نموذج (١٠) لامتحان شهادة إتمام الدراسة الثانوية العامة ٢٠٢٥ / ٢٠٢٦ م

المادة : الرياضيات التطبيقية باللغة الإنجليزية (الشعبة العلمية رياضيات) الزمن : ساعتان

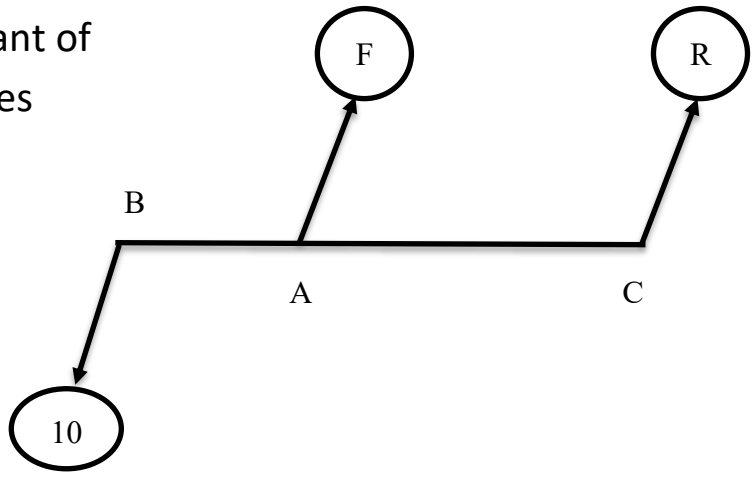
==========

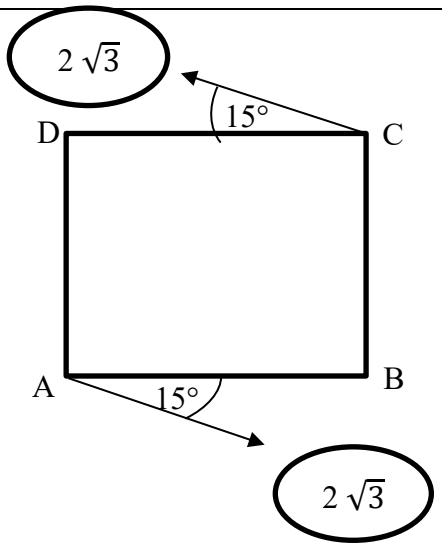
أولاً: الأسئلة الموضوعية (الاختيار من متعدد) "كل سؤال درجة واحدة"

(1)	A body moves in a straight line and its displacement given as a function in time by the relation $S = t^3 - 6t^2$ meter, then the motion is decelerated in the interval ……..						
(a)	]0,2[	(b)	]4,∞[	(c)	]2,4[	(d)	]2,4]

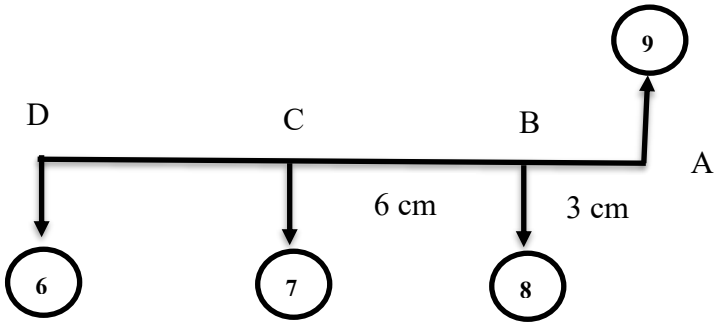
(2)	A body of mass (2n+3) kg. moves with initial velocity 2 m/Sec., then the magnitude of the force acted on the body is 73 Newton when t = …….. Seconds.						
(a)	2	(b)	3	(cN)	4	(d)	5

(3)	A force of magnitude 5 newton acted on a plane. If the two points A, B lie in the same plane such that $\vec{F} = 3\ \overrightarrow{AB}$, $M_A = 5k+10$ and $M_B = 3k+14$, then the distance between the point A and the line of action of the force = ……..length unit						
(a)	2	(b)	3	(c)	4	(d)	5

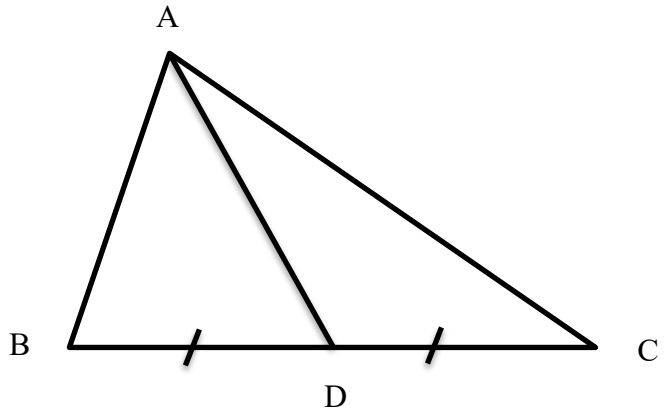
(4)	In the opposite figure: R is the magnitude of the resultant of two parallel forces of magnitudes F Newton, 10 Newton such that AC = 2 AB then $R \times F$ =…….. $(Newton)^2$ 						
(a)	50	(b)	75	(c)	150	(d)	100

