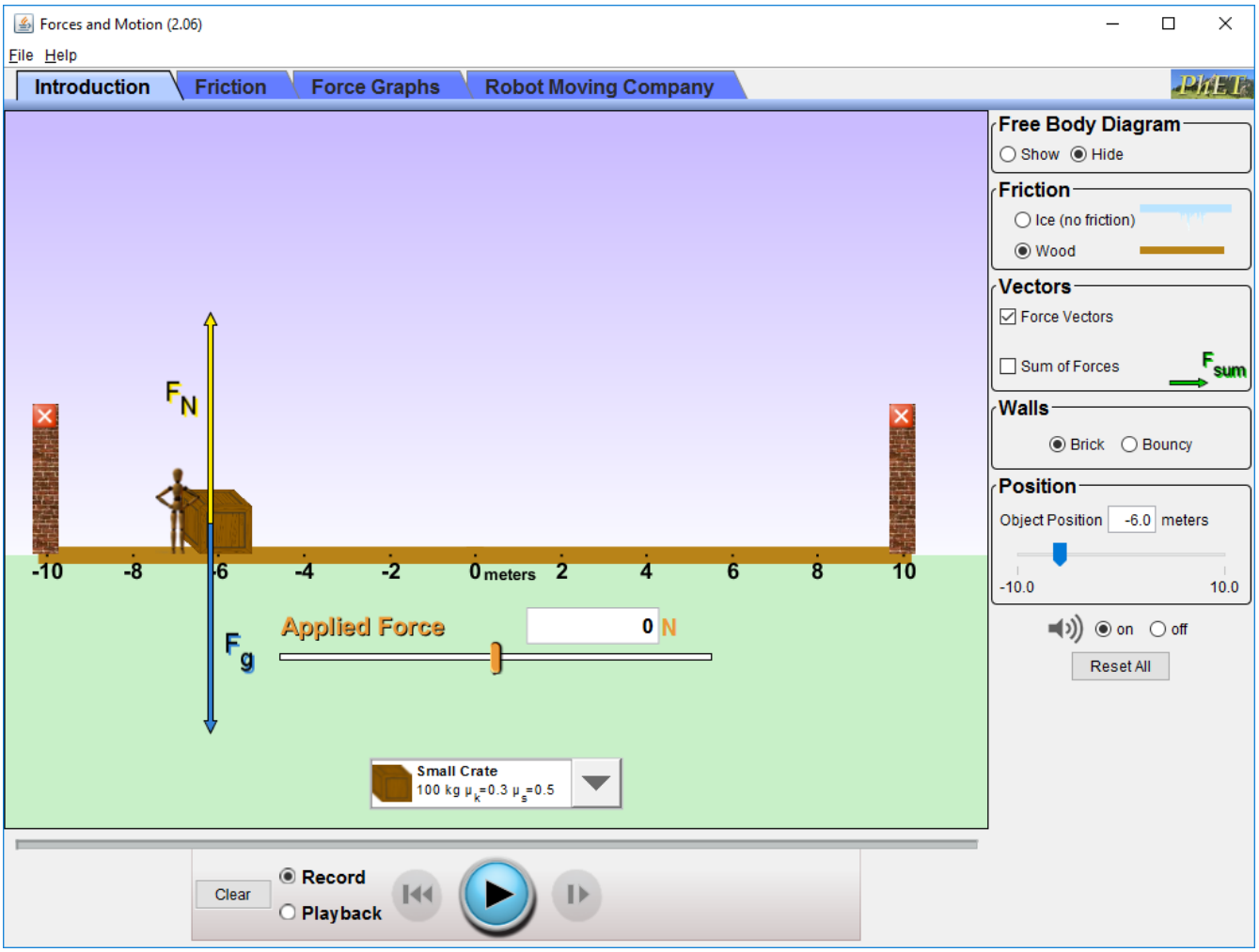
Forces and Motion

Lab 4 Procedure – Provide written answers to all questions in red.

Download and run the Java application "forces-and-motion_en". The starting screen should appear as shown below.

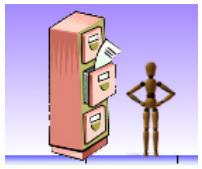


1. From the bottom of the screen, select the file cabinet as the object to move.

You will try and duplicate the following scenario:

Joe has just been promoted and is pushing a file cabinet down the hall to his new office. He begins by looking at the file cabinet and considering how to best go about his task (scene 1). He then begins pushing on the file cabinet, which, at first, does not move at all (scene 2). Eventually the file cabinet begins to slide across the floor, slowly moving towards Joe's new office (scene 3).

a. Draw all the force vectors you think are acting on the file cabinet in each scene.

Scene 1: Man not pushing	Scene 2: Man pushing but file cabinet not moving	Scene 3: Man pushing and file cabinet moving to right
		

Describe the vectors you drew.

b. Why does the file cabinet moves in scene 3 but not in scene 1 or 2?

2. Select the book object. Look at the following scenario.

When Annette finishes her physics homework, she closes her book and shoves it (pushes then releases) (scene 1) to the other end of the table. The book slows down as it crosses the table (scene 2) until it eventually stops (scene 3).

a. Draw the force vectors you think are acting on the book in each scene.

Scene 1: Annette pushing book and book moving (to the right)	Scene 2: Book moving (to right) across table	Scene 3: Book stopped at end of table
		

Describe the vectors you drew.

b. Why do you think the book moves when Annette pushes it (scene 1)?

c. Why do you think the book continues to move when she takes her hand away from the book (scene 2)?

d. Why do you think the book eventually stops moving (scene 3)

3. The next scenarios are not part of the Java simulation. Just use your best thinking to answer the questions.

At the park, Emily is sliding into home plate. Inside the ice rink, Fran fell and is sliding across the ice.

a. Draw a picture of both Emily and Fran sliding (not graded). Include the vector forces acting on both Emily and Fran.

Describe the vectors you drew.

b. Draw the forces you think are acting on Emily and Fran.

Describe the vectors you drew.

c. Describe what will happen to each person over time and explain why.