



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

للفص الثاني الثانوي "علمى"
الفصل الدراسى الأول
للعام الدراسى 2025 / 2026

الأسبوع الثالث

لجنة الإعداد

أ/ محمود السيد محمد

أ/ محمد عبد العاطى

لجنة الترجمة

أ/ بلال محمد رومية

أ/ إيمان العزبى

أ/ أمانى الشهاوى

لجنة مراجعة الترجمة

أ/ شريف البرهامى

أ/ عثمان مصطفى عثمان



Classroom Performance (Week Three) - Mathematics Applications

- 1- A force of magnitude 150 gm.wt acts in a direction of 60° north of west. Calculate its two components in the directions of north and west.
- 2- Resolve a force of magnitude 240 N in two directions, the first of which is inclined to the line of the force at an angle of 45° and the other at an angle of 60° on the other side.
- 3- Resolve a force of F Newton in the west direction into two components, the first in the direction of 30° northwest and its magnitude is 36 Newton and the second in the direction of the south. Find the magnitude of the force and the magnitude of the second component.
- 4- Resolve a force of 48 kg .wt acting in the southeast direction into two components, one acts in the east direction and the other acts in the southwest direction . Find the magnitude of these components.
- 5- A solid body weighing 360 N is placed on a plane inclined to the horizontal at an angle of 30° Find the magnitude of the components of this body's weight in the direction of the line of greatest slope of the plane and the direction perpendicular to it.
- 6- A body weighing 60 kg.wt is placed on an inclined plane of length 2.6 m and height 1.3 m. Find the magnitude of the weight components in the direction of the line of greatest slope of the plane and the direction perpendicular to it.



- 7- If $10\sqrt{3}$ kg.wt and 10 kg.wt are the magnitude of the component perpendicular to the plane and the component in the direction of the line of greatest slope of the plane, respectively, for the weight of a body placed on a smooth inclined plane make angle θ° with horizontal Find the magnitude of the weight of the body and the measure of the angle of inclination of the plane.
- 8- If $\vec{F}_1 = 4\hat{i} + 7\hat{j}$, $\vec{F}_2 = \hat{i} - 8\hat{j}$, $\vec{F}_3 = -5\hat{i} + \hat{j}$ three coplanar forces and met at a point A, Find the resultant of these forces.
- 9- If $\vec{F}_1 = (12, 300^\circ)$, $\vec{F}_2 = (5\sqrt{2}, 135^\circ)$, $\vec{F}_3 = (6\sqrt{3}, 90^\circ)$ three coplanar forces met at a point A find the resultant of these forces
- 10- ABCD is a rectangle in which AB = 6 cm, BC = 8 cm, $H \in \overline{BC}$, where BH = 6 cm. Forces of magnitudes 1, 10, $5\sqrt{2}$, 3 g.wt act on it. In the directions $\overrightarrow{AD}$, $\overrightarrow{AC}$, $\overrightarrow{AH}$, $\overrightarrow{AB}$ and respectively, find the magnitude of the resultant of these forces, then prove that their line of action passes through point H
- 11- ABCD is a rectangle in which AB = 8 cm, BC = 6 cm $H \in \overline{CD}$, where HD = 6 cm. Forces of magnitudes 6, 20, $13\sqrt{2}$, 2 N act on it. In the directions $\overrightarrow{AB}$, $\overrightarrow{CA}$, $\overrightarrow{AH}$, $\overrightarrow{AD}$ and B, respectively, find the magnitude of the resultant of these force.
- 12- ABC is equilateral triangle, M is the point of intersection of its medians. Forces of magnitudes 4, 4, 8 N acted on a point M in the directions $\overrightarrow{MB}$, $\overrightarrow{MC}$, $\overrightarrow{MA}$ respectively. Find the magnitude and direction of the resultant.

