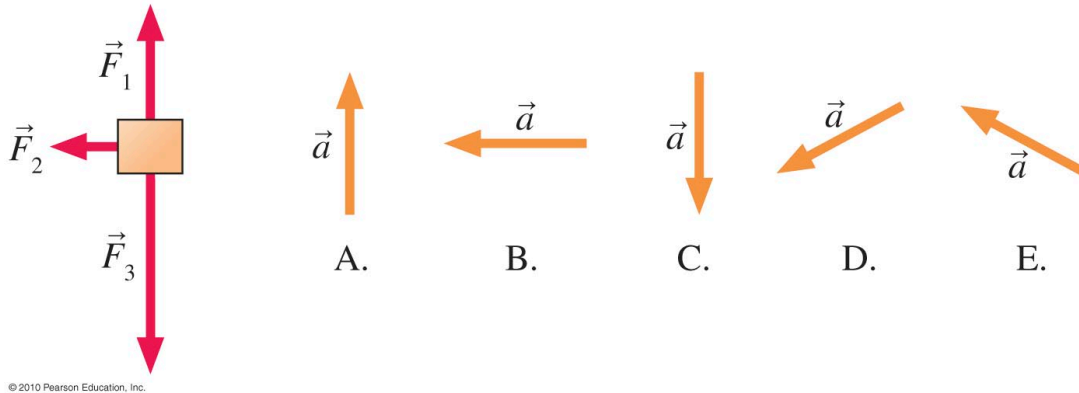


Quiz #4: Forces and Newton's Laws of Motion

Problem 1 (2 points)

Three forces act on an object. In which direction does the object accelerate?



Problem 2 (2 points)

Tennis balls experience a large drag force. A tennis ball is hit so that it goes straight up and then comes back down. The direction of the drag force is

- a) always up.
- b) up and then down.
- c) always down.
- d) down and then up.

Problem 3 (3 points)

A constant force is applied to an object, causing it to accelerate at 20.0 m/s^2 . What will be the acceleration if:

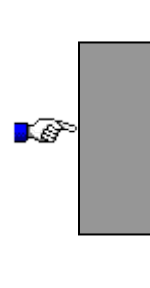
- a) The force is halved?
- b) The force is halved and the object's mass is doubled?
- c) The force and the object's mass are both doubled?

Problem 4 (3 points)

For each situation described below, draw a free-body diagram showing all of the forces acting on the object.

a) A heavy box is in the back of a truck. The truck is accelerating to the right. Apply your analysis to the box. (Air resistance is not negligible.)

b) You hold a picture motionless against a wall by pressing on it.



c) A person on a bridge throws a rock straight downward towards the water. The rock has just been released. Air resistance is negligible.