

## ONE-DIFFERENCE TRAIN

1. Give each pair of students one set of Shapes and Sizes Attribute Pieces. Tell them that they are going to make a special kind of train with their shapes. Ask students to find the small yellow circle. **Find a shape that is different from the small yellow circle in only one way. Put it next to the small yellow circle.** Give pairs time to find a shape. **What shape did you find?** (small yellow square, triangle, or rectangle; large yellow circle; small green, blue or red circle) **How do you know it is different in only one way?** Have students share their thinking. **Now find another shape that is different in only one way from your second shape. Put it next. How do you know it is different in only one way?** Continue having students find shapes until you feel they understand what a one-difference train is.
2. Explain to students that they will work with their partner to make one-difference trains. Each shape should be different in only one way from the previous shape (in writing). Make a recording of your trains. Explain how you know each shape is different in only one way from each shape next to it.
3. Discussion
  - Tell about your train. How many colors does it have? Does it have different shapes? Different sizes? How long is it?
  - How many shapes of your set are left over? Did anyone use all the shapes in the set? How did you do it?
  - What are the first two shapes in your train? In what way are they different? In what way are they the same?
  - Did anyone start with the same shape but use a different second shape? If not, what other shape could have been second? How you know?
  - How many ways do you think you could build a one-difference train? Why do you think as you do?

[Source: 20 Thinking Questions for Pattern Blocks Grades 1-3, Creative Publications]

**Extension:**

1. Suppose that the back of your train is the front. Do you still have a one-difference train? Explain why or why not.
2. Could you build a three-difference train? If so, tell how you would do it. If not, explain why not.

[Source: 20 Thinking Questions for Pattern Blocks Grades 1-3, Creative Publications]

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