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

د/ هالة عبد السلام خفاجى

إشراف علمي

مستشار الرياضيات

أ/ منال عزقول

أداءات وتقييمات لمنهج تطبيقات الرياضيات لغات

للصف الثانى الثانوي "علمى"

الفصل الدراسى الأول

للعام الدراسي 2025 / 2026

الأسبوع الخامس

لجنة الإعداد

أ/ محمد عبد العاطى أ/ محمود السيد محمد أ/ عفاف جاد

ترجمة

أ/ محمود سليمان نظيم

مراجعة الترجمة

أ/ شريف البرهامى

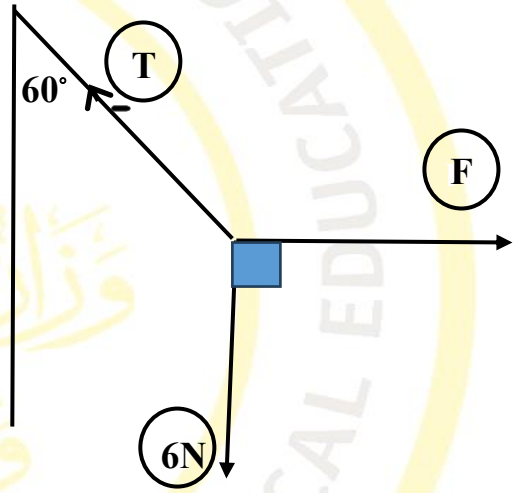
Classroom Performance (Week Five) - Mathematics Applications

(1) If $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, $\overrightarrow{F_3}$ are three coplanar forces met at a point and in equilibrium and $\overrightarrow{F_1} = \vec{\imath} - \vec{\jmath}$, $\overrightarrow{F_2} = 3\vec{\imath} + 4\vec{\jmath}$

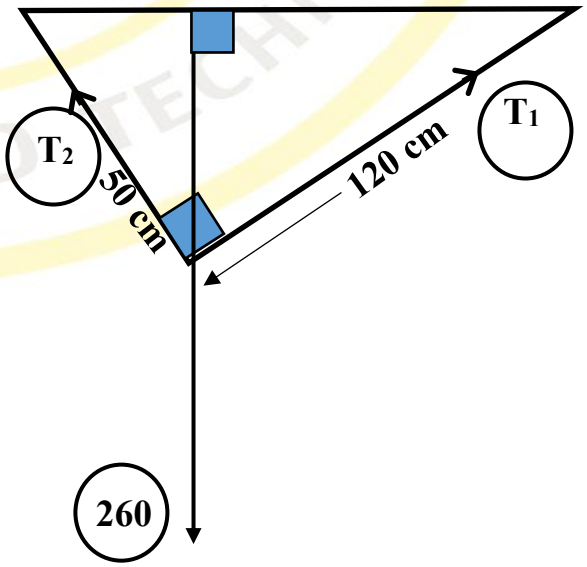
Find the values of $\|\overrightarrow{F_3}\|$.

(2) If the coplanar forces $\overrightarrow{F_1} = a\vec{\imath} - 6\vec{\jmath}$, $\overrightarrow{F_2} = -3\vec{\imath} + 4\vec{\jmath}$, $\overrightarrow{F_3} = 9\vec{\imath} + b\vec{\jmath}$ met at a point and in equilibrium .
Find the value of a and b .

(3) If the body is in equilibrium under the action of the represented coplanar forces as shown in the opposite figure where the magnitude of forces measured in dyne .
Find the magnitude of F And T



(4)A body of wight 260 Newton is in equilibrium under the action of the represented coplanar forces as shown in the opposite figure .
Find the magnitude of T_1 and T_2



(5)a particle in equilibrium under the action of forces of magnitudes F_1 , F_2 , 49 Newton represented by $\overline{AB}$, $\overline{BC}$, $\overline{CA}$ respectively in triangle ABC in the same cyclic order where AB = BC = 4 cm and CA = 7 cm Find the values of F_1 and F_2 .

