

CHAPTER

10

Physics Test Prep

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

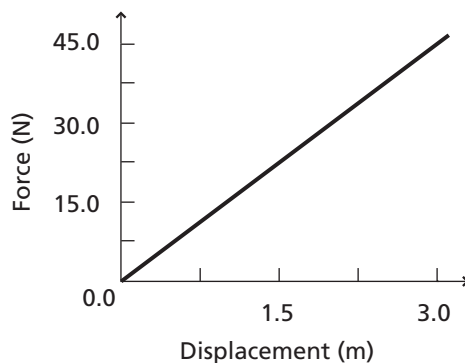
1. A child holds onto a string attached to a toy boat and exerts a force of 8.0 N to pull the boat a distance of 7.2 m along a straight shoreline. If the child holds the string at a 15.0° angle with the horizontal, how much work does she do on the toy boat?

A 14 J
B 56 J
C 58 J
D 71 J

Objective: 5.04

Thinking Skill: Applying

Use the graph to answer problems 2 and 3.



2. The graph shows the force and displacement of an object that is being pushed. How much work is done to push the object 3.0 m?

A 140 J
B 68 J
C 15 J
D 7.5 J

Objective: 5.04

Thinking Skill: Applying

3. How much power would be developed if the work were done in 2.5 s?

A 3.0 W
B 6.0 W
C 27 W
D 54 W

Objective: 5.04

Thinking Skill: Applying

4. The weight of a bicyclist and a bicycle together is 53.0 kg. How much work has been done if the bicyclist slows the bicycle from a speed of 3.84 m/s to 1.27 m/s?

A -68.1 J
B -136 J
C -348 J
D -696 J

Objective: 5.04

Thinking Skill: Applying

5. A bicycle has a front gear that is turned by a pedal and is connected by a chain to a rear gear, which turns the rear wheel. If the pedal radius is 18.0 cm, the front gear radius is 9.0 cm, the rear gear radius is 4.0 cm, and the rear wheel radius is 33.0 cm, what is the ideal mechanical advantage, *IMA*, of the bicycle?

A 0.24
B 0.48
C 0.55
D 0.82

Objective: 5.04

Thinking Skill: Applying

10 **Physics Test Prep***continued*

- 6.** A boy lifts a stack of six identical books from the floor to a 1.2-m-high shelf in 2.5 s. If lifting the books requires 50.8 W of power, what is the mass of each book?

A 0.88 kg
B 1.1 kg
C 1.8 kg
D 2.9 kg

Objective: 5.02

Thinking Skill: Analyzing

- 7.** A worker uses a pulley system to lift a 21.7-kg box a distance of 12.4 m above the ground. The worker must exert a force of 97 N and pull 28.5 m of rope. What is the efficiency of the system?

A 44 percent
B 46 percent
C 95 percent
D 97 percent

Objective: 5.04

Thinking Skill: Remembering

- 8.** When a person walks, the hip acts as a _____ and moves through the arc of a circle, centered on the foot.

A lever
B piston
C pulley
D fulcrum

Objective: 5.04

Thinking Skill: Applying

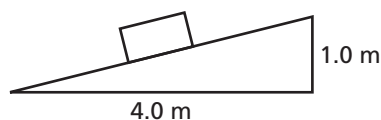
- 9.** Tall people can usually walk faster than short people. A taller person must apply _____ force to move the longer _____ that are their leg bones.

A less; levers
B greater, levers
C less; pistons
D greater, pistons

Objective: 5.04

Thinking Skill: Applying

- 10.** The diagram below shows a box that is being pushed up a ramp. A force of 58 N is required to push the box up the ramp. If the ramp has an efficiency of 78 percent, what is the mass of the box?



A 18 kg
B 19 kg
C 20 kg
D 21 kg

Objective: 5.04

Thinking Skill: Applying