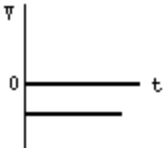
1. A child travels 60 meters north and then 120 meters south. What is the displacement?

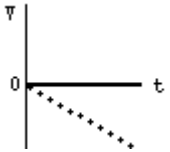
(a) 20 m south (b) 60 m south (c) 120 m south (d) 180 m south
(e) 60 m north

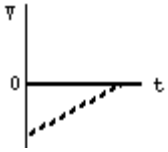
Displacement is the total change in position. **Correct answer is (b)**

2. Which graph represents constant positive acceleration

(a) 

(b) 

(c) 

(d) 

Positive acceleration means that the velocity is getting more and more positive as time increases. **Correct answer is (d)**

3. Kinetic Energy is given by the formula $KE=\frac{1}{2}mv^2$, where *m* is the mass and *v* is its velocity. The SI unit of energy is the Joule (J) which is equivalent to what combination of basic units?

(a) $kg \cdot m^2/s^2$ (b) $g \cdot cm^2/s^2$ (c) $kg \cdot m/s^2$ (d) $kg \cdot m^2/s$

$[KE] = [m][v^2] = [m][l]^2[t]^2$ Both (a) and (b) have the right units, but only (a) uses SI units. **Correct answer is (a)**

4. A car accelerating from rest at 2.0 m/s^2 for 5.0 s

(a) covers a distance of 10 m (c) has a final speed of 10 m/s

(b) covers a distance of 50 m (d) has a average velocity of 10 m/s

$x = x_0 + v_0t + \frac{1}{2} at^2$…and $v = v_0 + at$ Here $x_0=0$ $v_0=0$ t=5 s a=2 m/s^2

→ x= 0 + 0 + ½ 2 25 m = 25 m and v = 0 + 2 5 m/s = 10 m/s

Correct answer is (c)

5. If a car accelerates from rest in the positive direction

(a) its final velocity is zero (b) its acceleration is negative

(c) its final velocity is positive (d) its displacement is negative

If it accelerates, its velocity changes, so (a) is wrong

If it accelerates in the positive direction, the acceleration is positive, so (b) is wrong

If it accelerated in the positive direction its velocity gets more and more positive, and since it starts out from the rest, the final velocity must be > 0, so **(c) is correct**

If it starts from rest with positive acceleration it travels in the positive direction, so (d) is wrong