



A box of mass M is sitting at rest on an incline at an angle of θ as shown above. Which of the following is true:

- 1) Gravity and the normal force from the surface can keep the block stationary.
- 2) An additional force, which must point up along the incline, is needed.
- 3) An additional force, which must point vertically up, is needed.
- 4) An additional force which must point to the right is needed.
- 5) An additional force, which must have a component pointing to the right, is needed.
- 6) An additional force is needed but it can be in any direction provided it is the correct magnitude.
- 7) An additional force, whose magnitude and direction must both be specific values, is needed.

A *person* is initially standing inside a closed box that is resting on a scale. The person *jumps* in the air. Assume that the scale can adjust instantaneously to any change in force applied to it. While the person is in the air inside the box, does the scale:

- 1) Increase its reading from when the person is standing on the floor?
- 2) Decrease its reading from when the person is standing on the floor?
- 3) Give the same reading as when the person is standing on the floor?
- 4) Not enough information given.

A *bird* is initially standing inside a closed box that is resting on a scale. The bird jumps into the air and begins *flying* around the box staying at a constant height. Assume that the scale can adjust instantaneously to any change in applied force. While the bird is in the air inside the box, does the scale:

- 1) Increase its reading from when the bird is standing on the floor?
- 2) Decrease its reading from when the bird is standing on the floor?
- 3) Give the same reading as when the bird is standing on the floor?
- 4) Not enough information given.