**Please complete and submit the following multiple choice.**

_____ 1. A projectile launched at an angle of 45° above the horizontal travels through the air. Compared to the projectile's theoretical path with no air friction, the actual trajectory of the projectile with air friction is
A. lower and shorter
B. lower and longer
C. higher and shorter
D. higher and longer

_____ 2. Approximately how much time does it take light to travel from the Sun to Earth?
A. 2.00×10^{-3} s
B. 1.28×10^{0} s
C. 5.00×10^{2} s
D. 4.50×10^{19} s

_____ 3. A rock falls from rest a vertical distance of 0.72 meter to the surface of a planet in 0.63 second. The magnitude of the acceleration due to gravity on the planet is
A. 1.1 m/s^2
B. 2.3 m/s^2
C. 3.6 m/s^2
D. 9.8 m/s^2

_____ 4. Two stones, _A_ and _B_, are thrown horizontally from the top of a cliff. Stone _A_ has an initial speed of 15 meters per second and stone _B_ has an initial speed of 30 meters per second. Compared to the time it takes stone _A_ to reach the ground, the time it takes stone _B_ to reach the ground is
A. the same
B. twice as great
C. half as great
D. four times as great

_____ 5. The speed of an object undergoing constant acceleration increases from 8.0 meters per second to 16.0 meters per second in 10 seconds. How far does the object travel during the 10 seconds?
A. 3.6×10^{2} m
B. 1.6×10^{2} m
C. 1.2×10^{2} m
D. 8.0×10^{1} m

_____ 6. A bullet fired horizontally takes 4.0 s to reach the ground. The height of the gun that fired is:
A. 4 m
B. 15 m
C. 37 m
D. 78 m

_____ 7. A 1750 kilogram car travels at a constant speed of 15.0 meters per second around a horizontal, circular track with a radius of 45.0 meters. The magnitude of the centripetal force acting on the car is
A. 5.00 N
B. 583 N
C. 8750 N
D. 3.94 x 10^5 N

_____ 8. As a meteor moves from a distance of 16 Earth radii to a distance of 2 Earth radii from the center of Earth, the magnitude of the gravitational force between the meteor and Earth becomes
A. 1/8 as great
B. 8 times as great
C. 64 times as great
D. 4 times as great

_____ 9. An electric circuit contains a variable resistor connected to a source of constant voltage. As the resistance of the variable resistor is increased, the power dissipated in the circuit
A. decreases
B. increases
C. remains the same

_____ 10. Which diagram best represents the gravitational forces, F_g, between a satellite, S, and Earth?


(1)   (2)   (3)   (4)
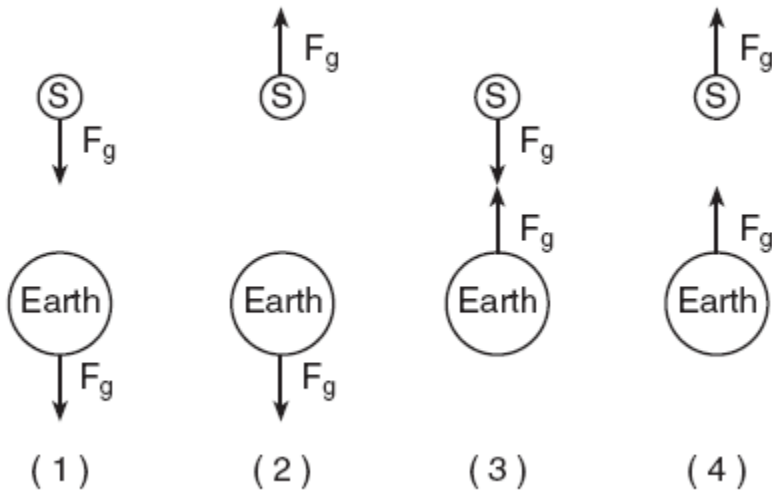
_____ 11. If the charge on each of two small spheres is doubled, the force between them will
  A. Increase by four times
  B. Increase by two times
  C. Increase by sixteen times
  D. Decrease by four times

_____ 12. A 25-newton horizontal force northward and a 35-newton horizontal force southward act concurrently on a 15-kilogram object on a frictionless surface. What is the magnitude of the object's acceleration?
  A. 0.67 m/s^2
  B. 1.7 m/s^2
  C. 2.3 m/s^2
  D. 4.0 m/s^2

_____ 13. The diagram below represents two concurrent forces.

Which vector represents the force that will produce equilibrium with these two forces?

