PRACTICE

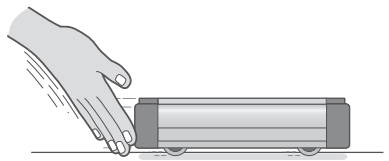
Activity 9: Mechanical Forces and Motion

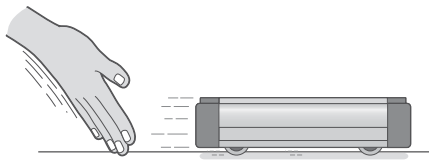
Name Date Class

Part 1

Multiple Choice

1. A low-friction car is given a quick push so that it only stays in contact with the hand for an instant. (Assume that friction and drag are so tiny, they can be ignored.) After contact with the hand, what happens to the motion of the car and why?





a) The car slows down; the forces are balanced.

b) The car slows down; the forces are unbalanced in the direction opposite the motion.

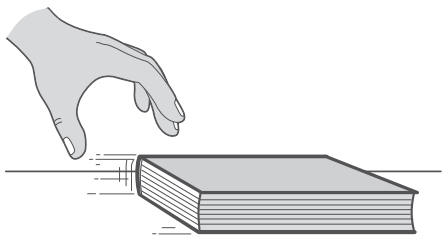
c) The car speeds up; the forces are unbalanced in the direction of motion.

d) The car moves at constant speed; the forces are unbalanced in the direction of motion.

e) The car moves at constant speed; there are no interactions affecting the car's motion.

(Questions 2-3) A friend gives a book a quick shove across the table.

2. After the book is no longer touching his hand, the forces exerted on the book are:



a) the applied force from the hand only.

b) drag only.

c) friction and the applied force from the hand.

d) friction and drag.

e) friction, drag, and the applied force from the hand.

3. After the book leaves the hand, the book:

a) slows down; the forces are balanced.

b) slows down; the forces are unbalanced in the direction of motion.

c) slows down; the forces are unbalanced in the direction opposite the motion.

d) moves at a constant speed; the forces are balanced.

e) moves at a constant speed; the forces are unbalanced in the direction of motion.

4. A dockworker pushes a crate with an applied force that is greater than the friction force. What is the result?

a) The crate speeds up.

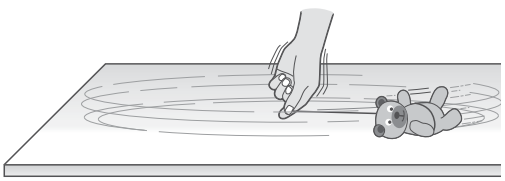
b) The crate slows down.

c) The crate moves at a constant speed.

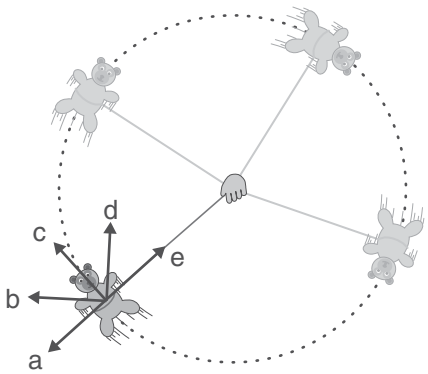
d) The crate speeds up, then moves at a constant speed.

e) The crate's speed does not depend on the forces exerted on it.

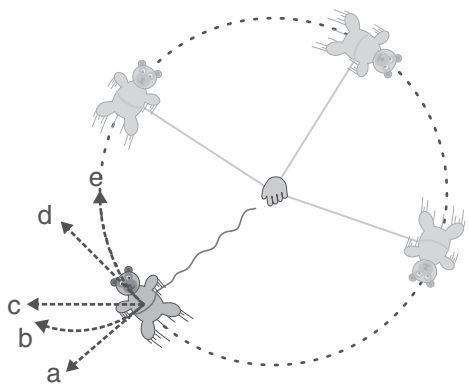
(Questions 5-6) Susan uses a string to whirl a teddy bear around on a table.



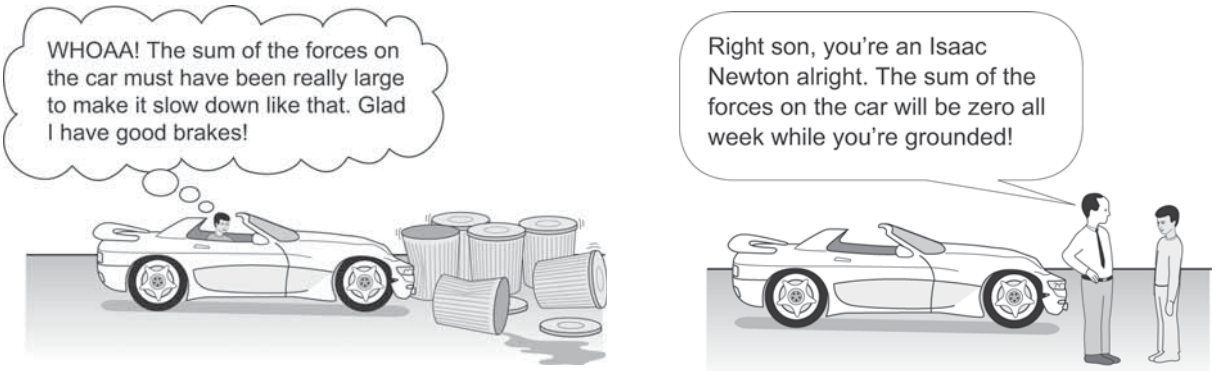
5. Which force arrow (a), (b), (c), (d), or (e) best represents the direction of the force exerted by the string on the teddy bear?



6. Suppose Susan suddenly lets go of the string at the position shown. Which dotted line (a), (b), (c), (d), or (e) would best represent the path of the teddy bear across the table?



Part 2



1. Driving his father's sports car for the first time, Joey accidentally crashes into the garbage cans in the driveway. The car slows down as it crashes into the cans. Which diagram best represents the forces acting on the car while slowing down?