{1}{2}$ and 1.

Select a card with A or C

> **DISCUSS IT**
>
> **Ask:** Which outcome is most likely?
>
> **Share:** An event with a probability of $\frac{1}{2}$ is less likely to occur than an event with a probability of $\frac{3}{4}$ because . . .

CONNECT IT

➤ **Complete the problems below.**

4 What word describes the probability of rolling an integer on a standard number cube? How can you describe the same probability with a number? Explain why you can describe the probability both ways.

Certain   1

Both the word "certain" and the number 1 describe an event that must happen

5 Each letter of the word EXPERIMENT is written on a separate slip of paper. One slip of paper is selected at random. Name two possible events that could occur. Describe their probabilities with both words and numbers.

Select a letter : certain, probability of 1

Select a vowel : unlikely; probability between 0 to $\frac{1}{2}$