Standardized Test Prep

MULTIPLE CHOICE

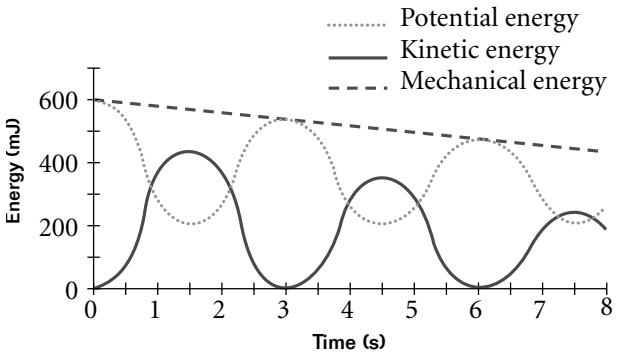
1. In which of the following situations is work *not* being done?

A. A chair is lifted vertically with respect to the floor.
B. A bookcase is slid across carpeting.
C. A table is dropped onto the ground.
D. A stack of books is carried at waist level across a room.

2. Which of the following equations correctly describes the relation between power, work, and time?

F. $W = \frac{P}{t}$
G. $W = \frac{t}{P}$
H. $P = \frac{W}{t}$
J. $P = \frac{t}{W}$

Use the graph below to answer questions 3–5. The graph shows the energy of a 75 g yo-yo at different times as the yo-yo moves up and down on its string.



3. By what amount does the mechanical energy of the yo-yo change after 6.0 s?

A. 500 mJ
B. 0 mJ
C. −100 mJ
D. −600 mJ

4. What is the speed of the yo-yo after 4.5 s?

F. 3.1 m/s
G. 2.3 m/s
H. 3.6 m/s
J. 1.6 m/s

5. What is the maximum height of the yo-yo?

A. 0.27 m
B. 0.54 m
C. 0.75 m
D. 0.82 m

6. A car with mass m requires 5.0 kJ of work to move from rest to a final speed v. If this same amount of work is performed during the same amount of time on a car with a mass of $2m$, what is the final speed of the second car?

F. $2v$
G. $\sqrt{2}v$
H. $\frac{v}{2}$
J. $\frac{v}{\sqrt{2}}$

Use the passage below to answer questions 7–8.

A 70.0 kg base runner moving at a speed of 4.0 m/s begins his slide into second base. The coefficient of friction between his clothes and Earth is 0.70. His slide lowers his speed to zero just as he reaches the base.

7. How much mechanical energy is lost because of friction acting on the runner?

A. 1100 J
B. 560 J
C. 140 J
D. 0 J

8. How far does the runner slide?

F. 0.29 m
G. 0.57 m
H. 0.86 m
J. 1.2 m