وزارة التربية والتعليم

الإدارة المركزية لتطوير المناهج

إدارة تنمية مادة الرياضيات

أداءات وتقييمات لمنهج الرياضيات

للصف الثانى الثانوى [علمى]

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Homework Week: (14)   Semester (2)   Mathematics - Applications
Grade: Second Secondary (Scientific)

(1)   A body with a mass of 600 grams is placed on a smooth plane inclined to
   the horizontal at an angle of measure $45°$. A force of mag. $400\sqrt{2}$ gm.wt
   acts on it in the direction of the plane's greatest slope upward . Find the
   magnitude and direction of the acceleration. If the force ceases to act 3
   seconds after the start of the movement, find when the body changes
   direction.

(2)   A body with a mass of m kg is placed on a smooth plane inclined to the
   horizontal at an angle of $\theta°$, where $\tan\theta = \frac{3}{4}$. a force of magnitude 41
   kg.wt in the direction of the line of greatest upward slope. As a result of
   this force, the body moves from rest to the top of the plane a distance of
   294 cm in 3 seconds. Find the mass of the body.

(3)   A rough inclined plane, 250 meters long and 150 meters high, has a body
   placed at rest on it. The body slides down the plane. The acceleration of
   the body is 196 cm/s². Find the coefficient of kinetic friction (μ_k)
   between the body and the plane.

(4)   A rough inclined plane, 250 meters long and 150 meters high, has a body
   placed at rest on it. The body slides down the plane. The coefficient of
   kinetic friction (μ_k) between the body and the plane is equal to $\frac{1}{2}$. Find
   the velocity of the body after it has traveled 200 cm on the plane.

(5)   A body with a mass of 2 kg is placed on a rough inclined plane, inclined
   at an angle of 30° to the horizontal. A horizontal force of 20 N acts on
   the body towards the plane, causing the body to move at a uniform
   speed. Find the coefficient of kinetic friction (μ_k) between the body and
   the plane.

(6) A body with a mass of 10 kg is placed on a rough horizontal plane. A horizontal force of 37 N acts on it, causing it to move along the horizontal plane with a uniform acceleration of $\frac{5}{4}$ m/s². Find the coefficient of kinetic friction between the body and the plane.
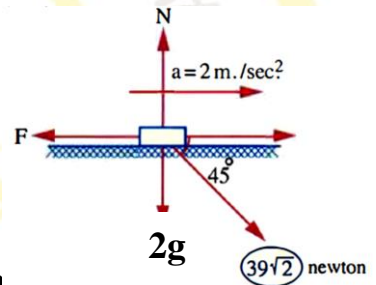
(7) In the opposite figure:
A body with a mass of 6 kg is placed on a rough horizontal plane. F the magnitude of the kinetic friction force. Find the coefficient of kinetic friction (μ_k) between the body and the plane.
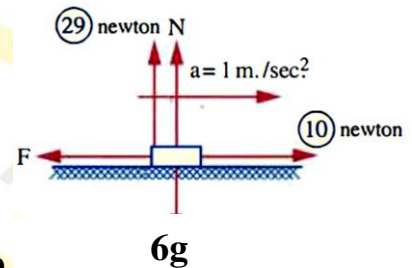

(8) In the opposite figure:
A body with a mass of 2 kg is placed on a rough horizontal plane. F the magnitude of the kinetic friction force. Find the coefficient of kinetic friction (μ_k) between the body and the plane.

(9) In the opposite figure:
A body with a mass of 4 kg is placed on a rough horizontal plane. F the magnitude of the kinetic friction force. Find the coefficient of kinetic friction (μ_k) between the body and the plane.
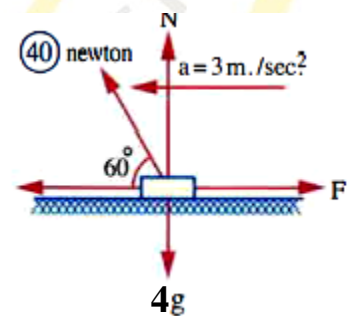
(10) Boxes are moved in a factory by sliding down an inclined plane 15 meters long and 9 meters high. Find the speed of the box that started moving from the rest at the top of the plane, when it reaches the base of the plane, if the plane is rough and the coefficient of kinetic friction between them is equal to $\frac{1}{4}$