(5)	In the opposite figure: ABCD is a square of diagonal length 12 cm. Two forces of magnitudes $2\sqrt{3}$ Newton, $2\sqrt{3}$ Newton form a couple, then the norm of moment of the couple = …….. Newton.cm. 						
(a)	$12\sqrt{3}$	(b)	18	(c)	36	(d)	$24\sqrt{3}$

(6)	A man stands on the floor of a lift, if the left moves vertically upwards with acceleration of magnitude (a) m/sec^2. if the mass of the man (2k) kg. and the mass of the left (5k) kg. Then the ratio between the magnitude of the pressure of the man on the floor of the left and the magnitude of the tension in the wire of the left =…….						
(a)	$\frac{2}{5}$	(b)	$\frac{2}{3}$	(c)	$\frac{2}{7}$	(d)	$\frac{3}{7}$

(7)	In the opposite figure: The given forces are parallel And one of these forces is the resultant of the other forces then CD = ……. cm. 						
(a)	5	(b)	5.5	(c)	4	(d)	4.5

(8)	A body moves in a straight line such that the algebraic measure of its acceleration is given by the relation a = 2n+k and the algebraic measure of the average acceleration during the interval [2,4] equals -2 cm/sec^2, then k=…….						
(a)	- 4	(b)	4	(c)	- 8	(d)	8

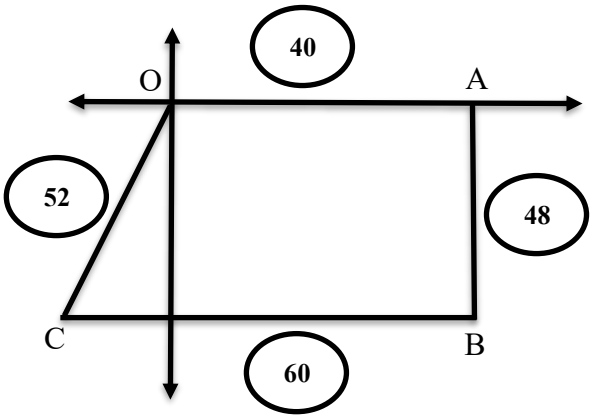
(9)	If the force $\overrightarrow{F}$ = 10 $\hat{\imath}$ +5 $\hat{\jmath}$ acts at the point A The point D is the midpoint of $\overline{BC}$ Such that $\overrightarrow{BA}$ + $\overrightarrow{CA}$ = (4, - 6) Then $\overrightarrow{M_D}$ = …… $\hat{k}$ 							
(a)	80	(b)	- 80	(c)	40	(d)	- 40

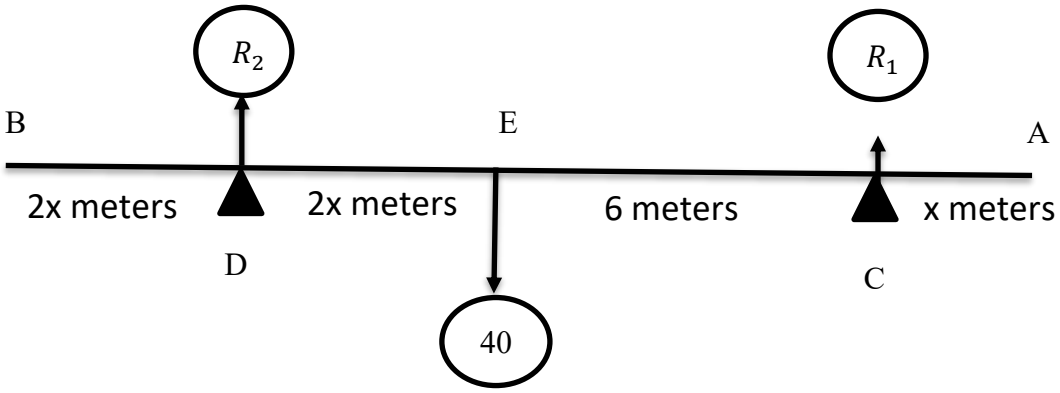
(10)	If the two forces $\overrightarrow{F_1}$, $\overrightarrow{F_2}$ form a couple such that $\overrightarrow{F_1}$ = (-3,2) acts at the point A (1,1), $\overrightarrow{F_2}$ acts at the point B (-1, n) such that AB is the arm of the moment of the couple Then the magnitude of the moment of the couple = ……. Units of moment.						
(a)	3	(b)	5	(c)	10	(d)	13

ثانياً : الأسئلة الموضوعية (الاختيار من متعدد) "كل سؤال درجتان"

