

Material Preparation

MATERIALS

- toy car
- nine standard unit blocks
- 9" x 12" construction paper (two colors of your choice)
- two different colored markers that match the paper you chose
- butcher paper
- masking tape
- drinking straws (two straws per child)
- two pieces of cardboard (approx. 12" x 18") or some type of flat surface, such as a unit block building board

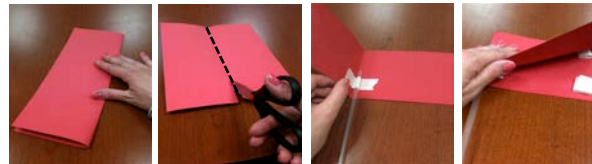
NOTE: Foam board or poster board will not work.

For each child:

- set of two racing flags
- Ask Me About Blocks sticker

PREPARE IN ADVANCE

- Create set of two racing flags for each child (one of each chosen color):
 - Fold 9" x 12" construction paper in half lengthwise. Cut on fold.
 - Fold the 4½" x 12" strips in half.
 - Tape the top half of a straw inside the fold of the paper.
 - Tape open ends of the strip together.
 - Repeat with the other color.
- Create two ramp boards:
 - Cut butcher paper into two 12" x 36" pieces.
 - Use a colored marker to draw a large square on each sheet in different colors.
 - Align each sheet of paper with a piece of cardboard. Tape the paper with the red square on top of the cardboard using two small masking tape loops in each top corner; the paper is twice as long as the cardboard and will extend over the floor to form a ramp.



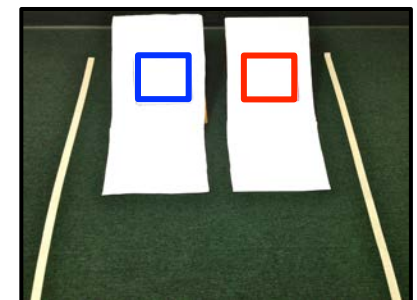
racing flag



For each child

SET UP THE LESSON AREA

- Identify a large, smooth, open area for the lesson. Use masking tape to create a speedway on the floor.
- Tape two 6' to 10' parallel lines with 4' to 6' of space in between (make sure the two ramps fit in between).
- Gather unit blocks, cardboard ramps, toy car, masking tape and racing flags and place them near the speedway.



speedway

OBJECTIVE

Children will conduct an investigation to explore how changing a variable may affect the distance a toy car travels down a ramp.

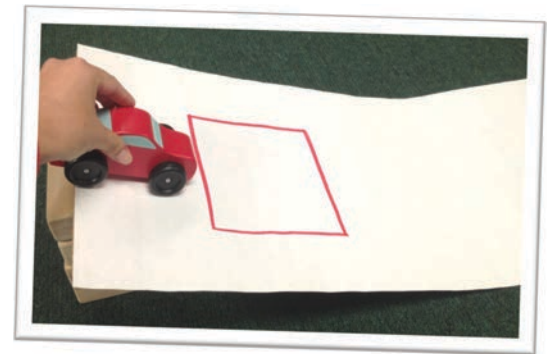
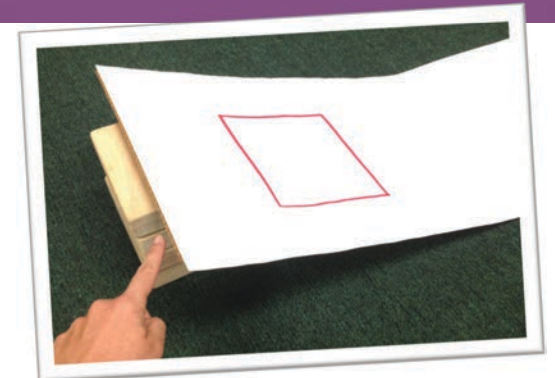
EXCITE

1. Gather the children in the ECHOS lesson area. Seat them along the speedway lines in two rows facing each other. As children observe, stand in the middle of the two rows and stack four blocks on top of each other. **Can anyone figure out what I am building?** Listen to the children's responses.
2. Lean one of the "ramps" against the stack of blocks. **What do you think it looks like?** Listen to the children's answers.



