ACTIVITY 21

How Things Move

BROWARD COUNTY ELEMENTARY SCIENCE BENCHMARK PLAN

Grade 1—Quarter 3
Activity 21

SC.C.1.1.1
The student understands that different things move at different speeds.

SC.H.1.1.1
The student knows that in order to learn, it is important to observe the same things often and compare them.

ACTIVITY ASSESSMENT OPPORTUNITIES

The following suggestions are intended to help identify major concepts covered in the activity that may need extra reinforcement. The goal is to provide opportunities to assess student progress without creating the need for a separate, formal assessment session (or activity) for each of the 40 hands-on activities at this grade level.

1. Ask, *Does a person walking down the school hallway go faster or slower than a snail?* (much faster) Then ask, *Who is moving faster, a person walking or a person sliding down a playground slide?* (The person going down the slide is moving faster.)

2. Use the Activity Sheet(s) to assess student understanding of the major concepts in the activity.

In addition to the above assessment suggestions, the questions in bold and tasks that students perform throughout the activity provide opportunities to identify areas that may require additional review before proceeding further with the activity.

ACTIVITY 21

How Things Move

OBJECTIVES

In this activity, students compare the speeds at which different objects move.

The students

- act out the speed at which eight objects move and compare their motion
- sequence the speeds of different objects from slowest to fastest

SCHEDULE

About 40 minutes

VOCABULARY

direction
motion
position
speed

MATERIALS

For each student

1	Activity Sheet 21, Parts A and B
1	bag, plastic, resealable, 15 cm × 15 cm
1 pr	scissors*

*provided by the teacher

PREPARATION

1. Make copies of Activity Sheet 21, Parts A and B, for each student.
2. If possible, locate a place outdoors where students can act out the speeds of the eight objects they will study.

BACKGROUND INFORMATION

Motion can be defined as a change in the position of an object over time. The **speed** at which an object moves is determined by the length of time it takes the object to move a certain distance. In this activity, students will compare the speeds of different objects.

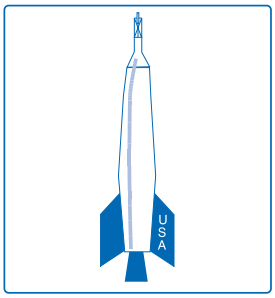
Motion also has **direction**. Consider crossing a busy street. It is not enough to know the speed at which the cars are moving; you must also know the direction in which they are traveling to know if you are in danger. Speed does not have direction, but velocity does. Velocity is the speed of an object and the direction in which it moves. Thus, two cars traveling at 50 miles per hour but moving in opposite directions will have the same speed but different velocities.

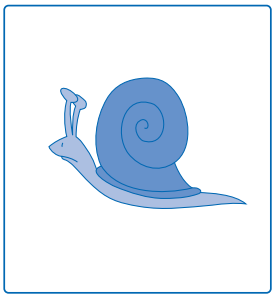
You do not have to see an object move to know that motion has taken place. Suppose you look out a window and see a bird on a tree branch. A few minutes later, you look out the window again and notice that the bird is now on the ground. Although you did not see the bird move, you know that motion has taken place because the **position** of the bird relative to the branch has changed.

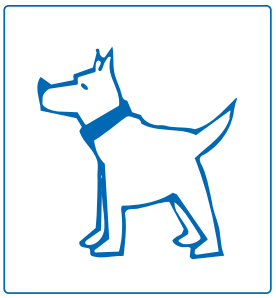
▼ **Activity Sheet 21, Part A**

How Things Move

Cut out the four cards.



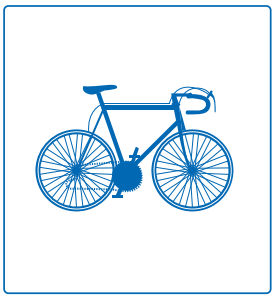


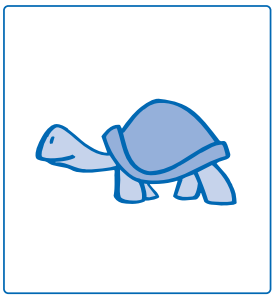


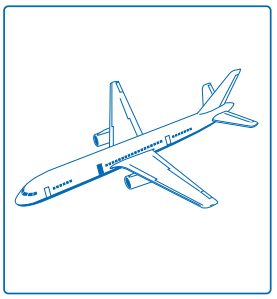
▼ **Activity Sheet 21, Part B**

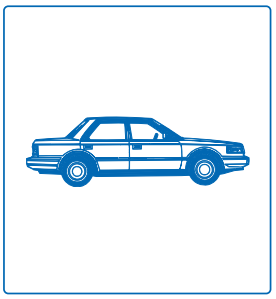
How Things Move

Cut out the four cards.