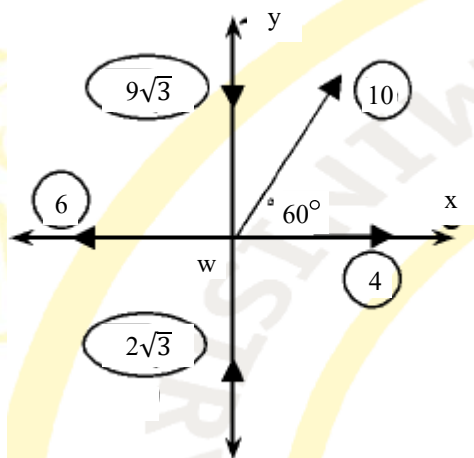


13- Forces of magnitudes F , K , 6 Newton acted on a point in the directions East, North, 30° South of West respectively. If the resultant of the forces is 8 Newton and in the direction 30° North of East, determine the value of each of F , K .

14- ABCDHW is a regular hexagon. Forces of magnitudes 2 , $4\sqrt{3}$, F , $2\sqrt{3}$, K kg.wt act at a point A and act in the directions $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$, $\overrightarrow{AH}$, $\overrightarrow{AW}$ respectively. If the resultant of these forces is 20 kg.wt and acts in the direction $\overrightarrow{AD}$ find the values of F , K .

15- In the opposite figure:

The coplanar forces of magnitudes 4 , 10 , $9\sqrt{3}$, 6 , $2\sqrt{3}$ units of force act at point (W), determine the resultant of these forces...





Homework (Week Three) - Mathematics Applications

- (1) A force of magnitude 100 gm.wt acts in direction of 30° north of west calculate its two components in direction north and west.
- (2) Resolve force of magnitude 5000 Newton in two directions one of them inclined to the line of action of the force by 45° and the other by angle 60° in the other side.
- (3) Resolve force of magnitude F N in North direction into two component the first one in direction 30° north of west, of magnitude 60 N and the second in west direction.
Find magnitude of force F and its second component.
- (4) A force of magnitude 60 kg.wt acts in direction south of east resolved in two component one of them in east direction and the second in south of west direction.
Find the two components.
- (5) An inclined plane with length 2m and height 1m . put on it a body of weight 50 kg.wt
Find the two components of weight in direction of line slope of plane and perpendicular to it.
- (6) An object with weight W on an inclined plane with horizontal by angle θ , $\tan \theta = \frac{3}{4}$
if component of weight in direction of plane equals 15N.find magnitude of weight of an object and component of weight perpendicular to plane.



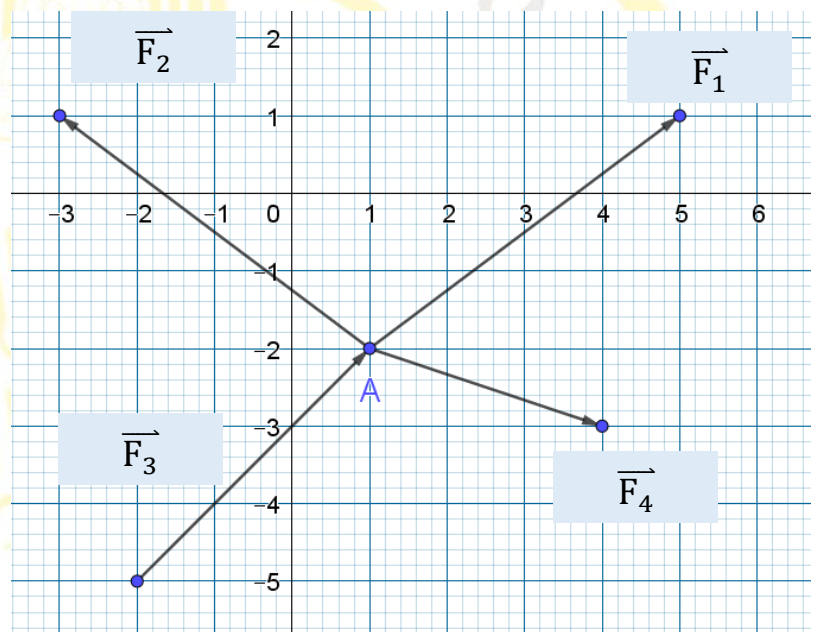
(7) If $\vec{F}_1 = 3\hat{i} + 5\hat{j}$, $\vec{F}_2 = 4\hat{i} - 7\hat{j}$, $\vec{F}_3 = -6\hat{i} + \hat{j}$ are three coplanar forces met at point find resultant of these forces.

