

Name: _____

Class Period: _____

Honors Physics: Work - Homework

Conceptual Questions

1. Consider, in what ways is the word 'work' as used in everyday language the same as the physics definition of work? In what ways is it different?

2. A soccer player is coming in to kick the ball. 1) He brings his leg back, 2) his foot comes in contact with the ball, and 3) the ball flies through the air. During which part or parts (1, 2, 3) does the soccer player do work on the ball? Explain your answer.

Mathematical Questions

3. A worker pushes a crate with a mass of 153 kg with a horizontal force of 345 N through a distance of 24.0 m. Assume a coefficient of kinetic friction of 0.220 exists between the floor and the crate.
Going through the forces acting on the crate one at a time, calculate the net or total work done on the crate.

*See back for final questions

4. A person lifts a 4.50 kg cement block with a constant velocity a distance of 1.20 m off the ground.
- A. What is the work done by the person's upward force?
 - B. What is the work done by gravity?
- This person then carries the cement block horizontally 7.30 m. *Consider the angle between the force and movement.
- C. What is the work done by the person's upward force?
 - D. What is the work done by gravity?

5. **Bonus:** A 280.0 kg piano slides 4.30 m down a 30.0° incline. The piano is moving at a constant velocity (kept from accelerating by a man pushing back on the piano with his force directed parallel to the incline). The coefficient of kinetic friction is 0.400

Equilibrium or Non-Equilibrium ΣF_x : _____

Equilibrium or Non-Equilibrium ΣF_y : _____

- A. Draw the FBD and the 'adjusted' FBD
- B. Calculate the components of F_g and write a statement for ΣF_x and ΣF_y
- C. Calculate the normal force
- D. Calculate the force exerted by the man.
- E. What is the work done by the force from the man?