Guiding the Activity

1 Ask, **What can move faster—a person walking or a racing car?**

Explain that there are different ways to describe the way things move. One way is by their speed. Write the word *speed* on the board and read it aloud. Tell students that **speed** is how fast or slowly something moves. Racing cars move faster than people because they have more speed.

Ask, **What does *fast* mean?**

Additional Information

Students should recognize that racing cars can move faster than people can.

Accept all answers. This is a difficult question that will involve comparisons. Students may suggest that fast means moving with more speed than something else moves.

Guiding the Activity

	Additional Information
2 Have two student volunteers come to the front of the class. Have them stand back-to-back and then take five steps forward. Ask, **How can you describe the way these two students move?**	*Accept all answers, but guide the discussion to the direction in which things move.*
Explain that another way to describe how things move is by direction. Write the word *direction* on the board. **Direction** is the way an object faces. Point out that the two students walked in opposite directions.	
3 Tell students that when something moves, its position changes. Write the word *position* on the board. **Position** is where something is. Explain that when the two students stopped walking, they were in different positions from when they started. Have students tell you the position of various objects in the classroom that you call out. For example, the position of the clock is on the wall in the front of the classroom.	
Call on the two volunteers to stand back-to-back again. Tell the class to close their eyes while the volunteers take five steps again. When they have stopped, tell the class to open their eyes. Ask, **Do you have to see something move to know that it has moved? Explain.**	*No. If something has changed position, you know that it has moved.*
4 Tell students that moving from one place to another is called **motion**. Write the word *motion* on the board. Have each student demonstrate motion of a part of their body while sitting in their seats.	*Students may wave their arms, bob their heads, or wiggle their fingers to demonstrate motion.*
5 Distribute **Activity Sheet 21, Parts A and B,** to each student. Tell students to look at the eight pictures and imagine how each object moves. Explain that they will act out the motion of each object in the pictures.	*Take the class to the designated location outdoors if you have chosen one. If you will be doing the activity in the classroom, tell students to keep noise to a minimum.*

Guiding the Activity

Additional Information

Call out the name of the first object on the activity sheet. Ask, **Can you move at the same speed as this object?** If students say they can, have them pantomime the motion and speed of the object. If students say they cannot move as fast as the object moves, they should remain standing in position.

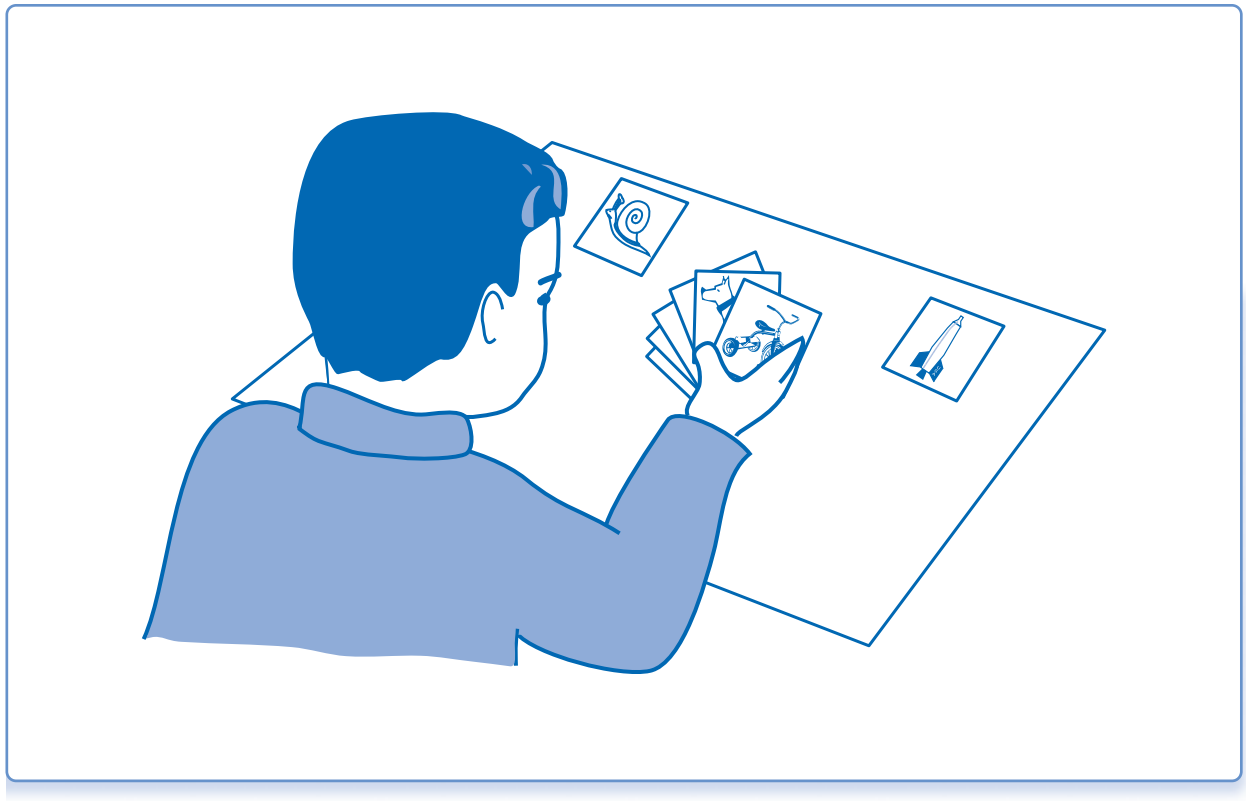
Students should recognize that they cannot move as fast as cars, jet planes, and rockets. They may or may not be able to move as fast as a bicycle, and they can move at least as fast as a tricycle, a snail, a turtle, and perhaps a dog.

