1. A particle goes from $x = -2$ m, $y = 3$ m, $z = 1$ m to $x = 3$ m, $y = -1$ m, $z = 4$ m. Its displacement is:

a) $(1\,\text{m})\hat{i} + (2\,\text{m})\hat{j} + (5\,\text{m})\hat{k}$

b) $(5\,\text{m})\hat{i} - (4\,\text{m})\hat{j} + (3\,\text{m})\hat{k}$

c) $-(5\,\text{m})\hat{i} + (4\,\text{m})\hat{j} - (3\,\text{m})\hat{k}$

d) $-(5\,\text{m})\hat{i} - (2\,\text{m})\hat{j} = (3\,\text{m})\hat{k}$

2. A projectile is fired over level ground with an initial velocity that has a vertical component of 20 m/s and a horizontal component of 30 m/s. The distance from launching to landing points is:
   a) 40 m
   b) 60 m
   c) 80 m
   d) 122.5 m

3. A stone is tied to the end of a string and is swung with constant speed around a horizontal circle with a radius of 1.5 m. If it makes two complete revolutions each second, its acceleration is:

   a) 0.24 m/s^2
   b) 240.7 m/s^2
   c) 2.4 m/s^2
   d) 24m/ s^2

4. Two blocks weighting 250 N and 350 N respectively, are connected by a string that passes over a massless pulley as shown. The tension in the string is:

a) 210 N
b) 410 N
c) 290.8 N
d) 500 N

250 N
350 N
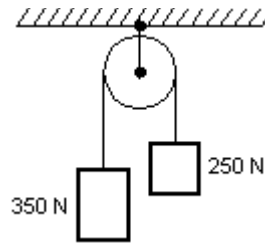
5. A 6-kg object is moving south. A net force of 12 N north on it result in the object having an acceleration of:

a) 2 m/s^2, north
b) 2 m/s^2, south
c) 18 m/s^2, north
d) 18 m/s^2, south

6. The "reaction" force does not cancel the "action" force because:

a) the action force is greater than the reaction force
b) they are in the same direction
c) the reaction force is greater than the action force
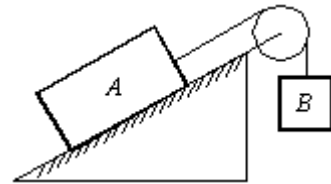d) they act on different bodies

7. A box with a weight of 50 N rests on a horizontal surface with a coefficient of static friction is 0.4. If person pulls horizontally on it with a force of 10 N , then

a) the block will not move
b) the block will move to the left
c) the block will move to the right
d) the block will move upward

10 N
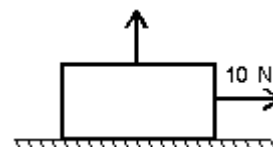
8. Block A, with a mass of 10 kg, rests on a 30 incline. The coefficient of kinetic friction is 0.20. The attached string is parallel to the incline and passes over a massless, frictionless pulley at the top. Block B, with a mass of 8.0 kg, is attached to the dangling end of the string. The acceleration of B is:

a) 0.69 m/s^2, up the plane
b) 0.69 m/s^2, down the plane
c) 2.6 m/s^2, up the plane
d) 2.6 m/s^2, down the plane