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

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

وتوجيهات رئيس الادارة 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

للعام الدراسي 2026 / 2027

الأسبوع الثالث

لجنة الاعداد

أ/ محمد عبد العاطى أ/ محمود السيد محمد

لجنة الترجمة

أ/ أمانى الشهاوى أ/ إيمان العزبى أ/ بلال محمد رومية

لجنة مراجعة الترجمة

أ/ عثمان مصطفى عثمان أ/ شريف البرهامى

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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 $\overrightarrow{F_1} = 4\,\hat{\imath} + 7\,\hat{\jmath}$, $\overrightarrow{F_2} = \hat{\imath} - 8\,\hat{\jmath}$, $\overrightarrow{F_3} = -5\,\hat{\imath} + \hat{\jmath}$ three coplanar forces and met at a point A, Find the resultant of these forces.

6- If $\overrightarrow{F_1} = (12, 300°)$, $\overrightarrow{F_2} = (5\sqrt{2}, 135)$, $\overrightarrow{F_3} = (6\sqrt{3}, 90°)$ 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

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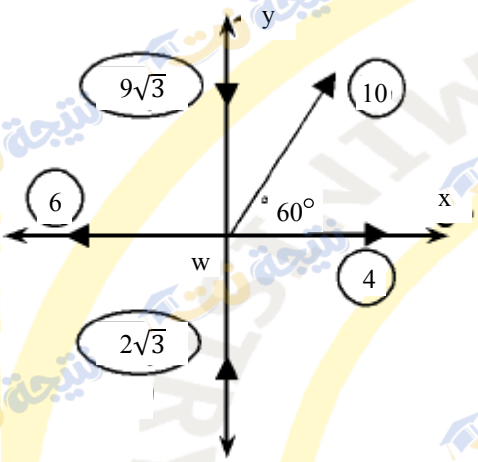
8- Forces of magnitudes F, K, 6 Newton acted on a point in the directions East, North, 30° South of West respectively. If the resultant of the forces is 8 Newton and in the direction 30° North of East, determine the value of each of F , K.

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- <u>In the opposite figure:</u>

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...



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Homework (Week Three) - Mathematics Applications

(1) A force of magnitude 100 gm.wt acts in direction of 30^o 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^o 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

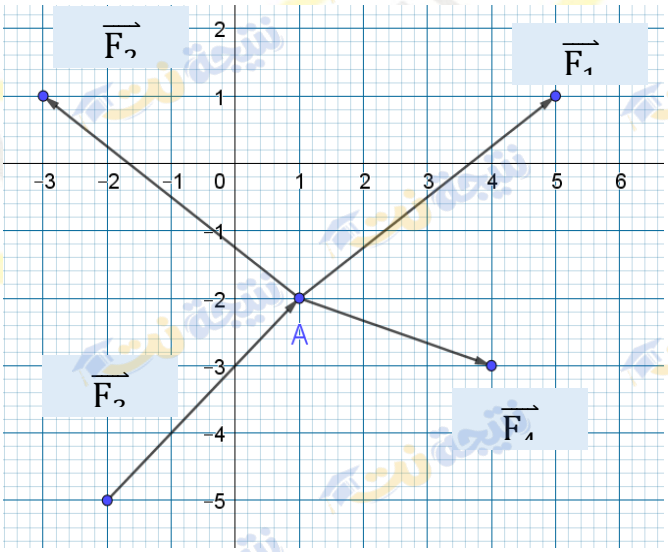
Find the two components of weight in direction of line slope of plane and perpendicular to it.

(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 $\overrightarrow{F_1} = (14, 300^o)$, $\overrightarrow{F_2} = (3\sqrt{2}, 135^0)$, $\overrightarrow{F_3} = (7\sqrt{3}, 90^0)$ are three coplanar forces met at point. Find resultant of these forces .

(6) In the opposite figure:

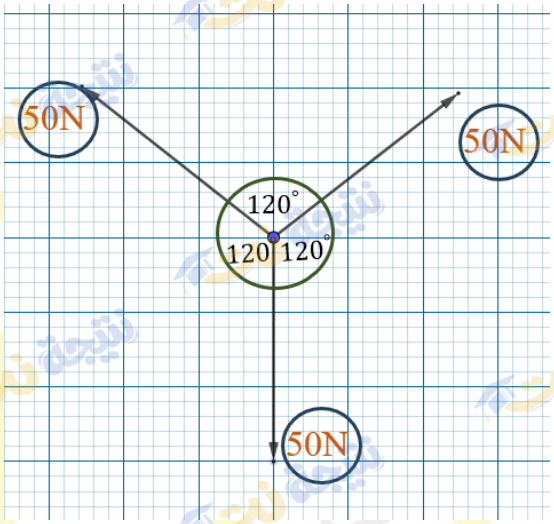
$\overrightarrow{F_1}$, $\overrightarrow{F_2}$, $\overrightarrow{F_3}$, $\overrightarrow{F_4}$ are four forces act at point A, find resultant.



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(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=8cm, BC = 6cm ,E $\in \overline{CD}$, CE =2cm 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 $\overrightarrow{AE}$.

