1) An object of mass = 2 kg is pulled by a constant force \( F = 4 \text{ N} \) for a horizontal distance of 2 m. (Refer to Figure above. What is the work done along the +x-axis? Neglect friction.
A) 8 kg m/s²
B) 8 kg m²/s²
C) 7 kg m/s²
D) 7 kg m²/s²
Answer: D

2) A 100 kg object is pulled vertically upwards by a constant force of 4000 N for a distance of 20.0 m. What is the work done by the applied force on the object?
A) 60,400 kg m/s²
B) 80,000 kg m/s²
C) 80,000 kg m²/s²
D) 60,400 kg m²/s²
Answer: C

3) An object of 1.0 kg mass is pulled up an inclined plane by a constant force of 10 N that causes a displacement of 0.50 m. The angle of inclination with the horizontal is 30°. Neglect friction and use \( g = 10 \text{ m/s}^2 \). What is the work done by the 10 N force on the object along the inclined plane?
A) 4.3 J
B) 4.3 kg m/s²
C) 5.0 J
D) 2.5 J
Answer: C

4) The ratio of the final kinetic energy to the initial kinetic energy of an object is one half. If the initial velocity of the object is 10 m/s, what is the final velocity?
A) 20 m/s
B) 20 m/s²
C) 7.1 m/s
D) 7.1 m/s²
Answer: C

5) An object of mass 4.0 kg is thrown vertically upwards from ground level with an initial speed of 20 m/s. Ignore friction and use \( g = 10 \text{ m/s}^2 \). How high did the object go?
A) 20 m
B) 4.5 m
C) 15 m
D) 80 m
E) None of the other choices is correct.
Answer: A
6) An object is under the influence of a force as represented by the force vs. position graph as shown in Figure above. What is the work done as it moves from 10 to 15 m?
A) 25 J
B) 50 J
C) 100 J
D) 80 J
Answer: A

7) An object is under the influence of a force as represented by the force vs. position graph in Figure above. What is the work done as the object moves from 0 m to 4 m?
A) 20 J
B) 30 J
C) 0 J
D) 40 J
Answer: A

8) 4.0 J of work are performed in stretching a spring with a spring constant of 2500 N/m. How much is the spring stretched?
A) 3.2 cm
B) 0.3 cm
C) 5.7 m
D) 5.7 cm
Answer: D

9) As compared to Jack, Jill does twice the work in half the time. Jill's power output is
A) the same as Jack's power output.
B) one-half as much as Jack's power output.
C) twice Jack's power output.
D) four times Jack's power output.
Answer: D
10) Refer to Figure above. Three applied forces, $F_1 = 20.0 \text{ N}$, $F_2 = 40.0 \text{ N}$, and $F_3 = 10.0 \text{ N}$ act on an object with a mass of 2.00 kg which can move along an inclined plane as shown in the figure. The questions refer to the instant when the object has moved 0.600 m along the surface of the inclined plane in the upward direction. Neglect friction and use $g = 10.0 \text{ m/s}^2$. What is the amount of work done by force $F_1$ as the object moves up the inclined plane?
A) 10.0 J
B) 11.0 J
C) 12.0 J
D) 16.0 J
Answer: C

11) A truck has four times the mass of a car and is moving with twice the speed of the car. If $K_t$ and $K_c$ refer to the kinetic energies of truck and car respectively, it is correct to say that
A) $K_t = 16 \times K_c$.
B) $K_t = 4 \times K_c$.
C) $K_t = K_c$.
D) $K_t = \frac{1}{2} K_c$.
Answer: A