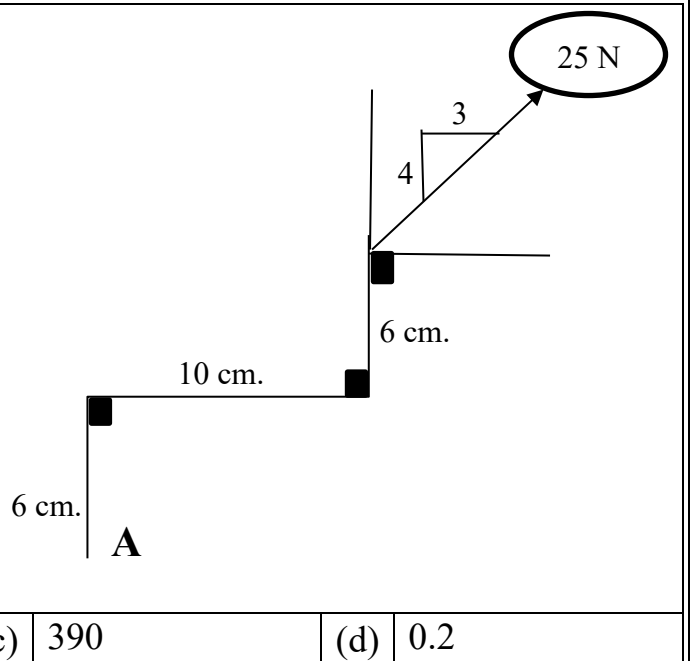
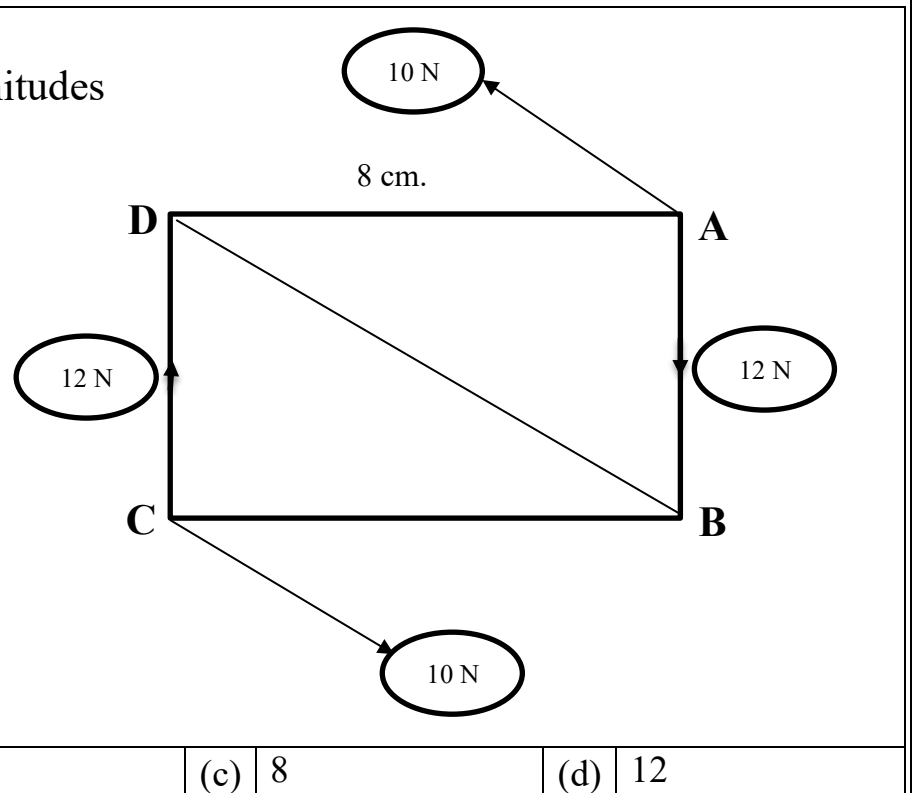


أولاً : الأسئلة الموضوعية (الاختيار من متعدد) "كل سؤال درجة واحدة"

(1)	In the opposite figure: The algebraic measure of the moment of the force 25 newton about the point A = Newton. meter 
(a)	20
(b)	380
(c)	390
(d)	0.2

(2)	In the opposite figure: If the two forces of magnitudes 10 and 10 Newton are parallel to $\overrightarrow{BD}$ and the system is in equilibrium, then $CD = \dots\dots\dots$ cm. 
(a)	10
(b)	6
(c)	8
(d)	12

(3)	If the line of action of the force $\vec{F} = k \hat{i} - 8 \hat{j}$ passes through the two points A (3,9) and B (0,5), then k =						
(a)	6	(b)	- 6	(c)	8	(d)	- 8

