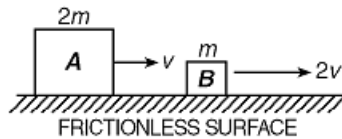


Energy

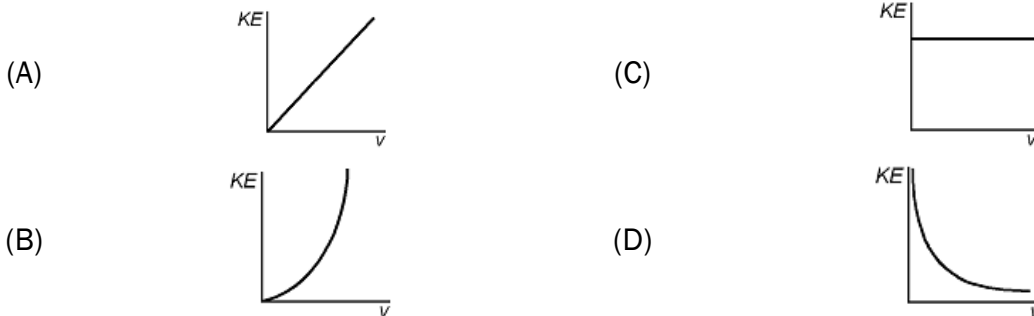
Directions: Read online textbook pages 172 – 179. Solve the following problems using the GUESS method and proper significant figures. Be sure to show ALL work.

- As the speed of a bicycle moving along a level horizontal surface changes from 2 meters per second to 4 meters per second, the magnitude of the bicycle's gravitational potential energy
 (A) decreases (B) increases (C) remains the same
- If the speed of a car is doubled, the kinetic energy of the car is
 (A) quartered (B) quadrupled (C) doubled (D) halved
- The diagram below shows block A, having mass $2m$ and speed v , and block B, having mass m and speed $2v$.

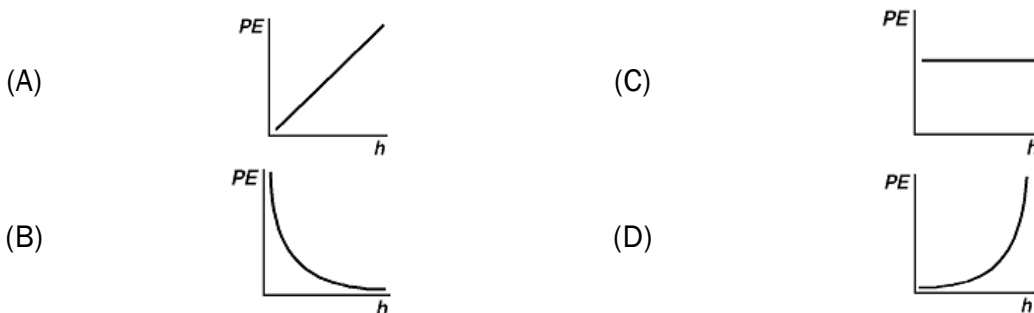


Compared to the kinetic energy of block A, the kinetic energy of block B is

- (A) four times as great (B) the same (C) one-half as great (D) twice as great
- Which graph best represents the kinetic energy of an object as a function of its speed?



- Which graph best represents the gravitational potential energy of an object as a function of its height?



6. A 60.0 kilogram runner has 2170 joules of kinetic energy. Calculate the speed of the runner.
7. Carole Singers, whose mass is 74.1 kg, is standing on a hill at a point that is 2.50 meters from level ground. If she walks to a point that is 13.6 meters above level ground, what is her change in potential energy?
8. It takes a force of 24.7 N to hold a spring stretch a distance of 41.9 cm. What is the elastic potential energy of the spring in this position? [Hint: Watch your units!]
9. A person who weighs 645 newtons rides an elevator upward at a constant speed of 3.0 meters per second for 5.0 second. Calculate the change in the person's gravitational potential energy.
10. A 0.250 kg mass is attached to a spring which has a spring constant of 35 N/m, as shown. It is pulled down and released so that it bobs up and down. Position A is the mass' highest point. Position C is the mass' lowest point. Position B is the mass' equilibrium position.



- Where does the mass have the most gravitational potential energy?
- Where does the spring have the most elastic potential energy?
- Where is the mass traveling the fastest?
- Where does the mass have the most kinetic energy?

Answers in size order: 5.17, 8.50, 8070, 9700, 6×10^5 , 6.3×10^5