TPHYS 121 Workshop Week 6

Module 3 Problems

Exercise 7.2

A weightlifter stands up at constant speed from a squatting position while holding a heavy barbell across his shoulders.

a Draw an interaction diagram

b Identify the "system" on your interaction diagram.

c Draw a free-body diagram for each object in the system. Use dashed lines to connect members of an action/reaction pair.

Exercise 8.23

While at the county fair, you decide to ride the Ferris wheel. Having eaten too many candy apples and elephant ears, you find the motion somewhat unpleasant. To take your mind off your stomach, you wonder about the motion of the ride. You estimate the radius of the big wheel to be $15m$, and you use your watch to find that each loop around takes $25s$.

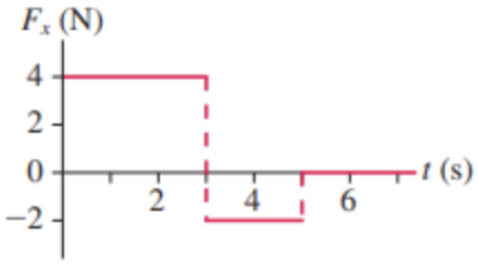
a What are your speed and the magnitude of your acceleration?

b What is the ratio of your weight at the top of the ride to your weight while standing on the ground?

c What is the ratio of your weight at the bottom of the ride to your weight while standing on the ground?

Exercise 6.11

The figure bellow shows the force acting on a $2.0kg$ object as it moves along the x-axis. The object is at rest at the origin at $t = 0s$. What is the acceleration and velocity at $t = 6s$?.



Additional Resources

- Flipping Physics on youtube: `https://www.youtube.com/user/flippingphysics`