COLEGIO NACIONES UNIDAS I.E.D.

Aprobado según Resoluciones 10-085 DE MARZO 20 DE 2009

FORMACIÓN INTEGRAL DE LÍDERES EMPRENDEDORES COMPETENTES, CON PRINCIPIOS DEMOCRÁTICOS, TECNOLÓGICOS, CULTURALES Y DEPORTIVOS

"EDUCACIÓN, CIENCIA, CULTURA Y DEPORTE PARA TRASCENDER"

TENTH GRADE   SKILLS WORKSHOP

INSTRUCTIONS
"Copy and solve the workshop in the notebook"
Date Delivery: July 15th

Read carefully and select the correct answer.

1. It is a part of mechanics that is responsible for studying the movement of bodies taking into account the causes that produce it.
   a. Mechanics
   b. Dynamics
   c. Kinematics
   d. Statics

2. "The acceleration acquired by a particle subjected to a non-zero resultant force is directly proportional to the resultant force and inversely proportional to the mass of said particle, and has the same direction and sense as this resultant."
   a. 1st Law of Newton
   b. 2nd Law of Newton
   c. 3rd Law of Newton
   d. 4th Law of Newton

3. The gravitational force with which a celestial body (in our case the Earth) attracts another, relatively close to it.
   a. Weight
   b. Mass
   c. Gravity
   d. Newton

4. There is a bag of potatoes on the mountain at (3000 m above sea level); it is taken to Cartagena (± 0.00 m above sea level). Based on the concept that weight decreases at higher altitudes, the answer would be:
   a. The bag of corn weighs more in the mountains
   b. The bag of corn weighs the same in both places
   c. The bag of corn weighs more in Cartagena
   d. The bag of corn weighs less in Cartagena

5. The primary unit of Force in the International System S.I. is
   a. Poundal
   b. Dyne
   c. Slug
   d. Newton

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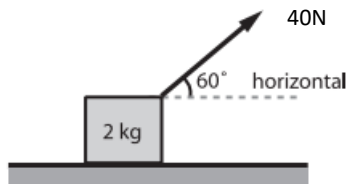*"EDUCACIÓN, CIENCIA, CULTURA Y DEPORTE PARA TRASCENDER"*

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6. A block moves under the action of a constant force of 100 N, knowing that the mass of the body is 25 kg. Calculate the value of the acceleration. Neglect friction
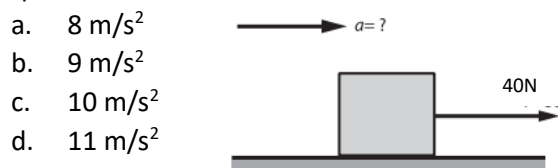   a. 1 m/s^2
   b. 2 m/s^2 $F = ma$
   c. 3 m/s^2
   d. 4 m/s^2

7. In the figure shown, find the acceleration of the block.

   FcosΘ=ma   Cos60^0=½
   a. 5 m/s^2
   b. 10 m/s^2
   c. 15 m/s^2
   d. 20 m/s^2

8. In the figure shown, the body has a mass of 4 kg, if the applied force is 40 Newtons and μk = 0.1. Calculate the acceleration of the block (g = 10 m/s^2).
   a. 8 m/s^2
   b. 9 m/s^2
   c. 10 m/s^2
   d. 11 m/s^2

   $F_K=\mu_K N$
   $F - F_K=ma$

9. Mark the true statement:
   a) Gravity is measured with mass.
   b) The mass depends on the place where it is measured.
   c) Mass depends on size.
   d) The measure of inertia is mass.
   e) None of the above

10. Indicate the correct proposition
    a) A person weighs the same on the coast and in the mountains.
    b) A person has the same mass on the coast like in the mountains.
    c) The value of gravitational mass is different from the value of inertial mass.
    d) 1 Newton = 1 kg

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e) Every non-zero resultant force produces an M.R.U.

11. Which of the following situations is explained? with Newton's first law (principle of inertia)

I.- When starting a car, the passengers are propelled backward.

II.- A man's weight is greater in polo.

III.- A magician removes the tablecloth from an unmoved table the objects that are on it.

a) I and III
b) I and II
c) II and III
d) Only I
e) Only II

12. Check the true statement:

a) To move a body, an internal force must be applied to it.

b) If a body moves in a straight line there are no forces acting on it.

c) The mass and weight of an object are equal.

d) Action and reaction forces are forces that they always balance.

e) N.A.

13. Relate each of the following cases to the number of Newton's Law that explains it.

I.- On the Moon the weight of a man is 1/6 of his weight on earth.

II.- When an elevator goes up, the passengers gain weight.

III.- To move a boat forward, you row backwards.

a. I1, II2, III3
b. I2, II1, III3
c. I3, II2, III1
d. I2, II3, III1
e. I1, II3, III2

14. The block in the figure can be at rest or moving to the right. The static and kinetic friction coefficients are 0.3 and 0.2 respectively (g = 10 m/s2).
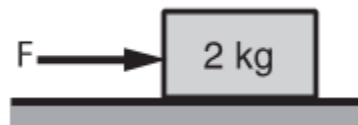
Correctly relate:

I.- With the block at rest, if.... it will begin to move.

II.- With the block in motion, if... it will maintain its constant speed.

III.- With the block at rest, if .... it will be ready to move.

IV.- With the block in motion, if... it will brake.

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V.- With the block in motion, if.... its speed will increase.

A) F = 3N

B) F = 4N

C) F = 5N

D) F = 6N

E) F = 7 N.

a. IE, IIB, IIIA, IVC, VD

b. ID, IIE, IIIB, IVA, VC

c. ID, IIB, IIID, IVA, VC

d. ID, IIA, IIIB, IVC, VE

e. IC, IIB, IIID, IVA, VE

15. Two identical spheres "P" and "Q" of mass "M" are suspended from threads weightless as indicated in the figure. So we can affirm that:
    a.   If we cut thread 1, "P" falls with a = g/2.
    b.   If we cut thread 2, "Q" falls with a = 2g.
    c.   If we cut thread 2, the tension in "1" decreases.
    d.   If we cut thread 1, at that instant the resulting force on "P" is 2mg.
    e.   They are all false

16. If you pull a rope downward with a force which is twice its weight, we can expect that:
    a.   Go up with an acceleration g/2.
    b.   Go up with an acceleration g.
    c.   Climb with constant speed.
    d.   Do not go up or down.
    e.   It depends on my weight.

17. If a force "F" causes an acceleration "a" in a mass "m", then a force "F/2" in a mass "2 m" will cause:
    a)   3/2
    b)   2a
    c)   a/4
    d)   4a
    e)   3a/4

18. An elevator was going up with a constant speed and begins to brake with an acceleration "-g/2. If you were on a scale. What would happen to the apparent weight What would you point out?
    a. It would indicate twice my weight.
    b. It would indicate a quarter of my weight.
    c. I would point out a third of my weight.
    d. I would indicate half my weight.

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e. I would point out my weight