INTRODUCE

1. **Do you remember the last time you went down a slide?** Listen to the children's responses.
2. **This slide has a special name. It is called a *ramp*.** Today we are going to be scientists and conduct an *investigation* using this ramp. Can you say investigation? An investigation happens when you ask a question and then try to find the answer.
3. **How tall is our ramp? Let's count the blocks.** Count with the children as you point to each block. **This ramp is four blocks *high*.**
4. Place the toy car at the top of the ramp and let it go. **What happened to the car? Yes, it went down the ramp, just like you do when you go down a slide in the playground.**



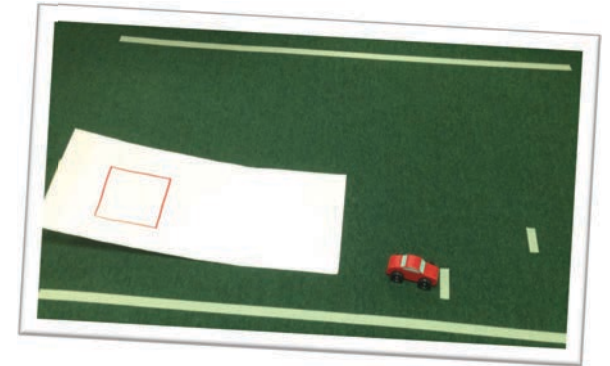
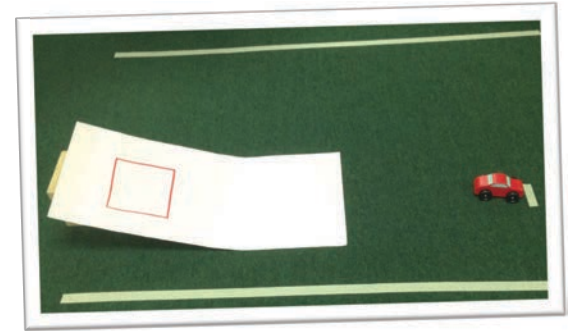
5. **Did the car stop at the bottom of the ramp or did it keep on going?** Accept responses. **Yes, it kept on going past the end of the ramp. I'm going to use masking tape to mark where the car stopped.** Use 3" of masking tape to mark where the car stopped.

6. **Let's change one thing about this investigation. The part of an investigation that changes is called a variable. One variable we can change is the height of the ramp.**

7. **If we make the ramp shorter, will the car go as *far*?** Listen to the children's responses. **Let's try it.** Hold the top block and ramp. Choose a child to help. **Remove two of the blocks from the stack. Now how tall is our ramp? Our ramp is only two blocks high.**

8. **Now that the ramp is shorter, we're ready to try it again.** Place the toy car at the top of the ramp and let it go. **Where did the car stop this time?** Use 3" of masking tape to mark where the car stopped.

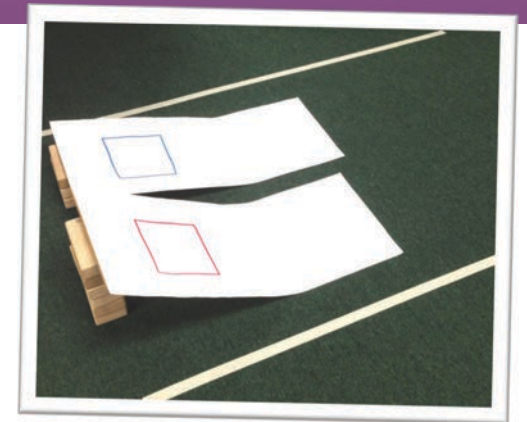
9. **Let's look at the results and compare where the cars stopped. Which mark is *farther*?** I wonder why that is. **Any ideas?** Listen to the children's responses. **Yes, when the ramp was *higher*, the car went farther.** Put the blocks and ramp aside.



