

## حل نموذج اختبار تجريبي وفق الهيكل الوزاري منهج انسابير



### تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف التاسع المتقدم ← فيزياء ← الفصل الثالث ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 2025-06-07 18:50:41

ملفات اكتب للمعلم اكتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل  
منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي للمدرس

المزيد من مادة  
فيزياء:

### التواصل الاجتماعي بحسب الصف التاسع المتقدم



صفحة المناهج  
الإماراتية على  
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

### المزيد من الملفات بحسب الصف التاسع المتقدم والمادة فيزياء في الفصل الثالث

حل نموذج تدريبي للاختبار النهائي وفق الهيكل الوزاري

1

نموذج تدريبي للاختبار النهائي وفق الهيكل الوزاري

2

مراجعة الوحدة العاشرة حالات المادة

3

شرح كامل تمارين الكتاب وفق الهيكل الوزاري مع الحلول

4

تجميعية أسئلة صفحات الكتاب وفق الهيكل الوزاري منهج بريدج

5

9 A

## الامتحان للفصل الدراسي الثالث 2024-2025

exam for the 3<sup>rd</sup> semester 2024-2025

	اسم الطالب
	الصف

يملأ هذا الجدول بدقة تامة من قبل لجنة التقدير						
اسم المراجع	اسم المقدر 2	اسم المقدر 1	الدرجة			رقم السؤال
			المراجع	المقدر 2	المقدر 1	
						Q1
						Q2
						Q3
						Q4
						Q5
						Q6
						المجموع

## Question

السؤال

1

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Q1) A satellite is orbiting earth at a distance of 220 km from its surface, Given that the mass of Earth is  $5.97 \times 10^{24}$  kg and the radius of Earth is  $6.38 \times 10^6$  m, answer :

يدور قمر صناعي حول الارض على مسافة 220 كم من سطحها , تبلغ كتلة الارض  $5.97 \times 10^{24}$  kg و نصف قطر الارض  $6.38 \times 10^6$  m اجب عما يلي

A) Find the free fall acceleration at the height at which the satellite is orbiting.

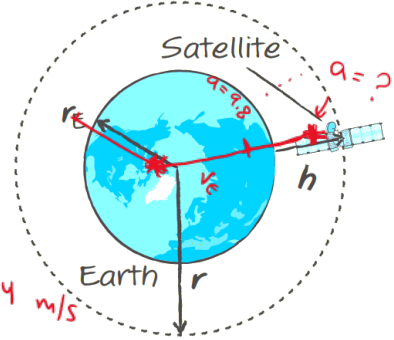
جد تسارع السقوط الحر على الارتفاع الذي يدور فيه القمر الصناعي

$$r = h + r_E = 220000 + 6.38 \times 10^6 = 6600000 \text{ m}$$

$$a = g \left( \frac{r_E}{r} \right)^2 = 9.8 \times \left( \frac{6.38 \times 10^6}{6600000} \right)^2 = 9.16 \text{ m/s}^2$$

B) Find the orbital speed of the satellite جد سرعة القمر الصناعي

$$V = \sqrt{\frac{G m_E}{r}} = \sqrt{\frac{6.67 \times 10^{-11} \times 5.97 \times 10^{24}}{6600000}} = 7767.4 \text{ m/s}$$



## Question

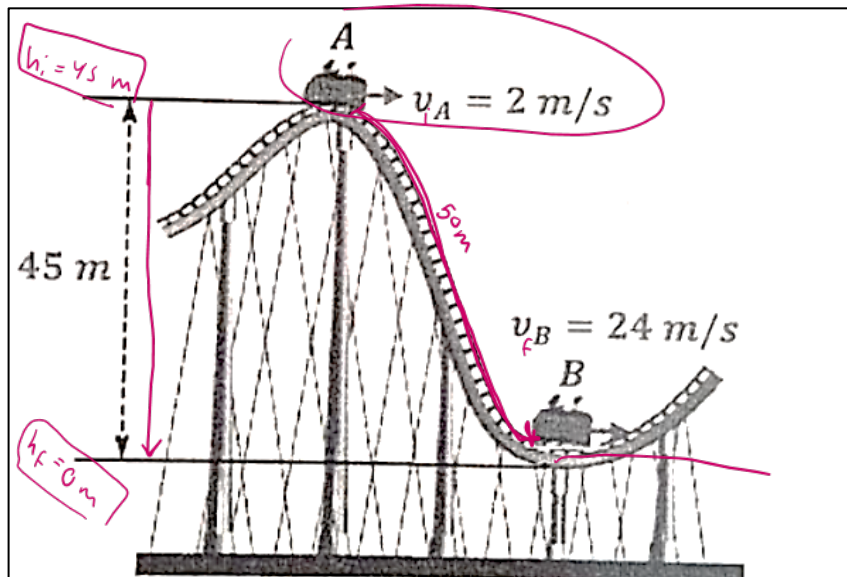
السؤال

2

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Q2 ) Rua and her brother Omar went to the amusement park, where they rode a roller coaster car. When the car was moving at a velocity of 2 m/s at location A, it suddenly descended along sloped path of length 50 m, so that the change in vertical height across this sloping path is 45 m, and the speed of the cart is 24 m/s at location B, as shown in the figure below. If the mass of the car and its passengers is 300 kg, answer the following :

