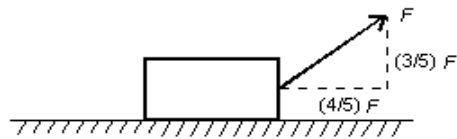


- 1) Three ropes are knotted together and are all pulled in three different directions. The knot remain despite the tug on each rope, if the angle between two ropes is 120 degrees and the magnitude of force applied to one of those ropes is 80 N while the other is 110 N. What is the magnitude of the force on the third rope?
- 2) A 1 N ball is suspended from a ceiling by a string. A 2 N horizontal force on the ball causes it to be suspended by an angle from the vertical. What is the magnitude of the tension in the string?
- 3) Imagine tossing a ball straight up in the air with a weight of 3.0 N, at the balls highest point what is the net force on the ball?
- 4) Imagine tossing a ball at an angle 60 degrees above the horizontal with a weight of 3.0 N with an initial speed of 20 m/s, at the balls highest point what is the net force on the ball.

- 5) A 400-N block is dragged along a horizontal surface by an applied force \vec{F} as shown. The coefficient of kinetic friction is $\mu_k = 0.4$ and the block moves at constant velocity. The magnitude of \vec{F} is:

- A) 100 N
- B) 150 N
- C) 200 N
- D) 290 N
- E) 400 N



- 6) While making your way to campus you witness a group of students pushing a 6,000 N car along a flat road with a force of about 300 N. Assuming the friction is negligible what is the acceleration of the car?
- 7) Imagine, for whatever reason, you are standing on a scale in an elevator. When would the scale display the greatest weight?
 - a. If you aren't moving at all
 - b. The elevator moves up while slowing down
 - c. Moves up at a constant speed
 - d. Moves down while decreasing speed
 - e. Moves down while increasing speed
- 8) A crazy physics professor stands in front a class holding a block of wood that has a ball suspended by a string. The professor drops the block and shouts, "what is the tension in the string!?"
- 9) Explain why a falling object on earth eventually falls with a constant speed, take for instance a devastating ball of hail.