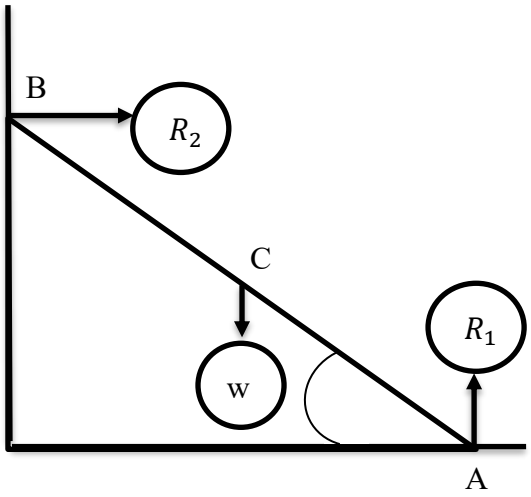
(11)	A body started its motion from rest under the action of a constant force, at an instant the algebraic measure of the momentum = 112 kg.m/Sec and the work done by the force at this instant is 80 kg.wt.m, then the magnitude of its velocity at this instant = ……. m/Sec						
(a)	8	(b)	152	(c)	14	(d)	12

(12)	A body moves in a straight line, the algebraic measure of its velocity is given by the relation v = $\frac{1}{r^2}$ m/Sec. then the algebraic measure of its acceleration = ……. m/Sec^2						
(a)	-32	(b)	32	(c)	-64	(d)	64

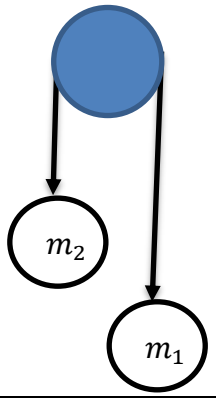
(13)	In the opposite figure: ABCO is a trapezium right angled at B Such that A (x,0), C (-5, -y) The forces acted on its sides are represented Completely by directed line segments as in the opposite figure and equivalent to a couple. then its magnitude =……..units of moment 						
(a)	400	(b)	600	(c)	1200	(d)	2400

(14)	AB is a uniform wooden rod of weight 40 kg.wt. rests horizontally on two supports at C and D where AC = x meter, ED = DB = 2x meter, a man of weight 80 kg.wt stands at A ,If the maximum distance the man can move in the direction of $\overrightarrow{AB}$ without rotating the rod is y meter, then $\frac{y}{x}$ = ……. 							
(a)	6	(b)	4	(c)	7	(d)	8

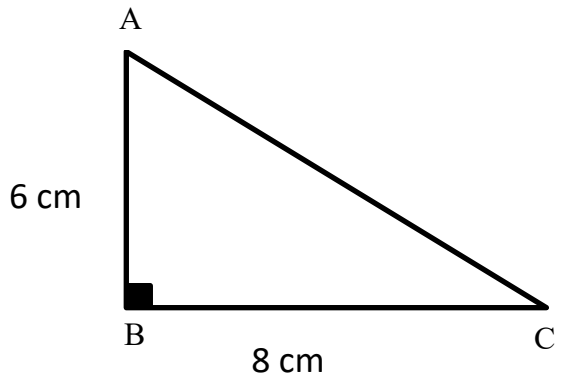
(15)	A body of mass 3 kg. starts its motion from rest under the action of a force $\overrightarrow{F}$ newton from the point whose position vector is (2,5) meter, and after 3 seconds the position vector is (11,23) meter, then the work done by this force = ……. joul						
(a)	260	(b)	270	(c)	27	(d)	2700

(16)	$\overline{AB}$ is a uniform rod of weight w newton rests with its end B against a smooth vertical wall and its end A on a rough horizontal ground and the rod about to slide such that the friction force between the rod and the ground = $7\sqrt{3}$ newton, R_1 = 14 newton. then θ = ……° 						
(a)	15	(b)	30	(c)	45	(d)	60

(17)	A car of mass k tons ascends an inclined road, if the road inclined to the horizontal by an angle whose sine = $\frac{1}{200}$ with maximum velocity 36 km/hr. if the resistance was 10 kg.wt for each ton of the mass of the car and the power is 12 horses , then k=……..tons						
(a)	3	(b)	4	(c)	6	(d)	8

(18)	Two masses m_1 , m_2 grams . If the system moves from rest And after n seconds the ratio between The kinetic energy of the two bodies = 4:3 respectively And the pressure on the pully = 240 gm.wt Then m_2= ……. gm 						
(a)	260	(b)	105	(c)	140	(d)	150

ثالثاً: الأسئلة المقالية " كل سؤال درجتان"

(19)	ABC is a right-angled triangle at B, AB = 6 cm., BC = 8 cm. The force $\overrightarrow{F}$ acted in the plane of the triangle Such that M_B = - 60 N.cm and M_A = M_C = 60 N.cm Find the magnitude of F 

(20)	A body projected from the bottom of a rough inclined plane, if the kinetic energy at this moment = 100 joule. If the body reached the top of the plane and then be at rest, given that the work done against friction during ascending = 20 joule. Find its potential energy at the top of the plane.

Good luck