(8) If $\vec{F}_1 = (14, 300^\circ)$, $\vec{F}_2 = (3\sqrt{2}, 135^\circ)$, $\vec{F}_3 = (7\sqrt{3}, 90^\circ)$ are three coplanar forces met at point. Find resultant of these forces .

(9) In the opposite figure:

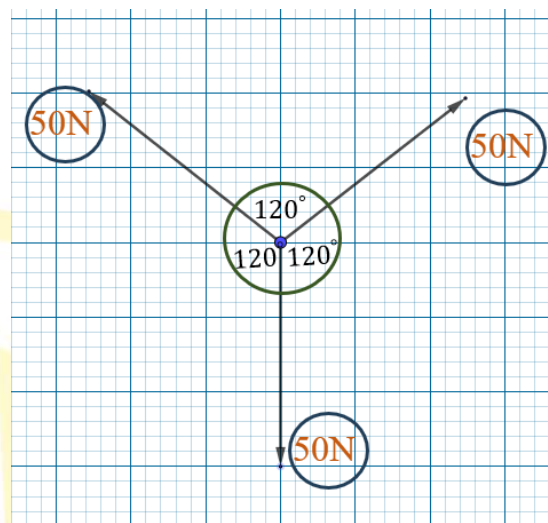
$\vec{F}_1$, $\vec{F}_2$, $\vec{F}_3$, $\vec{F}_4$ are four forces

act at point A, find resultant.

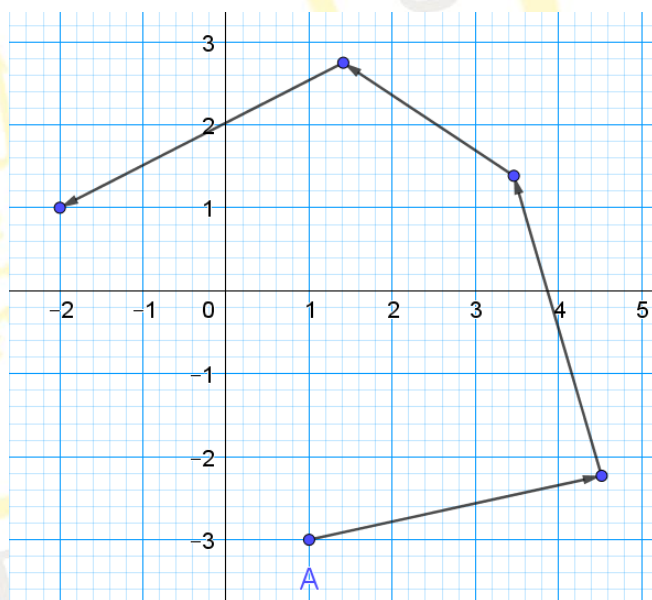




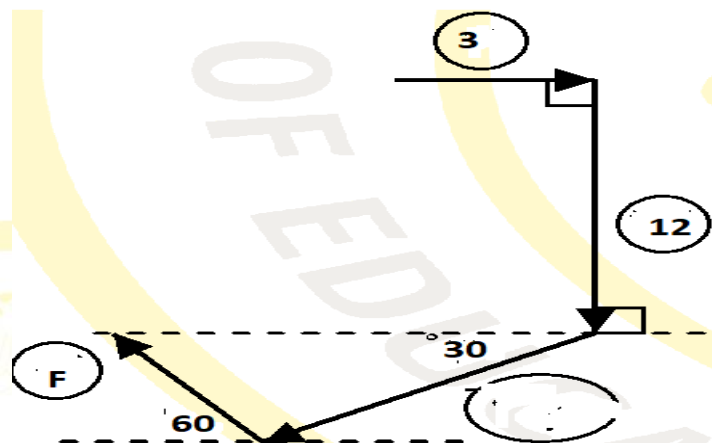
- (10) In the opposite figure:
Three equal forces magnitude of each
one is 50 N .find its resultant



- (11) In the opposite figure:
find the resultant of the forces
 $\vec{F}_1$, $\vec{F}_2$, $\vec{F}_3$, $\vec{F}_4$



- (11) Four coplanar forces of magnitude 3, 12, $6\sqrt{3}$, F kg.w represented by directed line segment in the figure, find F then find resultant of these forces .



