# So Fast! So Slow!

## Purpose

Students will explain that objects move at different rates, with some moving very slowly and some moving too quickly for people to see them.

## Materials

*For the teacher:* large box fan
*For each group of 2 students:* copy of Black Line Master (BLM) *So Fast! So Slow!*, research materials on top speeds of objects listed on BLM, graph paper, ruler, pencil

## Activity

### A. Demonstration

1. Place a large box fan in the front of the room, and ask students to gather near the fan. Turn the fan on a low setting.
2. Ask students to count how many blades they see.
3. Turn the fan on the highest setting. Ask: "How many blades do you see now?" Have students explain how they cannot see the blades of the fan.
4. Ask: "Why can you not see the blades of the fan? Are the blades still there? Are they still moving?" Have students explain that the fan's blades are moving so quickly that they cannot be seen.

### B. Class Discussion

1. Tell students: "When I turned the fan to a low setting, the blades moved at a slow speed, and you could see the blades moving. When I turned the fan to a high setting, the blades moved at a high speed, and you could not see the blades."
2. Ask students to define speed. Have students explain that speed is the measure of distance that an object travels in a given amount of time. [speed = distance/time]
3. Ask students to give other examples of objects that move so quickly they cannot be seen [e.g., spokes of a bicycle wheel when the wheel is spinning].
4. Ask: "Do you think there are some objects that move so slowly, you cannot tell they are even moving?" Ask students to give examples.

*(continued)*

### EXTENDING THE ACTIVITY

Have students find information about aircraft that move at mach speeds. Have students explain mach speed and prepare a mini-presentation to give to the rest of the class.

### connecting across the curriculum

**English/ Language Arts**
Have students read about insect facts in *The Amazing Book of Insect Records*, by Samuel Woods.

**Standards Link**
**5.3.11**

## Activity (continued)

### C. Activity

1. Divide students into groups of two, and distribute copies of the BLM *So Fast! So Slow!*, graph paper, and a ruler to each group.
2. Remind students that organisms can be considered objects.
3. Tell students to estimate the speed of each organism on the BLM.
4. Ask: "Which organisms do you think are the quickest? Which are the slowest? Which fall in between the quickest and slowest?" Tell students to list each organism in order from quickest to slowest.
5. Have students in each group discuss and compare their estimations.
6. Direct each group to use the research materials in the room to find out the rate of speed for each organism listed on the BLM.
7. Tell students to use this information to create a bar graph on graph paper, listing each organism on the *x*-axis, and rates of speed on the *y*-axis. Tell students to use the ruler to make straight lines.
8. Remind students to label each axis, and to use an appropriate title.

### D. Post-Activity Discussion

1. Have students in each group discuss their data and ask them to compare their data to their estimations of each organism's top speed.
2. Ask: "How close were you to your estimations?" Have students compare their estimation lists to their bar graphs.

## Questions for Review

### Basic Concepts and Processes

As students complete their research and graphs, ask:

- What does "speed" mean?
- Do objects/organisms move at different rates?
  - How do you know?
- Give me an example of a fast object/organism and a slow object/organism.

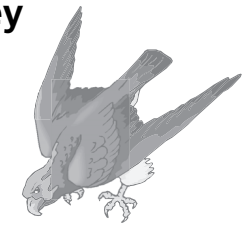
Name: _____

# SO FAST! SO SLOW!

**Estimate the top speed of each object. List the organisms below in order from quickest estimated speed to slowest estimated speed.**

**After class discussion, use the research materials in the room to find the actual top speed of each organism. Use this data to create a bar graph on graph paper.**

| | | | |
|---|---|---|---|
| **Giraffe** | **Snail** | **Chicken** | **Cheetah** |
| **Sloth** | **Peregrine Falcon, plunging after prey** | | |
| **Greyhound** | **Human running 100 meters** | | |



**ESTIMATED ORDER FROM FASTEST TO SLOWEST**

**1.** _____

**2.** _____

**3.** _____

**4.** _____

**5.** _____

**6.** _____

**7.** _____

**8.** _____