Student Name: **Grade:** 11

Test Name: Conceptual Physics In Class Practice Unit I, II, III, IV, IV

1. A 15-kilogram mass weighs 60. newtons on planet *X*. The mass is allowed to fall freely from rest near the surface of the planet.

   What is the acceleration of the mass after falling for 6.0 seconds?

   (a) $0.25\ m/s^2$

   (b) $10.\ m/s^2$

   (c) $24\ m/s^2$

   (d) $4.0\ m/s^2$

2. The work done in rubbing your hands together is equivalent to the amount of heat produced. This demonstrates

   (a) inertia.

   (b) kinetic energy.

   (c) conservation of energy.

   (d) momentum.

   (e) none of these

3. The kinetic energy of a 980-kilogram race car traveling at 90. meters per second is approximately

   (a) $4.4 \times 10^4\ J$

   (b) $8.8 \times 10^4\ J$

   (c) $4.0 \times 10^6\ J$

   (d) $7.9 \times 10^6\ J$

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

(a) quadrupled.
(b) quartered.
(c) doubled.
(d) halved.

5. A student throws a stone upward at an angle of 45°.

Which statement best describes the stone at the highest point that it reaches?

(a) Its acceleration is zero.
(b) Its acceleration is at a maximum.
(c) Its potential energy is at a minimum.
(d) Its kinetic energy is at a minimum.

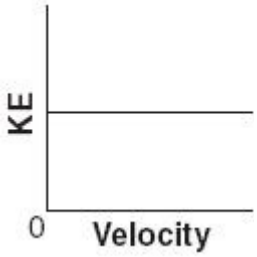
6. An object moving at a constant speed of 25 meters per second possesses 450 joules of kinetic energy.

What is the object's mass?

(a) 0.72 kg
(b) 1.4 kg
(c) 18 kg
(d) 36 kg

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

(a)



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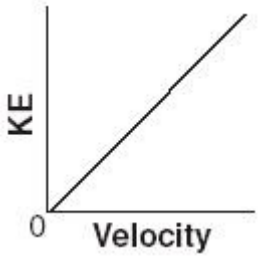

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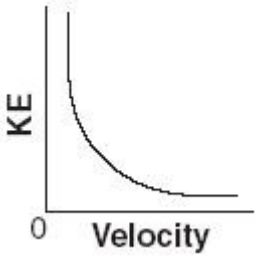

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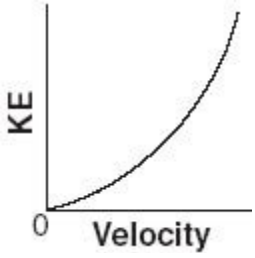

8. A well hit golf ball has a momentum of 5 kg m/s. If the impact lasts 0.1 seconds, what was the average force exerted on the ball?

(a) 5 N
(b) 50 N
(c) 500 N
(d) not enough information

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9. **A 5-kilogram mass is lifted from the ground to a height of 10 meters. The gravitational potential energy of the mass is increased by approximately**

(a) 0.5 J
(b) 50 J
(c) 250 J
(d) 500 J

10. A 50.-kilogram student threw a 0.40-kilogram ball with a speed of 20. meters per second.

What was the magnitude of the impulse that the student exerted on the ball?

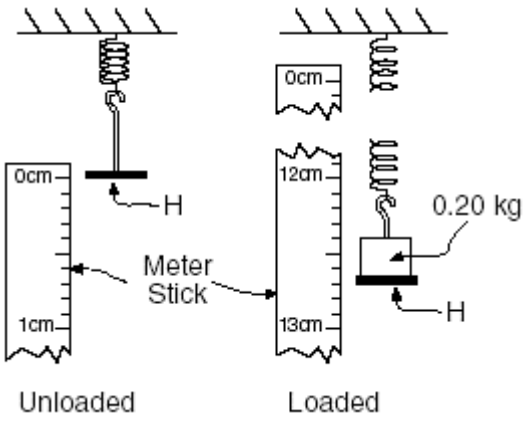
(a) 8.0 N•s
(b) 78 N•s
(c) 4.0×10^2 N•s
(d) 1.0×10^3 N•s

11. A spring scale reads 20. newtons as it pulls a 5.0-kilogram mass across a table.

What is the magnitude of the force exerted by the mass on the spring scale?

(a) 49 N
(b) 20. N
(c) 5.0 N
(d) 4.0 N

12. What is the displacement of the mass hanger (*H*) shown in the diagram after a 0.20-kilogram mass is loaded on it? [Assume the hanger is at rest in both positions.]



(a) 12.30 cm
(b) 12.50 cm
(c) 12.70 cm
(d) 13.30 cm

13. 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

(a) one-fourth as great.
(b) one-half as great.
(c) the same.
(d) four times as great.

14. A 200-pound man and a 100 pound boy face each other on frictionless rollerblades. The man pushes against the boy so that the boy moves back with a velocity of 8 ft/s. The man will be moving backward at

(a) 64 ft/s
(b) 16 ft/s
(c) 8 ft/s
(d) 4 ft/s

15. **In an elastic collision, momentum is conserved, as is**

(a) kinetic energy.
(b) potential energy.
(c) speed.
(d) velocity.