(6) ABCD is a square its diagonals intersect at M , E is the midpoint of $\overline{BC}$ Forces of magnitudes $6\sqrt{2}$, F_1 , F_2 Newton act at the point M in the directions of $\overrightarrow{MA}$, $\overrightarrow{MD}$, $\overrightarrow{ME}$ respectively and the forces are in equilibrium . Find the values of F_1 and F_2 .

(7) Three coplanar forces are in equilibrium their magnitudes are F_1 , F_2 , $5\sqrt{3}$ kg.wt act at point ,if the measure of the angle between the line of action of the first force and the second force is 120° and the measure of the angle between the line of action of the second force and the third force is 150° . Find the magnitude of F_1 and F_2 .

(8) a boy of wight 21 gm.wt is suspended at the end of a light string of length 50 cm and the other end at a point of a vertical wall , a horizontal force of magnitude F gm.wt acts on the weight in a perpendicular direction to the wall which makes the body a part 40 cm from the wall . Find the magnitudes of the force F and the tension in the string in case of equilibrium .

(9)A weight of 60 gm . wt is suspended at the end of a light string of length 28cm,the other end to the ceiling of a room, a force acts upon the weight to be in equilibrium when the weight at a distance 14 cm from the ceiling ,the force is perpendicular to the string in case of equilibrium . Find the magnitude of the force and the tension in the string .

(10)A lamp of weight 400 g is attached to the end of a light string 100 cm long, and the other end is fixed at a point in the ceiling of a room. A horizontal force is acting on the lamp, so the lamp is in equilibrium while it is 80 cm vertically below the ceiling. Find the magnitude of the force and the magnitude of the tension in the string.

(11) A body of weight 300 gm .wt is suspended by two light strings, one of them is inclined to the vertical by an angle of measure θ°, and the other string is inclined to the vertical by an angle of measure 60°. If the magnitude of tension in the first string is $150\sqrt{3}$ gm .wt . Find the measure of angle θ° and the magnitude of tension in the second string .

(12) A weight of 600 gm.wt is suspended by two light strings of lengths 24 cm and 18 cm from two points on a horizontal line 30 cm apart. Find the magnitude of tension in each of the strings in the equilibrium position.

(13) A body of weight 15 Newton was suspended from the end of a light string, the other end of which was fixed at a point on a vertical wall. A horizontal force acted on it, so the body became in equilibrium when the string was inclining on the wall at an angle of measure 60°. Find the magnitude of the tension and the magnitude of the horizontal force.

(14) A weight of 170 gm .wt was suspended by two strings, 16 cm and 30 cm long, and its other ends were fixed to the string at two points on a single horizontal line such that the two strings were perpendicular. Find the magnitude of the tension in the two strings.

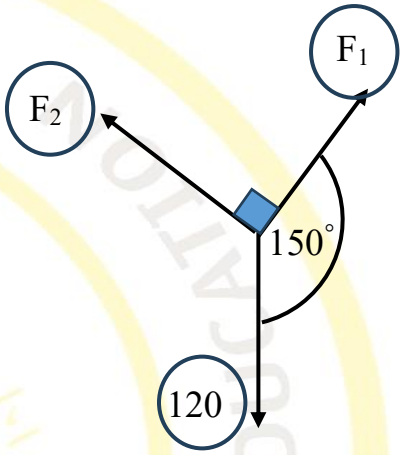
(15) A body of weight 40 Newton was suspended from one end of a string, the other end of which was fixed to a vertical wall. The body was displaced by a force in a direction perpendicular to the string until the body became inclined on the vertical at an angle of measure 30° .Find the magnitude of the force acting and the magnitude of the tension in the string.

