1. Calculate the final velocity for an object that accelerates at 12.7 m/s^2 [E40°N] for 21 seconds. The initial velocity was 56 m/s [W35°S].

2. Calculate the unknown vector in the diagram to the right. The diagram is not to scale.

3. A projectile is fired with an initial velocity of 153 m/s at an angle of 72° above the horizontal. Calculate the
   a. Maximum height reached by the projectile.
   b. Range of the projectile
   c. The velocity of the projectile 3.2 s after being fired.
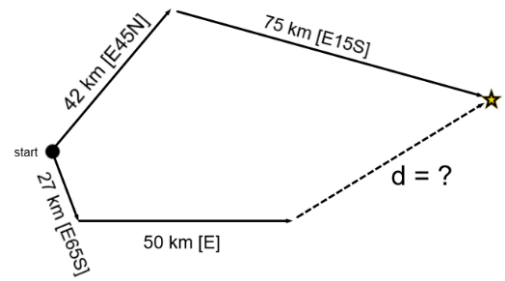
4. A pool ball traveling to the right strikes another, stationary ball. Each ball has the same mass. Use the information given in the diagram to calculate the velocity of pool ball #2.
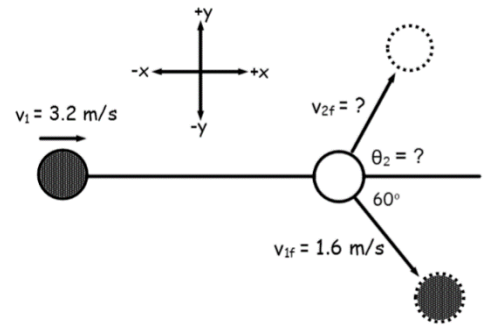
5. A 33 kg block is sliding down a 35° incline. The coefficient of kinetic friction is 0.13. Calculate the applied force up the ramp necessary so the block accelerates with a magnitude of 0.75 m/s^2 down the ramp.

6. If the cable will break under a tension of 7500 N, what is the smallest angle that can be made without breaking the cable? The beam is 220 kg and 18.0 m long. The sign is 12.0 m from the left end of the beam with a mass of 60 kg.
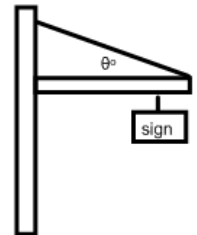
7. A bridge spans 460 m and has a mass of 9500 kg. Using the information in the diagram below, calculate the upward force supplied by each column.