The following Worksheet package is Review from Physics 11. As always show all work, including diagrams, knowns, and equations.

Worksheet 4.1a – Work $W = Fd$

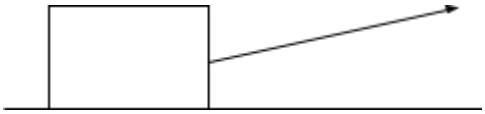
1. A 20.0 N pomegranate is lifted at a constant velocity from the floor to a height of 1.50 m. How much work is done on the object?

2. A 15.0 N potato is moved horizontally 3.00 m across a level floor using a horizontal force of 6.00 N. How much work is done on the potato?

3. A 2.20 N pear is held 2.20 m above the floor for 10.0 s. How much work is done on the pear?

4. A 10.0 kg pink grapefruit is accelerated horizontally from rest to a velocity of 11.0 m/s in 5.00 s by a horizontal force. How much work is done on the pink grapefruit assuming no friction?

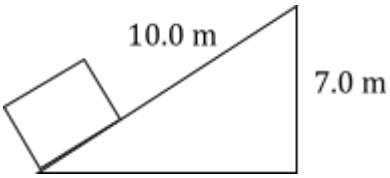
5. A 90.0 N box of papayas is pulled 10.0 m along a level surface by a rope. If the rope makes an angle of 20^{o} with the surface, and the force in the rope is 75.0 N, how much work is done on the box?



6. A 60.0 kg student runs at a constant velocity up a flight of stairs. If the height of the stairs is 3.2 m, what is the work done against gravity?

7. A 20.0 kg passionfruit is pulled horizontally 9.0 m along a level frictionless surface at a constant velocity. How much work is done on the passionfruit?

8. An 80.0 kg pumpkin is pushed up at a constant velocity along a frictionless incline as shown in the diagram. How much work is done on the pumpkin in moving it up the incline?



9. A 25.0 kg pickle is accelerated from rest through a distance of 6.0 m in 4.0 s across a level floor. If the friction force between the pickle and the floor is 3.8 N, what is the work done to move the object?

10. A 1165 kg car traveling at 55 km/h is brought to a stop while skidding 38 m. Calculate the work done on the car by the friction forces.

1) 30.0 J 2) 18.0 J 3) 0 J 4) 605 J 5) 705 J 6) 1900 J 7) 0 J 8) 5500 J 9) 140 J 10) -1.4×10^{5} J

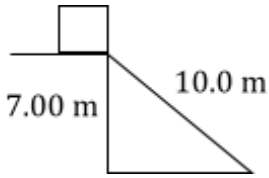
Worksheet 4.1a – Ep and Ek

$Ep = mgh \qquad Ek = \frac{1}{2}mv^2$

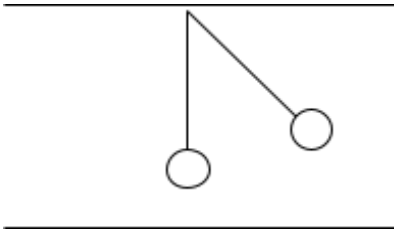
1. A 25.0 N object is held 2.10 m above the ground. What is the potential energy with respect to the ground?

2. An uncompressed spring is 20.0 cm in length. What is the potential energy of the spring when an average force of 65.0 N compresses it to a length of 13.5 cm?

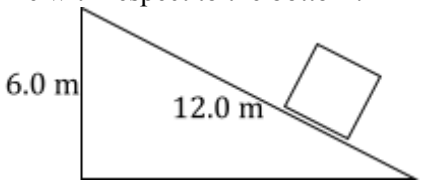
3. A 2.75 kg box is at the top of a frictionless incline as shown in the diagram. What is the potential energy with respect to the bottom of the incline?



4. The bob of a pendulum has a mass of 2.0 kg and hangs 0.50 m above the floor. The bob is pulled sideways so that it is 0.75 m above the floor. What is its potential energy with respect to its equilibrium position?



5. A 2.00 $x10^3$ kg object is pushed to the top of an incline as shown. If the force applied along the incline is 6.00 x 10^2 N, what is the potential energy of the object when it is at the top of the incline with respect to the bottom?



6. A 3.0 kg ewok is traveling at a constant speed of 7.5 m/s. What is its kinetic energy?

7. The kinetic energy of a 20.0 N droid is 5.00 x 10^2 J. What is the speed of the droid?

8. A 10.0 N lightsaber is accelerated from rest at a rate of 2.5 m/s^2. What is the kinetic energy of the lightsaber after it has accelerated over a distance of 15.0 m.

9. A 1200.0 N Wookie falls off a cliff on Earth. What is its kinetic energy after it falls for 4.50 s?

10. An 8.0 kg bantha poodoo is dropped from a height of 7.0 m. What is the kinetic energy of the poodoo just before it hits the ground?

11. A 9.00 kg object falls off of a 1.2 m high table. If all of the objects potential energy is converted into kinetic energy just before it hits the floor, how fast is it moving?

12. Solve #11 using kinematics this time. Is there any difference?

13. A 50.0 g golf ball is thrown upward with an initial velocity of 12 m/s. Assume the initial potential energy is zero, find the potential energy, kinetic energy and total energy of the system at each of the follow:
    a. the initial position
    b. at a point 2.75 m above the initial position
    c. the maximum height the ball reaches

• 52.5 J 2) 4.2 J 3) 189 J 4) 4.9 J 5) 120000 J 6) 84 J 7) 22.1 m/s 8) 38 J 9) $1.2x10^5$ J 10) 550 J 11) 4.85 m/s 12) 4.85 m/s 13) a. Ep = 0; Ek = 3.6 J, Et = 3.6 J b. Ep = 1.3 J, Ek = 2.3 J, Et = 3.6J c. Ep = 3.6 J, Ek 0 J, Et = 3.6 J