Homework (Week Five) - Mathematics Applications

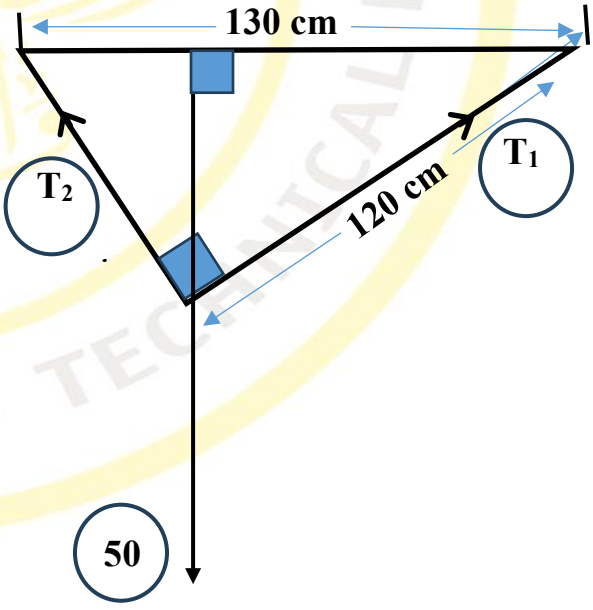
(1) If $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, $\overrightarrow{F_3}$ are three coplanar forces met at a point and in equilibrium and $\overrightarrow{F_1} = 2\vec{\imath} - 3\vec{\jmath}$, $\overrightarrow{F_2} = 2\vec{\imath}$. Find the value of $\|\overrightarrow{F_3}\|$.

(2) If the forces $\overrightarrow{F_1} = a\vec{\imath} + 2\vec{\jmath}$, $\overrightarrow{F_2} = 6\vec{\imath} - b\vec{\jmath}$, $\overrightarrow{F_3} = -4\vec{\imath} + 3\vec{\jmath}$ met at a point and in equilibrium .
Find the values of a and b .

(3) If the body is in equilibrium under the action of the represented coplanar forces as shown in the opposite figure where the magnitude of forces measured in dyne . Find the magnitude of F_1 and F_2



(4) A body of wight 50 Newton is in equilibrium under the action of the represented coplanar forces as shown in the opposite figure .
Find the magnitude of T_1 And T_2



(5) A particle in equilibrium under the action of forces of magnitudes F_1 , F_2 , 18 Newton can be represented by segments $\overline{AB}$, $\overline{BC}$, $\overline{CA}$ in order from the triangle ABC in the same cyclic order, where AB = 5 cm, BC = 4 cm , CA = 3 cm, find the values of: F_1 , F_2 .

(6) A square ABCD whose diagonals intersect at M , E is the midpoint of $\overline{AC}$, the forces whose magnitudes $2\sqrt{2}$, F_1 , F_2 Newton affected at the point M and act in the directions $\overrightarrow{MB}$, $\overrightarrow{MC}$, $\overrightarrow{MC}$ respectively . If the forces are in equilibrium , find the values of: F_1 , F_2 .

(7)) Three coplanar forces are in equilibrium their magnitudes are F_1,F_2, 8 kg.wt act at point ,if the measure of the angle between the line of action of the first force and the second force is 120° and the measure of the angle between the line of action of the second force and the third force is 150° . Find the magnitude of F_1 and F_2 .

(8) A light string of length 130 cm is fixed at one end to a vertical wall and a body of weight 240 gm.wt is tied to the other end. A horizontal force of magnitude F gm.wt acted on the body, moving it away from the wall by 50 cm to be in equilibrium. Find the magnitudes of F and the tension in the string.

(9) A weight of 80 gm . wt is suspended at the end of a light string of length 50 cm , the other end to the ceiling of a room, a force acts upon the weight to be in equilibrium when the weight at a distance 25 cm from the ceiling ,the force is perpendicular to the string in case of equilibrium . Find the magnitude of the force and the tension in the string .

(10) A lamp of weight 260 gm.wt is attached to the end of a light string 130 cm long, and the other end is fixed at a point in the ceiling of a room. A horizontal force is acting on the lamp, so the lamp is in equilibrium while it is 50 cm vertically below the ceiling. Find the magnitude of the force and the magnitude of the tension in the string.

(11) A body of weight 500 gm .wt is suspended by two light strings, one of them is inclined to the vertical by an angle of measure θ°, and the other string is inclined to the vertical by an angle of measure 45°. If the magnitude of tension in the first string is $250\sqrt{2}$ gm .wt . Find the measure of angle θ° and the magnitude of tension in the second string in case of equilibrium .

