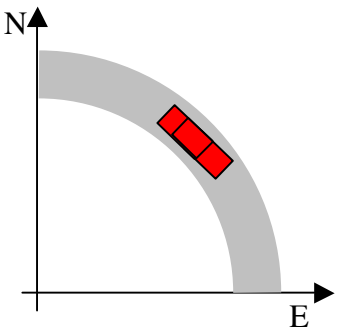
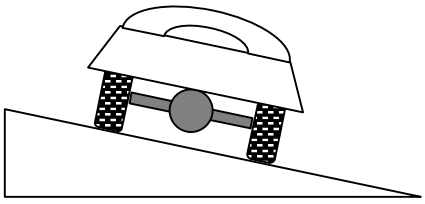
1. (a)Go on-line to find the radius and time of orbit for the International Space Station. The orbit isn't circular, so just use an average value. Be careful to find the radius of orbit not the altitude. If you get the altitude, you can find the radius by adding the radius of Earth. (b)Find the acceleration due to the gravitational force exerted on the ISS by Earth. (c)Compare this result to the gravitational acceleration on Earth. (d)Explain why astronauts on the ISS feel "weightless" despite the surprisingly large answer to part (b).

2. A 700kg car whose speed is increasing at a uniform rate of 0.600m/s^2 travels along a curved road that forms a circle of radius 20.0m. When the car is northeast of the center of the circle, it has an instantaneous speed of 4.00m/s. Find (a)the tangential component of the acceleration and (b)the radial component of the acceleration and (c)the magnitude of the total force the road exerts on the car.



3. A car rounds a curve of radius 25.0m that is banked at 20.0°. The coefficient of static friction between the road and the car is 0.520. Find the maximum velocity that a car can have and make this turn.



4. Suppose the car tries to make the same turn on an icy day when the coefficient of static friction has dropped to 0.250. Find (a)the maximum allowed speed to make the turn and (b)the minimum speed needed to make the turn.