



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

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

ونوجيهات رئيس الإدارة المركزية للتعليم العام

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مسنشار الرياضيات

أ / منال عرقول

إعدادات ونقييمات لمنهج تطبيقات الرياضيات لفان

للصف الثاني الثانوي "علمي"

الفصل الدراسي الأول

للعام الدراسي 2026 / 2027

الأسبوع الثالث

لجنة الإعداد

أ / محمد عبد العاطي أ / محمود السيد محمد

لجنة الترجمة

أ / إمانى الشهاوى أ / إيمان العربى أ / بلال محمد رومية

لجنة مراجعة الترجمة

أ / عثمان مصطفى عثمان أ / شريف البرهامى



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 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.
- 3- 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.
- 4- 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.
- 5- 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.
- 6- 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
- 7- 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

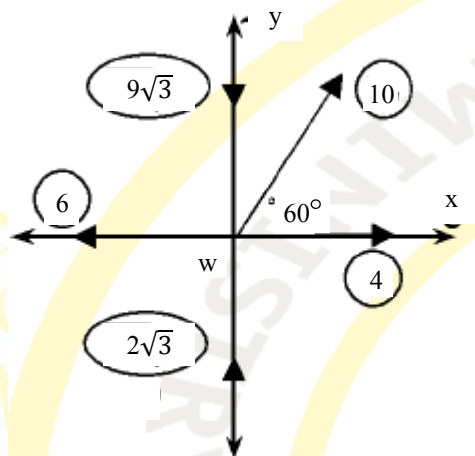


8- Forces of magnitudes F , K , 6 Newton acted on a point in the directions East, North, 30° South of West respectively. If the resultant of the forces is 8 Newton and in the direction 30° North of East, determine the value of each of F , K .

9- 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 .

10- 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...





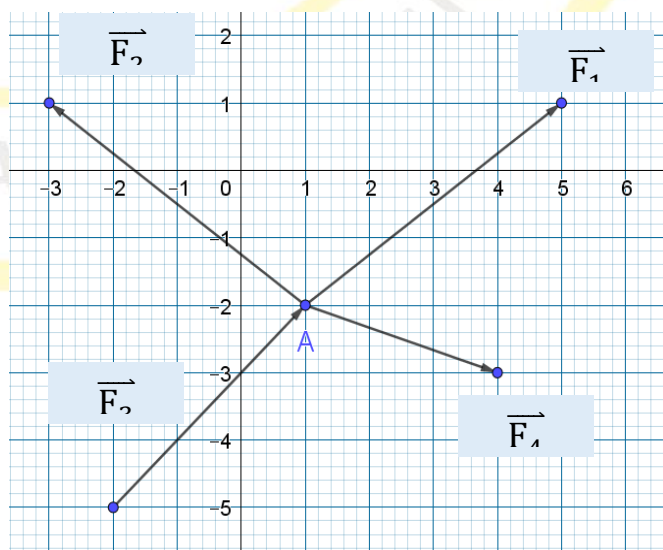
Homework (Week Three) - Mathematics Applications

- (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 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.
- (3) 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.
- (4) 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.
- (5) 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 .

- (6) In the opposite figure:

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

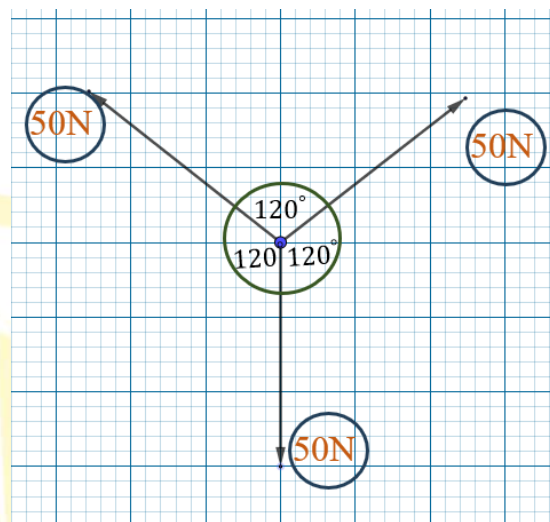
act at point A, find resultant.





