Name _____ Date _____

Physics Energy WS #6

Period _____ Mrs. Nadworny

A

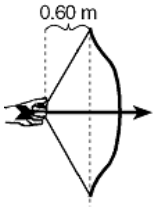
Work Energy Theorem

Directions: Read online textbook pages 181 – 186. Solve the following problems using the GUESS method and proper significant figures. Be sure to show ALL work.

1. A force is applied to a block, causing it to accelerate along a horizontal, frictionless surface. The energy gained by the block is equal to the

   (A) power applied to the block
   (B) work done on the block
   (C) impulse applied to the block
   (D) momentum given to the block

2. In the diagram below, an average force of 20. newtons is used to pull back the string of a bow 0.60 meter. As the arrow leaves the bow, its kinetic energy is



   (A) 3.4 J (B) 6.0 J (C) 12 J (D) 33 J

3. A block is pushed across a smooth table top so that it is traveling with 145 joules of kinetic energy. It encounters a rough patch where friction does 73 joules of work on the block. Calculate the kinetic energy of block after traveling over the rough patch.

4. A 0.15 kilogram acorn falls 3.65 meters from a tree. It possesses 5.05 joules of kinetic energy just before striking the ground. Calculate the amount of work done by air resistance as the acorn fell.

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5. A 65 kilogram child running at 4.8 meters per second jumps onto a stationary 9.5 kilogram sled. The sled is initially on a level, frictionless surface.
    a. Calculate the speed of the child after she jumps onto the sled.

    b. Calculate the kinetic energy of the sled with the child after she jumps on the sled.

    c. After a short time, the moving sled with the child aboard reaches a rough level surface that exerts a constant frictional force of 71 newtons on the sled. How much work must be done by friction to bring the sled with the child to a stop?

6. A 26 kilogram child slides 5.1 meters down a slide, from a height of 3.2 meters, in 1.8 seconds. She gains 790 joules of kinetic energy while sliding.
    a. Calculate the amount of gravitational potential energy she had at the top of the slide.

    b. Calculate the amount of work done by friction as she slid down.

Answers in size order: 0.32, 4.2, 30, 72, 660, 660, 820