وزارة التربية والتعليم و التعليم الفنى
الإدارة المركزية للتعليم العام
إدارة تنمية مادة الرياضيات

برعاية معالي وزير التربية والتعليم و التعليم الفنى
السيد الأستاذ/ محمد عبد اللطيف

وتوجيهات رئيس الإدارة المركزية للتعليم العام

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إشراف علمي

مستشار الرياضيات

أ/ منال عزقول

أداءات وتقييمات لمنهج تطبيقات الرياضيات لغات

للصف الثانى الثانوي "علمى"

الفصل الدراسى الأول

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الأسبوع السادس

لجنة الإعداد

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Classroom Performance (Week Six) - Mathematics Applications

(1) A body of weight (W) Newton is placed on a smooth plane inclined to the horizontal at an angle of measure 45° and the body is kept in equilibrium by the effect of a force of magnitude $40\sqrt{2}$ Newton acting in the direction of the line of greatest slope of the plane upwards. Find the magnitude of the body's weight and the magnitude of the plane's reaction on the body.

(2) A body of weight 24 Newton is placed on a smooth plane inclined to the horizontal at an angle of measure 30° and the body is prevented from sliding by the effect of a force of magnitude (F) Newton inclined to the direction of the line of greatest slope of the plane upwards at an angle of measure 30° . Find the magnitude of the plane's reaction on the body.

(3) A body of weight 20 gm.wt. is placed on a smooth plane inclined to the horizontal at an angle of measure θ , where $\cos\theta = \frac{4}{5}$, the body is kept in equilibrium by a horizontal force of magnitude (F) gm.wt. Find the magnitude of this force and the magnitude of the plane's reaction on the body.

(4) A body of weight (W) Newton placed on a smooth plane inclined to the horizontal at an angle of measure 60° is kept in equilibrium by the effect of a horizontal force of magnitude $60\sqrt{3}$ Newton. Find the magnitude of the body's weight and the magnitude of the plane's reaction on the body.

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(5) A body of weight 200 gm .wt. is placed on a smooth plane inclined to the horizontal at an angle of measure θ, where $\tan\theta = \frac{3}{4}$, where the body's equilibrium is maintained by a force of magnitude (F) gm.wt tending in the direction of the line of the greatest slope of the plane upwards at an angle of α, where $\tan\alpha = \frac{5}{12}$, Find the magnitude of this force and the reaction of the plane on the body.

(6) A body of weight 48 Newton is placed on a smooth plane inclined to the horizontal at an angle of measure 30°, where the body's equilibrium is maintained by a tension force of magnitude $16\sqrt{3}$ N, which is inclined in the direction of the line of greatest slope of the plane upwards at an angle of measure θ. Find the measure of the angle θ, and the magnitude of the reaction of the plane on the body in the equilibrium state.

(7) A smooth ball with a radius of 60 cm. and a weight of 500 gm.wt. is resting on a smooth vertical wall suspended by a light string 40 cm. long, one end of which is fixed to the surface of the ball and the other end is fixed to a point on the wall located vertically above the point of contact of the ball with the wall. Find the magnitude of the tension in the string and the magnitude of the reaction of the wall in a state of equilibrium.

(8) A smooth ball weighing $10\sqrt{3}$ gm.wt rests on a smooth vertical wall and is suspended from one of its surface points by a string whose other end is fixed at a point on the wall located vertically above the point of contact of the ball. The string makes an angle with the vertical of measure 30°. Find the magnitude of the tension in the string and the magnitude of wall reaction.

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(9) A smooth ball of weight 45 Newton rests on a smooth wall and is suspended by a string whose one end is fixed at a point on its surface and the other end at a point on the wall located vertically exactly above the point of contact of the ball. If the length of the string is twice the length of the radius of the ball, find the magnitude of the wall reaction and the magnitude of the tension in the string in the equilibrium position.

(10) A smooth ball of weight 100 Newton is stable between a smooth vertical wall and a smooth inclined plane inclined to the horizontal at an angle of measure 60°. Find the magnitude of wall reaction and the magnitude of plane reaction.

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Homework (Week Six) - Mathematics Applications

(1) A body of weight (W) Newton is placed on a smooth plane inclined to the horizontal at an angle of measure 30° and the body is kept in equilibrium by the effect of a force of magnitude 36 Newton acting in the direction of the line of greatest slope of the plane upwards. Find the magnitude of the body's weight and the magnitude of the plane's reaction on the body.

(2) A body of weight 18 Newton is placed on a smooth plane inclined to the horizontal at an angle of measure 30° and the body is prevented from sliding by the effect of a force of magnitude (F) Newton inclined in the direction of the line of greatest slope of the plane upwards at an angle of measure 30° . Find the magnitude of the plane's reaction on the body.

(3) A body of weight 800 gm.wt is placed on a smooth plane inclined to the horizontal at an angle of measure θ, where $\sin\theta = \frac{6}{10}$, the body is kept in equilibrium by a horizontal force of magnitude (F) gm.wt Find the magnitude of this force and the magnitude of the plane's reaction on the body.

(4) A body of weight (W) Newton placed on a smooth plane inclined to the horizontal at an angle of measure 45° is balanced by the effect of a horizontal force of magnitude$20\sqrt{2}$ Newton. Find the magnitude of the body's weight and the magnitude of the plane's reaction on the body.

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(5) A body of weight 260 gm.wt. is placed on a smooth plane inclined to the horizontal at an angle of measure θ where $\tan\theta = \frac{5}{12}$, where the body's equilibrium is maintained by a force of magnitude (F) gm.wt tending in the direction of the line of the greatest slope of the plane upwards at an angle of α where $\tan\alpha = \frac{3}{4}$, Find the magnitude of this force and the reaction of the plane on the body.

(6) A body of weight 18 N is placed on a smooth plane inclined to the horizontal at an angle of measure 30° , where the body's equilibrium is maintained by a tension force of magnitude $6\sqrt{3}$ N, which is inclined in the direction of the line of greatest slope of the plane upwards at an angle of measure θ, Find the measure of the angle θ and the magnitude of the reaction of the plane on the body are found.

(7) A smooth ball with a radius of 30 cm and a weight of 200 gm.wt. is resting on a smooth vertical wall suspended by a light string 20 cm long, one end of which is fixed to the surface of the ball and the other end is fixed to a point on the wall located vertically above the point of contact of the ball with the wall. Find the magnitude of the tension in the string and the magnitude of the reaction of the wall in a state of equilibrium.

(8) A smooth ball weighing $50\sqrt{2}$ gm.wt rests on a smooth vertical wall and is suspended from one of its surface points by a string whose other end is fixed at a point on the wall located vertically above the point of contact of the ball. The string makes an angle with the vertical of measure 45°. Find the magnitude of the tension in the string and the magnitude of wall reaction.

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(9) A smooth ball of weight $90\sqrt{2}$ Newton rests on a smooth wall and is suspended by a string whose one end is fixed at a point on its surface and the other end at a point on the wall located vertically exactly above the point of contact of the ball. If the length of the string is twice the length of the radius of the ball, find the magnitude of the wall reaction and the magnitude of the tension in the string in the equilibrium position.

(10) A smooth ball of weight 60 Newton is stable between a smooth vertical wall and a smooth inclined plane inclined to the horizontal at an angle of measure 30°. Find the magnitude of wall reaction and the magnitude of plane reaction.

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