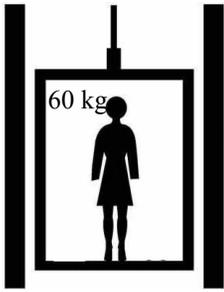


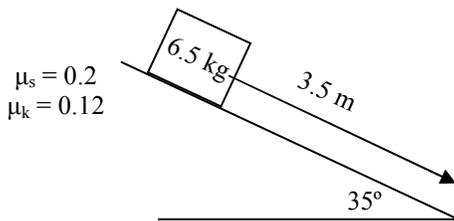
# PreAP Forces 11



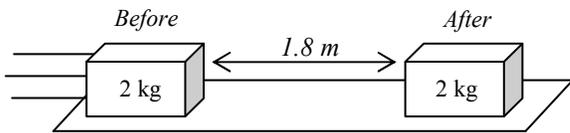
See "Normal Force" notes if you need help.

1. A 60 kg lady is on an elevator and experiences a normal force of 820 N.
  - A. \* What is the acceleration of the elevator?
  - B. If the elevator is moving down, is it stopping or starting?
  - C. If the lady were standing on a bathroom scale, what would it read?

2. Which of the following MUST point in the same direction: mass; net force; velocity; time; force; distance; acceleration.



3.
  - A. If the angle decreases, the force down the ramp:
  - B. If the angle increases the normal force:
  - C. \* Calculate the object's acceleration.
  - D. \* If the object is 3.5 m up the ramp and starts at rest, how fast is it going at the bottom of the ramp? You do have enough information.



4. A 2 kg box slides to a stop in 0.65 seconds.
  - A. \* Calculate the acceleration of the object. (Since you don't have force, use a different equation with acceleration in it.)

B. Calculate the force of friction and the coefficient of friction ( $\mu$ ).

5. What force provides the centripetal acceleration for the following situations? These are normal forces we already know.
  - A. A car turning a corner.
  - B. The earth moving around the sun.
  - C. A ball being spun around on a string.
  - D. A roller coaster at the bottom of the track.

6. Slim Jim and his go-cart are 280 kg. He is moving 12 m/s as it moves around a circular track that has a radius of 35 m.
  - A. Which way does the centripetal acceleration point?
  - B. What force provides the centripetal force that keeps the cart moving in the circle?
  - C. \* Calculate the centripetal acceleration of the cart.



D. Calculate the force keeping the cart in the circle.

E. Describe the path of the car after it hits a patch of ice.

- 1A)  $3.7 \text{ m/s}^2$
- 3C)  $4.75 \text{ m/s}^2$
- 3D)  $5.77 \text{ m/s}$  use a kinematic equation
- 4A)  $-0.85 \text{ m/s}^2$
- 7C)  $4.1 \text{ m/s}^2$