(1)   (2)   (3)   (4)
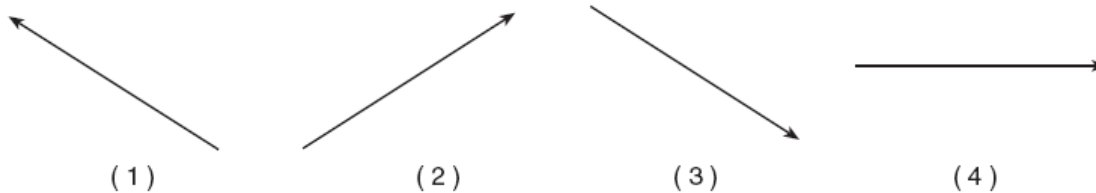
_____ 14. Which combination of fundamental units can be used to express energy?
  A. kg·m/s
  B. kg·m^2/s
  C. kg·m/s^2
  D. kg·m^2/s^2

_____ 15. Which graph best represents the relationship between the magnitude of the centripetal acceleration and the speed of an object moving in a circle of constant radius?

Speed   Speed   Speed   Speed
(1)   (2)   (3)   (4)
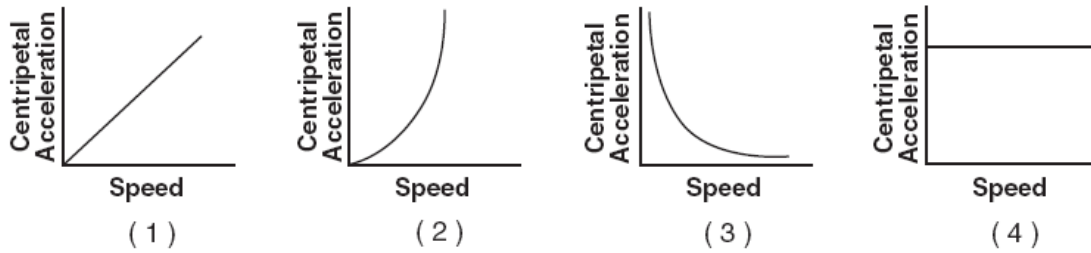
_____ 16. An object is thrown vertically upward. Which pair of graphs best represents the object's kinetic energy and gravitational potential energy as functions of its displacement while it rises?

(1)   (3)

(2)   (4)
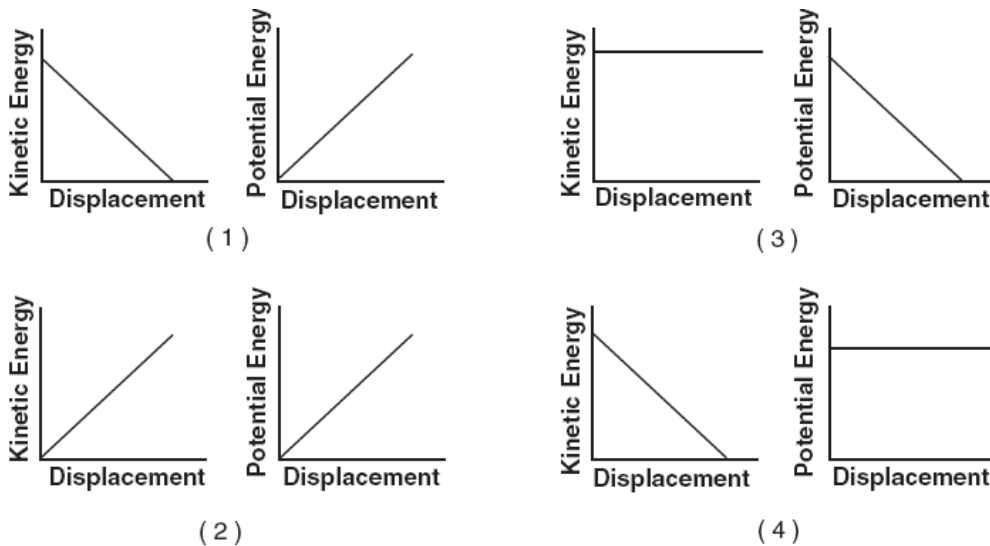
_____ 17. If light from the sun takes 5.5 hours to reach Pluto (the planet not the dog!) how far is that planet from the sun?
A. 9.9×10^7 km
B. 5.9×10^9 km
C. 4.6×10^5 km
D. 1.5×10^4 km

_____ 18. The magnitude of the centripetal acceleration of a body moving at a speed of 9 m/s in a circle of radius 3 m is:
A. 3 m/s^2
B. 4 m/s^2
C. 8 m/s^2
D. 27 m/s^2

_____ 19. An object that is shot through the air is called a
    A. Protractor
    B. Projectile
    C. Parabola
    D. Proboscis.