1. The table below lists the mass and speed of each of four objects.

Data Table

Objects	Mass (kg)	Speed (m/s)
A	1.0	4.0
B	2.0	2.0
C	0.5	4.0
D	4.0	1.0

Which two objects have the same kinetic energy?

(1) *A* and *D* (3) *A* and *C*

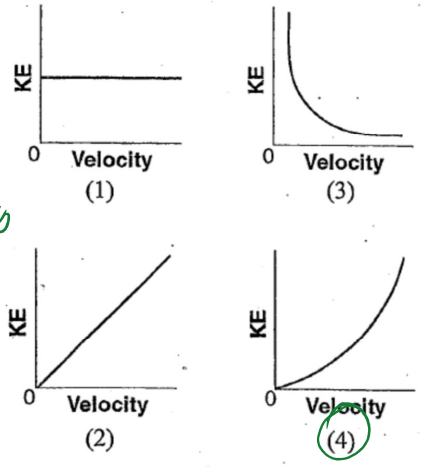
(2) *B* and *D* (4) *B* and *C*

2. If the speed of a car is doubled, the kinetic energy of the car is

(1) quadrupled (3) doubled

(2) quartered (4) halved

3. Which graph best represents the relationship between the kinetic energy, *KE*, and the velocity of an object accelerating in a straight line?



4. A 1.0-kilogram rubber ball traveling east at 4.0 meters per second hits a wall and bounces back toward the west at 2.0 meters per second. Compared to the kinetic energy of the ball before it hits the wall, the kinetic energy of the ball after it bounces off the wall is

(1) one-fourth as great (3) the same

(2) one-half as great (4) four times as great

5. A cart of mass *m* traveling at speed *v* has kinetic energy KE. If the mass of the cart is doubled and its speed is halved, the kinetic energy of the cart will be

(1) half as great (3) one-fourth as great

(2) twice as great (4) four times as great

6. If the direction of a moving car changes and its speed remains constant, which quantity must remain the same?

(1) velocity (3) displacement

(2) momentum (4) kinetic energy

7. Two students of equal weight go from the first floor to the second floor. The first student uses an elevator and the second student walks up a flight of stairs. Compared to the gravitational potential energy gained by the first student, the gravitational potential energy gained by the second student is

(1) less (3) the same

(2) greater

8. A girl rides an escalator that moves her upward at constant speed. As the girl rises, how do her gravitational potential energy and kinetic energy change?

(1) Gravitational potential energy decreases and kinetic energy decreases.

(2) Gravitational potential energy decreases and kinetic energy remains the same.

(3) Gravitational potential energy increases and kinetic energy decreases.

(4) Gravitational potential energy increases and kinetic energy remains the same.