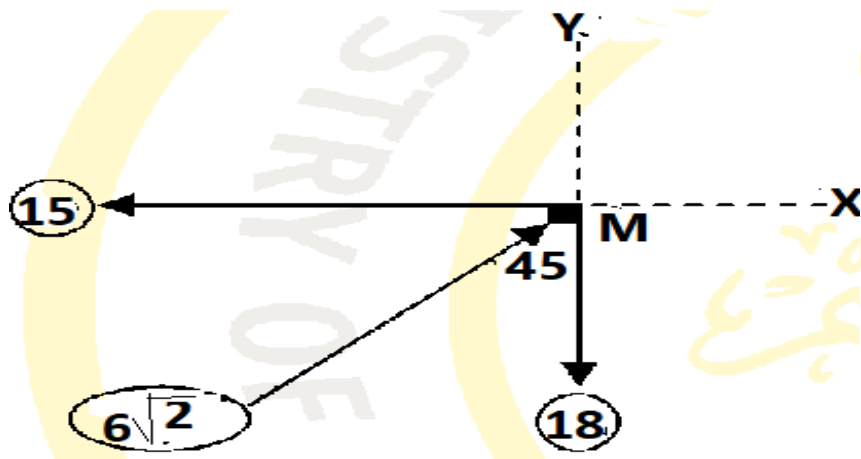
- (12) Four coplanar forces act at a point, the first 12N acts in east direction, the second 6N acts at 30° east north, the third 15 N in direction 60° north west, the fourth is $9\sqrt{3}$ N in direction 60° west south. find magnitude and direction of resultant of these forces .
- (13) Four coplanar forces act at a point, the first 12N acts in east direction, the second 6N acts at 30° East of North, the third 15 N in direction 60° North of West, the fourth is $9\sqrt{3}$ N in direction 60° West of South. find magnitude and direction of resultant of these forces .
- (14) Forces F , K , 6 act at a point in directions East, North and 30° South of East respectively, if resultant equals 8N in direction 30° North of East. find value of F and K
- (15) ABCD is rectangle, $AB=8\text{cm}$, $BC=6\text{cm}$, $E \in \overline{CD}$, $CE=2\text{cm}$ three forces F , 15, K g.w act in direction $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$, find value of F and K if resultant equals $15\sqrt{2}$ N works at direction $\overrightarrow{AE}$.



Weekly Assessment (Week Three) - Mathematics Applications

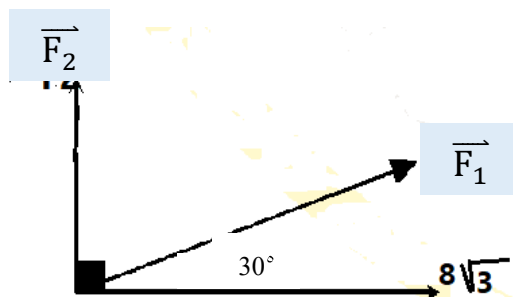
First group:

- (1) Resolve force of magnitude 5000N in two directions one of them inclined to the line of action of the force by 45° and the other by angle 60° in the other side.
- (2) A body of weight 200 N on an inclined plane with horizontal by angle 60° find two component of weight of this object in direction of greatest slope and perpendicular to it .
- (3) If $\vec{F}_1 = 3\hat{i} + 5\hat{j}$, $\vec{F}_2 = 4\hat{i} - 7\hat{j}$, $\vec{F}_3 = -6\hat{i} + \hat{j}$ are three coplanar forces met at point find resultant of these forces .
- (4) If $\vec{F}_1 = (20, 300^\circ)$, $\vec{F}_2 = (4\sqrt{2}, 135^\circ)$, $\vec{F}_3 = (10\sqrt{3}, 90^\circ)$ are three coplanar forces met at point find resultant of these forces .
- (5) Three coplanar forces of magnitude 15 , 18 , $6\sqrt{2}$ N act at point M find resultant of forces.