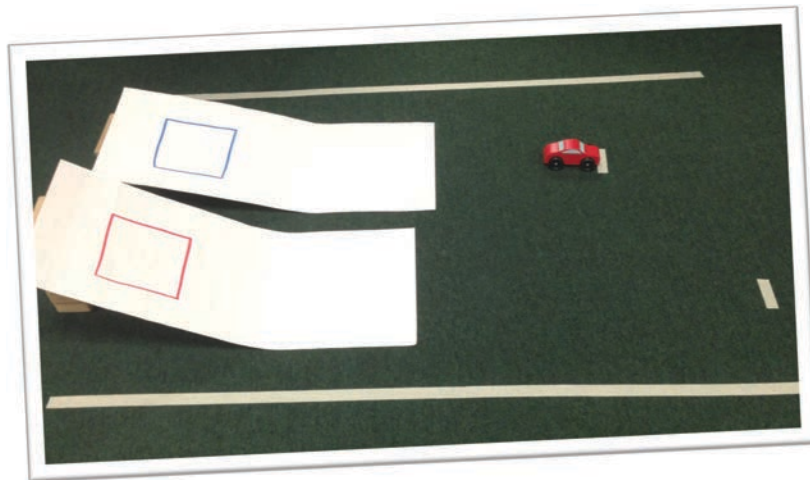
EXPLORE

1. **Let's pretend we're at a speedway.** Ask one child to build a stack of three blocks and lean the ramp against it. Ask another child to build a stack of six blocks and lean the ramp against it.

2. Point to the two ramps. **What do you notice about the ramps?** Prompt children to notice the height of the ramps and the colors of the squares drawn on the ramps.



3. **I'm going to give everyone two racing flags.** Give each child a set of flags. **What do you notice about your flags?** Wait for children to respond. Call out one color at a time and ask the children to hold up the corresponding flag. Guide as needed.
4. **We're going to predict which ramp will make the car go farther. Who thinks that the car will go farther on the red ramp? Hold up your red flag.** Repeat for second color. **Lower your flags.**
5. **We will test the red ramp first. Let's get ready.** Select one child. Ask him/her to listen carefully for the word "GO" before letting go of the car. To release the car, children should just open their hands and let go. They should not push the car down the ramp. **Ready? On your mark... get set... GO! Let's use this masking tape to mark the spot where the car stopped.**
6. **Now, let's test the blue ramp.** Select another child to release the same car down the ramp. **Ready? On your mark... get set... GO! Let's use this masking tape to mark the spot where the car stopped.**
7. **Let's talk about what we observed so far. What did you notice?** Listen to the children's responses. **When the ramp is taller, the car goes farther.**
8. **Let's try it again!** Repeat steps 4–8 with pairs of children until all children in the group have had a turn. Ask each new pair of children to remove or add one block to their stack.




INTERACT

Interact to accommodate children's individual needs and strengths. Use these suggested strategies as needed:

- If children are having difficulty sitting on either side of the speedway, ask all of them to sit on one side only.
- If possible, this lesson can be conducted outdoors. Just use a cart or wagon to take the blocks and ramps outside and try this activity during outdoor time.

OUTCOMES

1. Regroup the children in the ECHOS lesson area. **What did we discover today?** Listen to the children's responses. Use suggested prompts to elicit key concepts and vocabulary. Encourage responses from everyone.
 - **What happened when you let go of your car?**
 - **Did the car go farther when the ramp was higher?**
 - **What happened when we lowered the ramp?**
2. Recap and review the unit key concepts by asking and prompting children to recall something they learned from any of the prior *Blocks Measure Up* lessons.
3. Give each child an *Ask Me About Blocks* sticker. 

Remind the children to tell their family something they have learned about blocks.
4. After you have completed all of the lessons in this unit add the ECHOS materials suggested below to your science area or block area to encourage exploration.

VOCABULARY

- far/farther
- high/higher
- investigation
- ramp



toy car



ramps



racing flags