6 Have students return to their seats. Distribute a pair of scissors to each student and instruct students to cut out the eight cards on their activity sheets.

Emphasize that students should cut out the rectangular cards, not the pictures themselves.

Tell students to pick out the card that shows the object that moves the slowest and put the card on the left side of the desk. Next, tell students to pick out the card that shows the object that moves the fastest and put the card on the right side of the desk. Finally, have students arrange the remaining six cards from slowest to fastest (see Figure 21-1).

From slowest to fastest: snail, turtle, tricycle, dog, bicycle, car, jet plane, rocket



▲ ***Figure 21-1.*** *A snail moves at the slowest speed, and a rocket moves at the fastest speed.*

Guiding the Activity

7 Ask, **Where do you think you would be in this sequence of things that move?**

Distribute a plastic bag to each student and instruct them to put their cards in the bag.

Additional Information

Students will probably place themselves somewhere in the middle—faster than snails, turtles, and tricycles but slower than bicycles, cars, jet planes, and rockets. They may or may not think they can move faster than a dog.

Reinforcement

Write the names of the objects that students have sequenced on the board from slowest on the left to fastest on the right. Have students think of other objects that can be added to the sequence, and write those names in their appropriate places in the sequence.

Science Journals

Have students place their completed activity sheets in their science journals.

Cleanup

Have students return the scissors to the kit and discard any cut pieces of paper.

Connections

Science Challenge

Have students relate the way an animal moves to its physical characteristics. For example, ask students why a snail moves so slowly. (It has no legs but slides on a layer of slime that it deposits.) A deer moves fast because it has long legs and can leap. A grasshopper has large legs that allow it to jump.

Science Extension

- Have students pantomime some of the ways things move, such as fast, slow, rolling, sliding, hopping, jumping, moving in a circle, and moving in a straight line. Ask students to think of an animal or an object that moves in each of these ways. For example, racing cars move fast, worms move slowly, balls roll, sleds slide on snow, frogs jump, kangaroos hop, a hula hoop moves in a circle, and a train moves in a straight line. Have students think of other ways things move. Students can draw pictures of each way things move and create a Motion scrapbook.

- Have students list and demonstrate some examples of motion that they see every day. They can demonstrate different types of motion, such as the back and forth motion of a pendulum, the downward fall of leaves from trees, and the circular motion of a jump rope. Ask students where they have seen that type of motion in another situation. Have them look for examples of different types of motion at home and as they travel to and from school.

Science and the Arts

If there are any students in the class who are taking dance lessons, have them demonstrate some of the motions. Have ballet students demonstrate ballet positions. The rest of the class can perform these motions when taught by the student dancers.

Science and Math

Students may be interested in using the Internet to find out some world records in athletic events. Many of these records are actually measures of speed, although they are recorded in time for a given distance. Speed is defined as distance divided by time. Since the distance for an event is constant, the records are given in time. As an example, the world record for the 100-meter sprint is 9.78 seconds. This can be converted to a speed of 10.2 meters per second.