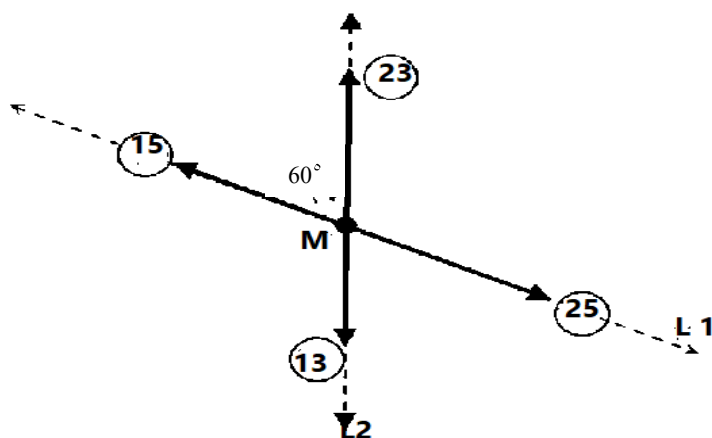


Second group :

(1) In the figure find $\vec{F}_1$ and $\vec{F}_2$



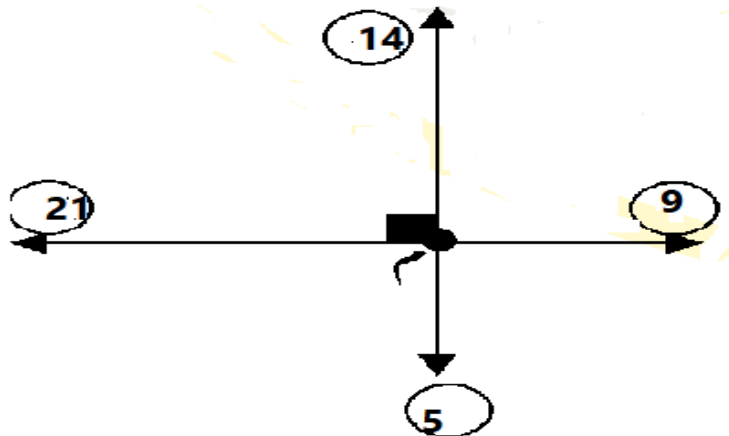
- (2) A body of weight 400 N on an inclined plane with horizontal by angle 30° , find two components of weight of this object in direction of greatest slope and perpendicular to it .
- (3) Resolve force of magnitude 12kg.w in two directions one of them inclined to the line of action of the force by 30° and the other by angle 120 on the other side.
- (4) If forces $\vec{F}_1 = 4\hat{i} - 2\hat{j}$, $\vec{F}_2 = -2\hat{i} - 3\hat{j}$, $\vec{F}_3 = 5\hat{j}$ find resultant of these forces .
- (5) $\vec{L}_1 \cap \vec{L}_2 = \{M\}$, forces of magnitude 23 ,15 ,25 , 13 gm.w at point M find resultant





Third group:

- (1) Resolve force of magnitude 180 N in two directions one of them inclined to the line of action of the force by 30° and the other by angle 90° on the other side.
- (2) Resolve force of magnitude F N in south direction into two component the first one in the east direction and its magnitude $36\sqrt{3}$ N and the second in direction 30° south of west find magnitude of force F and its second component ..
- (3) If $\vec{F}_1 = (16, 300^\circ)$, $\vec{F}_2 = (10\sqrt{2}, 135^\circ)$, $\vec{F}_3 = (6\sqrt{3}, 90^\circ)$ are three coplanar forces met at point find resultant of these forces .
- (4) An inclined plane with length 3m and height 1.5m . put on it a body of weight 20 kg.w. Find the magnitude of two component of weight in direction of line slope of plane and perpendicular to it .
- (5) Forces 9 , 14 , 21 , 5 kg.w act at point M find resultant of these forces .





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