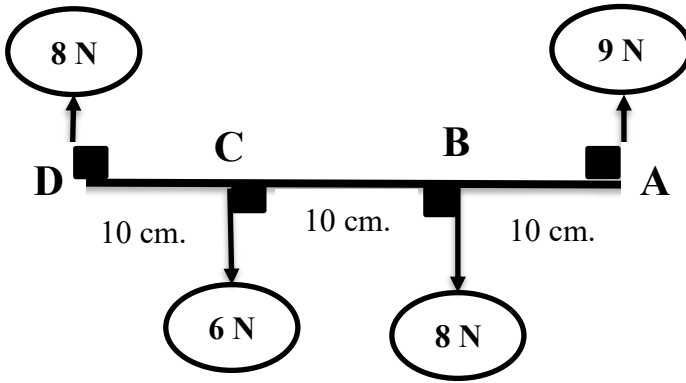
(4)	A particle moves in a straight line from a fixed point such that the algebraic measure of its velocity is given by the algebraic measure of its position r by the relation $v = r^3 - 16$ then, the algebraic measure of its acceleration at $v = 11$ meter is m/sec ²						
(a)	1	(b)	27	(c)	363	(d)	297

(5)	A body of mass 1000 gm. moves with velocity of magnitude $(2t + 5)$ m/sec. where t is the time in seconds, if the mass of the body increase at rate 0.6 kg. / sec. then the magnitude of the force acting on the body at any moment is newton.						
(a)	$2.4 t + 2003$	(b)	$1.2 t + 2000$	(c)	$1.2 t + 2$	(d)	$2.4 t + 5$

(6)		in the opposite figure: two parallel forces of magnitudes 4 newton and F newton, their resultant is R newton if the line of action of the resultant is $\overrightarrow{AD}$.					
		then F = Newton.					
(a)	6	(b)	2.25	(c)	5	(d)	6.25

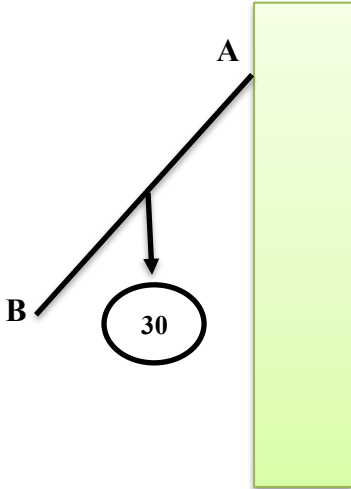
(7)	In the opposite figure: ABCDEO regular hexagon of center M, $XY = 12$ cm. If the shown forces are parallel Then the line of action of The resultant is						
(a)	$\vec{BE}$	(b)	$\vec{OA}$	(c)	$\vec{CD}$	(d)	$\vec{XY}$
(8)	A particle moves in a straight line from rest and from a fixed point such that the algebraic measure of its acceleration is given as a function in its position by the relation $a = \frac{1}{1+r}$ (a measured in m/sec^2 and r in meter), then $v^2 = \dots\dots\dots$						
(a)	$\ln(1+r)^2$	(b)	$\ln(r^2+1)$	(c)	$\frac{1}{2} \ln(r+1)$	(d)	$\ln(r+1)$
(9)	A body of mass 80 kg. put inside a lift moves vertically upwards with acceleration of algebraic measure $a = (4t - t^2) \text{ m/sec}^2$, then the maximum value of the pressure on the floor of the lift= Newton						
(a)	1176	(b)	464	(c)	1104	(d)	2704.8
(10)	A car of constant power of its engine and its mass 1200 kg., started its motion from rest, if its kinetic energy becomes 75000 kg. wt . meter after 8 seconds from the beginning of the motion, then the average power of the engine of the car = hours						
(a)	122	(b)	250	(c)	125	(d)	1225

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

(11)	In the opposite figure: a set of parallel forces if the resultant of these forces acts at point $M \in \overleftrightarrow{AB}$ then $M \in \dots\dots\dots$						
(a)	$\overline{CD}$	(b)	$\overline{BC}$	(c)	$\overline{CD}$	(d)	$\overline{BA}$

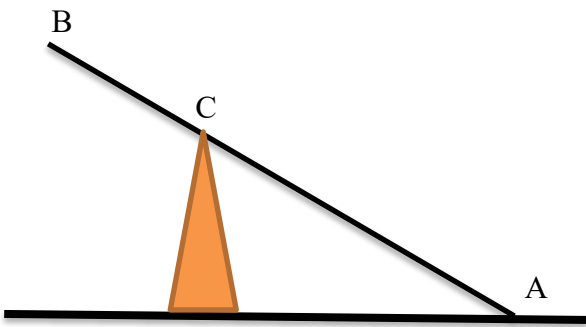
(12)	A body of mass m kg. descends from rest from the top of an inclined plane to the horizontal with an angle of measure 30° against a constant resistance of magnitude equals $\frac{1}{4}$ the magnitude of the weight of the body, if the kinetic energy of the body at the end of the plane is 98 joule, then the potential energy of the body at the top of the plane = Joule							
(a)	196 m	(b)	196	(c)	98	(d)	98 m	

(13)	In the opposite figure: ABCD is a trapezium in which $AB = AD = CD = 10$ cm. and $BC = 20$ cm. if the forces shown act in its sides, then the sum of the algebraic measure of the moments about B = Newton. cm						
(a)	$-400\sqrt{3}$	(b)	$-100\sqrt{3}$	(c)	$-200\sqrt{3}$	(d)	$-300\sqrt{3}$

