

Chapter 6

Use with Section 3

REINFORCEMENT

● How do things move?

A yo-yo with a mass of 0.25 kg is suspended from a hook on a ceiling. Use the diagram below to answer the questions.

1. Identify which of Newton's laws explains what happens in each of the following steps.

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| a. Earth pulls the yo-yo downward and the yo-yo pulls Earth upward. | |
| b. The yo-yo doesn't move. | |
| c. Someone pushes on the yo-yo in the direction shown by the arrow, and the yo-yo moves. | |
| d. The yo-yo keeps swinging back and forth. | |
| e. The yo-yo slows down and eventually stops. | |
| f. The yo-yo pulls on the hook and the hook pulls on the yo-yo. | |

2. What is the net force acting on the yo-yo in step b? _____
3. In step e, what force causes the yo-yo to slow down and stop? _____
4. If a net force of 0.2 N is applied in step c, use the space below to calculate how fast the yo-yo accelerates.
5. If the same net force is applied to a yo-yo with a mass of 0.5 kg, how will the rate of acceleration be affected? Why? _____

6. If the hook exerts a force of 0.001 N on the ceiling, how much force does the ceiling exert on the hook? _____