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Weekly Assessment (Week Three) - Mathematics Applications

First group:

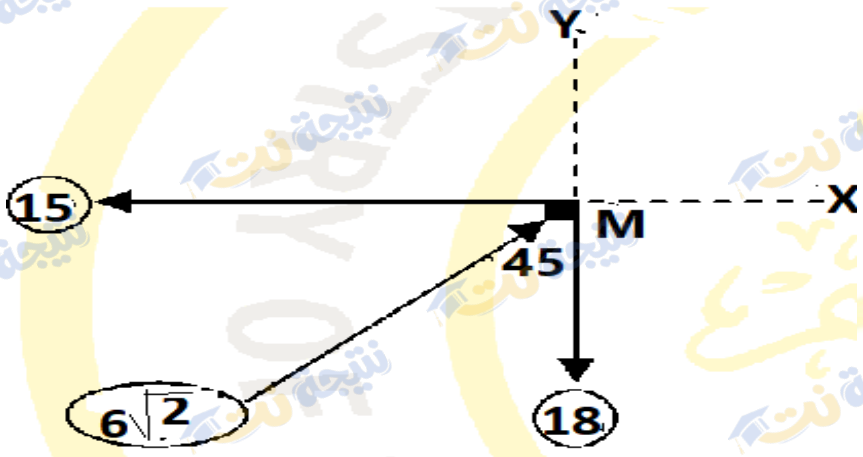
(1) Resolve force of magnitude 5000N in two directions one of them inclined to the line of action of the force by 45 and the other by angle 60° in the other side.

(2) A body of weight 200 N on an inclined plane with horizontal by angle 60^{o} find two component of weight of this object in direction of greatest slope and perpendicular to it .

(3) If $\overrightarrow{F_1} = 3\hat{\imath} + 5\hat{\jmath}$, $\overrightarrow{F_2} = 4\hat{\imath} - 7\hat{\jmath}$, $\overrightarrow{F_3} = -6\hat{\imath} + \hat{\jmath}$ are three coplanar forces met at point find resultant of these forces .

(4) If $\overrightarrow{F_1} = (20, 300^{o})$, $\overrightarrow{F_2} = (4\sqrt{2}, 135^{o})$, $\overrightarrow{F_3} = (10\sqrt{3}, 90^{o})$ are three coplanar forces met at point find resultant of these forces .

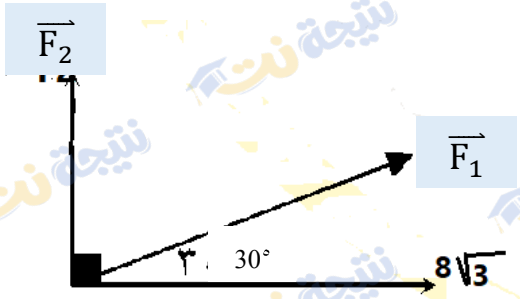
(5) Three coplanar forces of magnitude 15 ,18 ,$\sqrt{2}$ N act at point M find resultant of forces.



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Second group :

(1) In the figure find $\overrightarrow{F_1}$ and $\overrightarrow{F_2}$

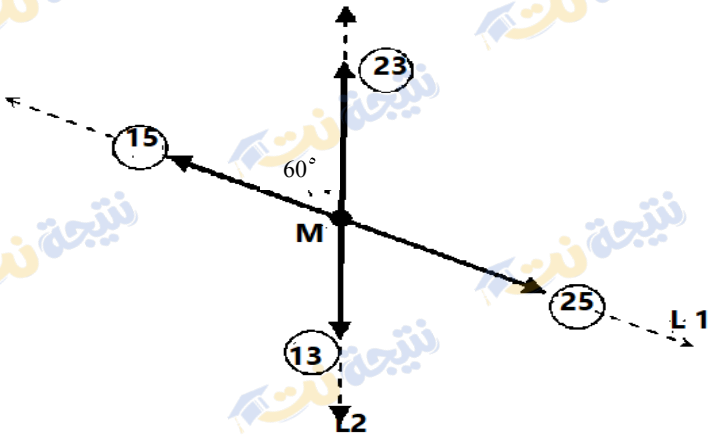


(2) A body of weight 400 N on an inclined plane with horizontal by angle 30^o ,find two components of weight of this object in direction of greatest slope and perpendicular to it .

(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 $\overrightarrow{F_1} = 4\hat{\imath} - 2\hat{\jmath}$, $\overrightarrow{F_2} = -2\hat{\imath} - 3\hat{\jmath}$, $\overrightarrow{F_3} = 5\hat{\jmath}$ find resultant of these forces .

(5) $\overleftrightarrow{L_1} \cap \overleftrightarrow{L_2} = \{M\}$, forces of magnitude 23 ,15 ,25 , 13 gm.w at point M find resultant



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Third group:

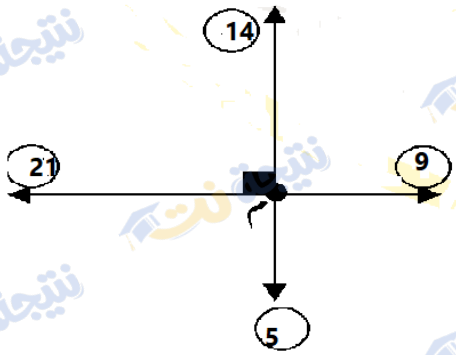
(1) Resolve force of magnitude 180 N in two directions one of them inclined to the line of action of the force by 30° and the other by angle 90^o on the other side.

(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^o south of weast find magnitude of force F and its second component ..

(3) If $\overrightarrow{F_1}$ =$(16,300^o)$, $\overrightarrow{F_2}$ =$(10\sqrt{2},135^o)$, $\overrightarrow{F_3}$ =$(6\sqrt{3},90^o)$ 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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