

127

Simple Machines and More

- 1) A person uses a 25 N force to raise an object with a pulley. They pull the rope 10 m. What was the work input?

- 2) A 50 kg object is raised 25 m. What is the work output?

- 3) A person pushes a 75 N box 4 m up a ramp. The person uses a force of 35 N. The box is raised 1.5 m off the ground.
 - a) What is the IMA?

 - b) What is the MA?

- 4) A 1350 N engine is raised 1.9 m by a pulley system. The rope is pulled 20 m by a person who supplies a force of 170 N. What is the efficiency?

5) A 2 kg ball is dropped from a height. It hits the ground with a speed of 25 m/s.

a) What is the kinetic energy of the ball when it hits the ground?

b) What is the potential energy of the ball as it hits the ground?

c) What is the total energy of the ball?

6) At some point during its fall, the ball in problem 5 is moving at a speed of 10 m/s. At that point, a) what is the kinetic energy of the ball?

b) At that point, what is its potential energy?

7) Before the ball in question 5 & 6 was dropped,

a) what was its kinetic energy?

b) Before it was dropped, what was its potential energy?

c) Before the ball was dropped, what was its height above the ground?

5a) 625 J b) 0 J c) 625 J 6a) 100 J b) 525 J 7a) 0 J b) 625 J c) 31.9 m