(12) A weight of 300 gm.wt is suspended by two light strings of lengths 12 cm and 9 cm from two points on a horizontal line 15 cm apart. Find the magnitude of tension in each of the strings in the equilibrium position.

(13) A body of weight 12 Newton was suspended from the end of a light string, the other end of which was fixed at a point on a vertical wall. A horizontal force acted on it, so the body became in equilibrium when the string was inclined on the wall at an angle of measure 30°. Find the magnitude of the tension and the magnitude of the horizontal force.

(14)) A weight of 65 gm .wt was suspended by two strings, 50 cm and 12 cm long, and its other ends were fixed to the string at two points on a single horizontal line such that the two strings were perpendicular. Find the magnitude of the tension in the two strings in case of equilibrium .

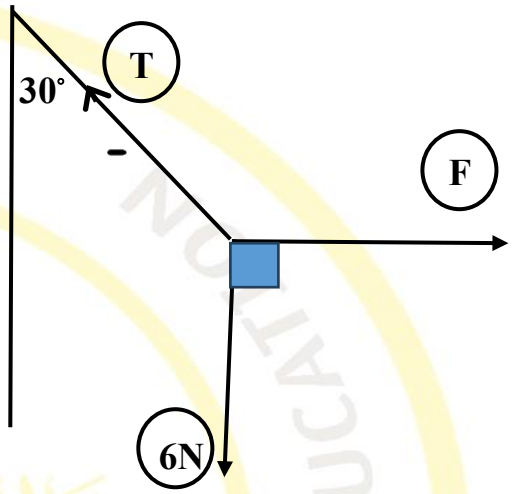
(15) A body of weight 60 Newton was suspended from one end of a string, the other end of which was fixed to a vertical wall. The body was displaced by a force in a direction perpendicular to the string until the body became inclined on the vertical at an angle of measure 45°. Find the magnitude of the force acting and the magnitude of the tension in the string in case of equilibrium .

Weekly Assessment (Week Five) - Mathematics Applications

First Group

(1) If $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, $\overrightarrow{F_3}$ are three coplanar forces met at a point and in equilibrium and $\overrightarrow{F_1}$=a $\vec{\imath}$ +4 $\vec{\jmath}$, $\overrightarrow{F_2}$ = 2 $\vec{\imath}$ - 4 $\vec{\jmath}$, $\overrightarrow{F_3}$ = 5 $\vec{\imath}$ + b $\vec{\jmath}$
Find the values of a and b .

(2) If the body is in equilibrium under the action of the represented coplanar forces as shown in the opposite figure where the magnitude of forces measured in Newton .
Find the magnitude of F and T



(3) Three coplanar forces are in equilibrium their magnitudes are F_1 , F_2 , 20 kg.wt act at point ,if the measure of the angle between the line of action of the first force and the second force is 150° and the measure of the angle between the line of action of the second force and the third force is 120° . Find the magnitude of F_1 and F_2 .

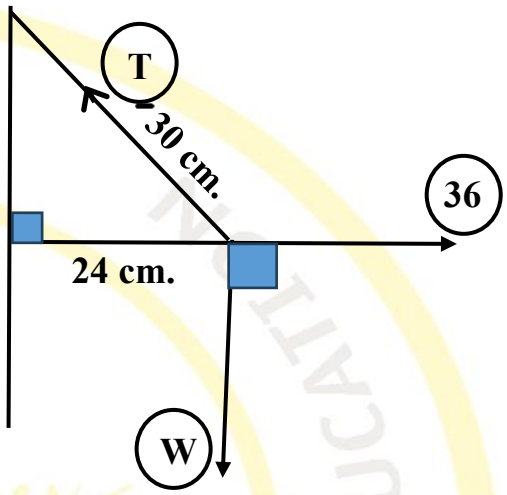
(4) A body of wight 120 gm.wt is suspended at the end of a light string of length 100 cm and the other end at a point of a vertical wall , a horizontal force of magnitude F gm.wt acts on the weight in a perpendicular direction to the wall which makes the body a part 80 cm from the wall . Find the magnitudes of the force F and the tension in the string in case of equilibrium .

