

PHYZ SPRINGBOARD: A NEW KIND OF MOTION



1. What distinguishes a moving object from one at rest? ("The moving one is moving and the one at rest isn't," or other such circular answers would be unacceptable here.)

2. The words above form a definition for translational or linear motion. By this definition, does the

qualify as a moving object? Justify your answer.

3. Do you agree with this classification of the object? Why or why not?

4. The motion seen in the object is a new kind of motion. A kind of motion we have not yet studied. In this kind of motion, what about the moving object changes?

5. What are two names we could use to describe this new kind of motion? (Recall we had two names—*translational* and *linear*—for the kind of motion we have studied so far.)

6. a. How far does an object need to turn so that its orientation changes?

b. How many different orientations does an object go through in one complete turn?

c. Which involves passing through a greater number of different orientations: rotating $1/100$ th of a turn or rotating one complete turn?

7. a. For objects in translational motion, we measure changes in position with units such as meters, inches, and light-years. What would be appropriate units for

measuring the changes in _____ that occur in

_____ motion? And how do they relate to each other?

b. Which of these do we prefer for scientific work?

8. How could we distinguish a "fast" object from a "slow" one in this new kind of motion?

9. a. What units of measure would be appropriate for quantifying fastness or slowness of this kind of motion?

b. Which of these do we prefer in scientific work?

10. An old-style phonograph record turns through 936 revolutions in 12 minutes.

a. What is the meaning of $936/12$ in this context?

b. What is the meaning of $12/936$ in this context?