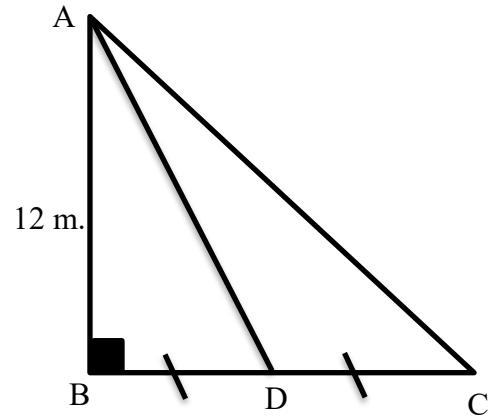
(14)	In the opposite figure: $\overline{AB}$ is a uniform rod of weight 30 Newton hanged from its end A by a hinge in a vertical wall, a couple whose norm of Its moment = $300\sqrt{3}$ Newton.cm acts on it and the rod is in equilibrium when it inclined to the wall by angle of measure 60°, then the length of the rod = cm.						
(a)	20	(b)	40	(c)	$20\sqrt{3}$	(d)	$40\sqrt{3}$

(15)	A and B are two points on a horizontal straight line, a particle started its motion from rest from point A towards point B, if the algebraic measure of its velocity (v) is given by the relation $v = (10 t + 3 t^2)$ m/sec., another body started from rest also from point B towards point A with acceleration $(0.6 t)$ m/sec ² , (where t is the time in seconds.) if the two bodies met after 5 seconds from the beginning of the motion, given that the two bodies start motion at the same moment, then AB = meter						
(a)	262.5	(b)	130	(c)	255	(d)	1000

(16)	A body moves under the action of a force of magnitude F newton such that $F = 20 + (t + k)^3$, where t is the time in seconds, if the magnitude of the impulse of the force on the body during the third second = 187.75 Newton. sec, then k =							
(a)	5	(b)	2	(c)	4	(d)	3	

(17)	In the opposite figure: $\overline{AB}$ is a uniform rod of weight 48 newton and of length 50 cm. rests with its end A on a rough horizontal ground, and from point C on a smooth support, if $CB = 10$ cm. and the height of the support = 20 cm., then the magnitude of the reaction at C = Newton						
(a)	24	(b)	$15\sqrt{3}$	(c)	38.4	(d)	$12\sqrt{3}$

- (18) In the opposite figure:
If $DB = DC$
A body of weight 96 newton starts to move from point A towards D on the road $\overline{AD}$, such that A is at height 12 m. from the ground surface.
then the potential energy at the Point of intersection of medians of the triangle ABC = Kg.wt.m

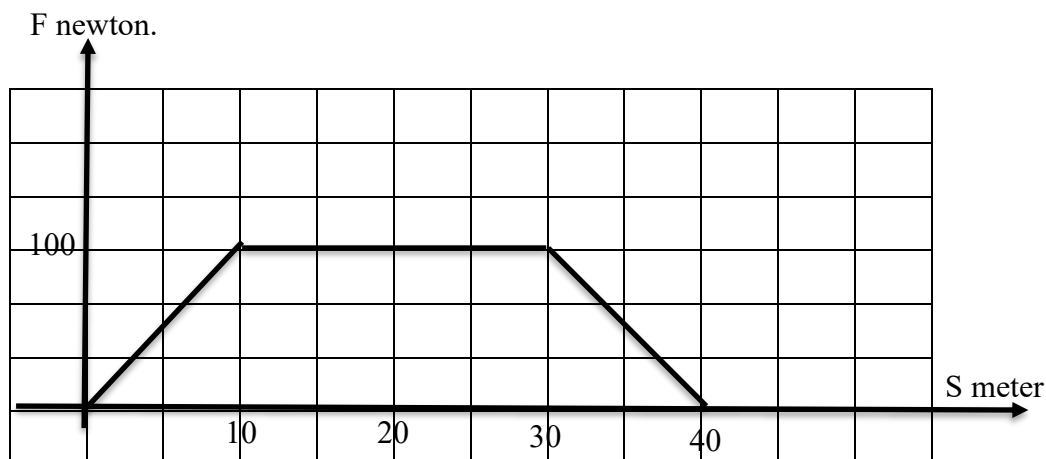


- (a) 348 (b) 768 (c) 7526.5 (d) 3763.5

ثالثاً: الأسئلة المقالية " كل سؤال درجتان "

- (19) ABC is a triangle in which $AB = 24$ cm., $BC = 28$ cm. and $AC = 32$ cm. forces of magnitudes 12, 14 and 16 newton act on sides of the triangle ABC in directions of $\overrightarrow{AB}$, $\overrightarrow{BC}$ and $\overrightarrow{CA}$ respectively. find the magnitude of the moment of the couple resulting from these forces.

- (20) The opposite figure Represents the displacement- force curve in $[0, 40]$
Find the change in kinetic energy in $[10, 35]$



Good luck