(5) A weight of 75 gm.wt is suspended by two light strings of lengths 90 cm and 120 cm from two points on a horizontal line 150 cm apart. Find the magnitude of tension in each of the two strings in the equilibrium position.

Second Group

(1) If $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, $\overrightarrow{F_3}$ are three coplanar forces met at a point and in equilibrium and $\overrightarrow{F_1}$=a $\vec{\imath}$ +3 $\vec{\jmath}$, $\overrightarrow{F_2}$ = 8 $\vec{\imath}$ - 7 $\vec{\jmath}$, $\overrightarrow{F_3}$ = b $\vec{\jmath}$
Find the values of a and b .

(2) If the body is in equilibrium under the action of the represented coplanar forces as shown in the opposite figure where the magnitude of forces measured in Newton .
Find the magnitude of W and T



(3) Three coplanar forces are in equilibrium their magnitudes are F_1 , F_2 , $40\sqrt{3}$ kg.wt act at point ,if the measure of the angle between the line of action of the first force and the second force is 120° and the measure of the angle between the line of action of the second force and the third force is 150° . Find the magnitude of F_1 and F_2 .

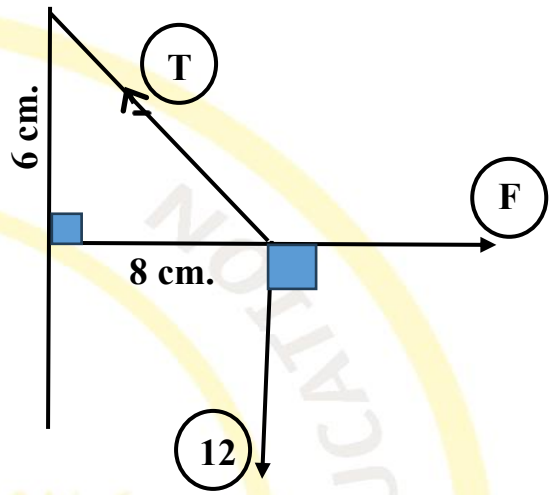
(4) A body of wight 600 gm.wt is suspended at the end of a light string of length 65 cm and the other end at a point of a vertical wall , a horizontal force of magnitude F gm.wt acts on the weight in a perpendicular direction to the wall which makes the body a part 25 cm from the wall . Find the magnitudes of the force F and the tension in the string in case of equilibrium .

(5) A weight of 300 gm.wt is suspended by two light strings of lengths 80 cm and 60 cm from two points on a horizontal line 100 cm apart. Find the magnitude of tension in each of the two strings in the equilibrium position.

Third Group

(1) If $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, $\overrightarrow{F_3}$ are three coplanar forces met at a point and in equilibrium and $\overrightarrow{F_1}$=a $\vec{\imath}$ - 4 $\vec{\jmath}$, $\overrightarrow{F_2}$ = - 3 $\vec{\imath}$ + b $\vec{\jmath}$, $\overrightarrow{F_3}$ = 9 $\vec{\imath}$
Find the values of a and b .

(2) If the body is in equilibrium under the action of the represented coplanar forces as shown in the opposite figure where the magnitude of forces measured in Newton .
Find the magnitude of F And T



(3) Three coplanar forces are in equilibrium their magnitudes are F_1 , F_2 , 60 kg.wt act at point ,if the measure of the angle between the line of action of the first force and the second force is 150° and the measure of the angle between the line of action of the second force and the third force is 120° . Find the magnitude of F_1 and F_2 .

(4) a body of wight 240 gm.wt is suspended at the end of a light string of length 150 cm and the other end at a point of a vertical wall , a horizontal force of magnitude F gm.wt acts on the weight in a perpendicular direction to the wall which makes the body a part 90 cm from the wall . Find the magnitudes of the force F and the tension in the string in case of equilibrium .

(5) A weight of 130 gm.wt is suspended by two light strings of lengths 25 cm and 60 cm from two points on a horizontal line 65 cm apart. Find the magnitude of tension in each of the two strings in the equilibrium position.