Explore

Ali, Brian, and Caitlin are to be photographed together.
How many different ways can they be arranged in a line? 6
What is the probability that Brian and Caitlin will be next to each other? $\frac{4}{6}$

Show *and* Share

Describe the strategy you used to solve this problem. I used a tree diagram.

Connect

Mayhew School has 4 championship banners to hang in a hallway.
The banners for basketball, volleyball, cross-country, and track and field are hung in line.
How many different ways can the banners be hung?
What is the probability that the banner for basketball will be next to that for volleyball?

Understand

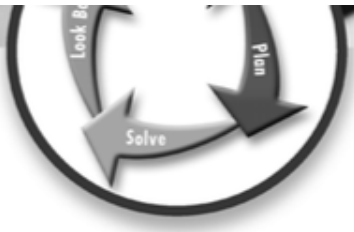
What do you know?
- There are 4 different banners.
- The banners hang in line.

Plan

Think of a strategy to help you solve the problem.
- You can **use a model**.

Strategies

- Make a table.
- Use a model.
- Draw a diagram.
- Solve a simpler problem.
- Work backward.
- Guess and check.
- Make an organized list.
- Use a pattern.
- Draw a graph



Use a tree diagram as a model.
Record the different arrangements.
The tree diagram is started below.

Copy and complete the diagram.
How many different arrangements are there? 24
What is the probability that the banners for basketball and volleyball are beside each other? $\frac{12}{24}$, or $\frac{1}{2}$

How could you have solved this problem another way? I could have used an organized list.

Practice

Choose one of the **Strategies**

1. Matthias is framing a photo of himself to give to his mother as a present. He will use:
   - a photo of himself at home, at school, or playing baseball
   - a white border or a black border
   - a silver frame or a wood frame

   How many different presents can he make? 12

2. Mr. Roe has cards labelled 1, 2, and 3. He arranges the cards to make a 3-digit number. What is the probability that the 3-digit number is less than 200? $\frac{2}{6}$, or $\frac{1}{3}$

Reflect

How can using a model help you solve a problem? Use an example to explain.