(7) In the opposite figure:

Three equal forces magnitude of each one is 50 N .find its resultant



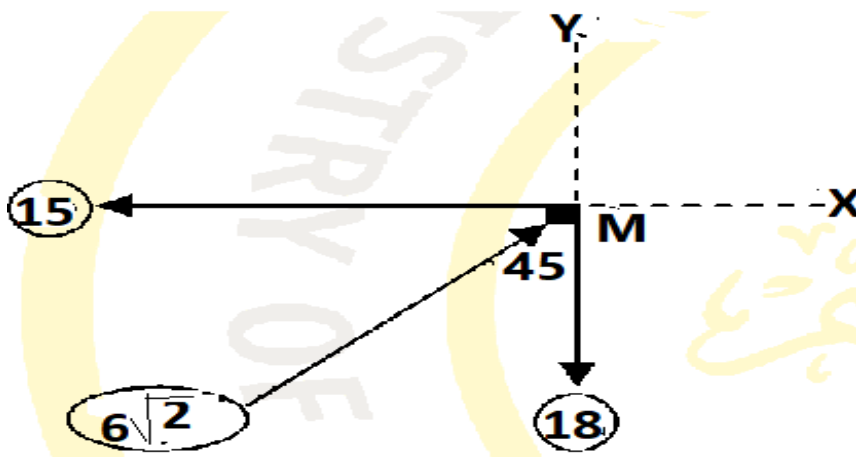
- (8) Four coplanar force act at point , the first 12N acts in east direction , the second 6N acts at 30° East of North ,the third 15 N in direction 60° North of Weast , the fourth is $9\sqrt{3}$ N in direction 60° Weast of South . find magnitude and direction of resultant of these forces .
- (9) Forces F, K,6 act at 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
- (10) 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 equal $15\sqrt{2}$ N works at direction $\overrightarrow{AE}$.



Weekly Assessment (Week Three) - Mathematics Applications

First group:

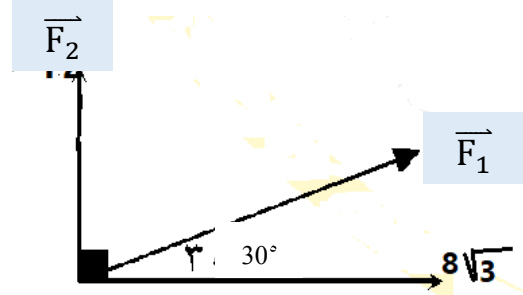
- (1) Resolve force of magnitude 5000N in two directions one of them inclined to the line of action of the force by 45° and the other by angle 60° in the other side.
- (2) A body of weight 200 N on an inclined plane with horizontal by angle 60° find two component of weight of this object in direction 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.



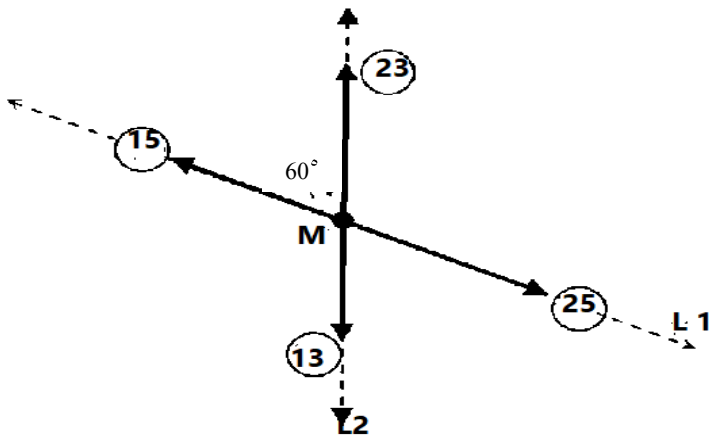


Second group :

(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 .

