## 2.5 Potential Energy

1. Calculate the potential energy that a 55.0 kg diver has standing on a 10.0 m platform.

2. Determine the mass of a water balloon that is dropped from a height of 35 m with a potential energy of 515 J.

3. A 1.00 x  $10^4$  kg airplane lands, descending a vertical distance of 10.0 km while travelling 100.0 km measured along the ground. What is the plane's loss of potential energy?

4. A coconut falls out of a tree 12.0 m above the ground and hits a bystander 3.00 m tall on the top of the head. If the mass of the coconut is 2.00 kg, calculate the potential energy of the coconut relative to the ground at each of the following sites:(a) while it is still in the tree

(b) when it hits the bystander on the head

(c) when it lands on the ground

5. Calculate the potential energy of a 5.00 kg object sitting on a 3.00 metre high ledge.

6. A 10.0 kg rock is at the top of a 20.0 m tall hill. How much potential energy does it have?

## 2.6 Kinetic Energy

1. Calculate the kinetic energy of a 0.45-kilogram golf ball travelling at: a) 20.0 m/s

b) 40.0 m/s

c) 60.0 m/s.

- 2. A 50.0 kg bicyclist on a 10.0 kg bicycle speeds up from 5.00 m/s to 10.0 m/s.a. What was the total kinetic energy before accelerating?
  - b. What was the total kinetic energy after accelerating?
- 3. A 4.00 kg rock is rolling 10.0 m/s. Find it's kinetic energy.

4. An 8.0 kg cat is running 4.0 m/s. How much kinetic energy does it have?