1) A 45.0 kg student runs at a constant velocity up the incline shown. If the power output of the student is 1.50 x 103 W, how long does it take the student to run the 9.0 m along the incline?

**Power and Efficiency Worksheet**

9.0 m

6.0 m

2) A 20.0 kg object is lifted vertically at a constant velocity 2.50 m in 2.00 s. Calculate the power output of the student.

3) A 2.00 kg object is accelerated uniformly from rest to 3.00 m/s while moving 1.5 m across a level frictionless surface. Calculate the power output.

4) An 8.5 x 102 kg elevator is pulled up at a constant velocity of 1.00 m/s by a 10.0 kW motor. Calculate the efficiency of the motor.

5) A 5.0 kg object is accelerated uniformly from rest to 6.0 m/s while moving 2.0 m across a level surface. If the force of friction is 4.0 N, calculate the power output.

6) A 5.00 x 102 W electric motor lifts a 20.0 kg object 5.00 m in 3.50 s. What is the efficiency of the motor?

1) 1.8 s 2) 245 W 3) 9.0 W 4) 83% 5) 1.5 x 102 W 6) 56% 7) 0.048 s

7) If a 1.00 x 102 kW motor has an efficiency of 82%, how long will it take to lift a 50.0 kg object to a height of 8.00 m?