ذهبت رؤى و أخوها عمر الى مدينة الألعاب، حيث ركبا عربة قطار الملاهي و عندما كانت العربة تتحرك بسرعة مقدارها 2 م/ث عند الموقع أ، هبطت فجأة عبر مسار مائل طوله 50 م بحيث كان التغير في الارتفاع الرأسي عبر هذا المسار المنحدر 45 م ، و مقدار سرعة العربة 24 م/ث عند الموقع ب ، كما هو مبين في الشكل ادناه. اذا كانت كتلة العربة مع ركابها 300 كغ ، فأجب عما يلي :



- A. Calculate the ~~change in the cart's gravitational potential energy~~ between positions A and B

احسب التغير في طاقة الوضع الجاذبية للكرة في الموقعين أ و ب

$$\Delta GPE = mg(h_f - h_i)$$

$$= 300 \times 9.8(0 - 4s) = -132300 \text{ J}$$

- B. Calculate the ~~change in the kinetic energy~~ between point A and B

احسب التغير في مقدار الطاقة الحركية للنقطتين أ و ب

$$\Delta KE = KE_f - KE_i$$

$$\Delta KE = \frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2$$

$$= \frac{1}{2} \times 300 \times (24)^2 - \frac{1}{2} \times 300 \times (2)^2 = 85800 \text{ J}$$

- C. Is the mechanical energy in the system between point A and B conserved? Explain this mathematically

هل الطاقة الميكانيكية في النظام بين النقطتين أ و ب محفوظة؟ افسر ذلك رياضيا؟

No, because the loss in potential energy is not equal to the gain in kinetic energy  $-\Delta GPE \neq \Delta KE$  which indicates energy losses

$$ME_i = GPE_i + KE_i$$

$$= mgh_i + \frac{1}{2}mv_i^2$$

$$= 300 \times 9.8 \times 4s + \frac{1}{2} \times 300 \times (2)^2 = 132900 \text{ J}$$

$$ME_f = GPE_f + KE_f$$

$$= mgh_f + \frac{1}{2}mv_f^2$$

$$= 300 \times 9.8 \times 0 + \frac{1}{2} \times 300 \times (24)^2$$

$$= 86400 \text{ J}$$

$ME_i \neq ME_f$   
 $ME_f < ME_i$

Question

السؤال

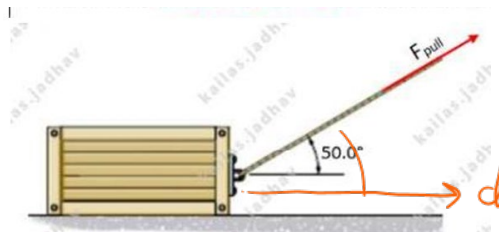
3

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A rope is used to pull a 20 kg wooden box a distance of 20.0 m across the floor. The rope is held at an angle of  $50^\circ$  with the floor, and a force of 303 N is applied to the rope.

A) How much work does the rope do on the box?

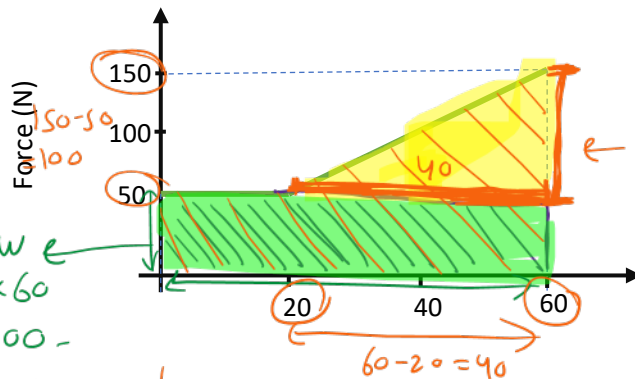
يتم سحب صندوق حديدي مسافة 20 م على الأرض بواسطة حبل يصنع زاوية  $50^\circ$  درجة مع الأرض، بقوة مقدارة 303 نيوتن (أ) ما هو مقدار الشغل الذي يصنعه الحبل على الصندوق؟



$$W = Fd \cos(\theta) = 303 \times 20.0 \times \cos(50) = 5248.1 \text{ J}$$

B) If the force the rope applies on the box varies with distance as shown in the figure. If you know that the box started moving with a speed of 2 m/s, what is the final speed of the box?

إذا كانت القوة التي يطبقها الحبل على الصندوق متغيرة مع المسافة حسب التمثيل البياني التالي ، إذا علمت أن السرعة الابتدائية للصندوق كانت 2 م/ث ، ما هي السرعة النهائية ؟



$$\text{Area 1} = L \times W \\ = 50 \times 60 \\ = 3000$$

$$W = \text{Area 1} + \text{Area 2} \\ = 3000 + 2000 \\ = 5000 \text{ J}$$

$$W = \frac{1}{2} m V_f^2 - \frac{1}{2} m V_i^2$$

$$5000 = \frac{1}{2} \times 20 \times V_f^2 - \frac{1}{2} \times 20 \times (2)^2 \rightarrow V_f = 22.4 \text{ m/s}$$

$$W = \frac{1}{2} m V_f^2 - \frac{1}{2} m V_i^2$$

$$\text{Area 2} = \frac{1}{2} \times b \times h \\ = \frac{1}{2} \times 40 \times 100 \\ = 2000$$

Question

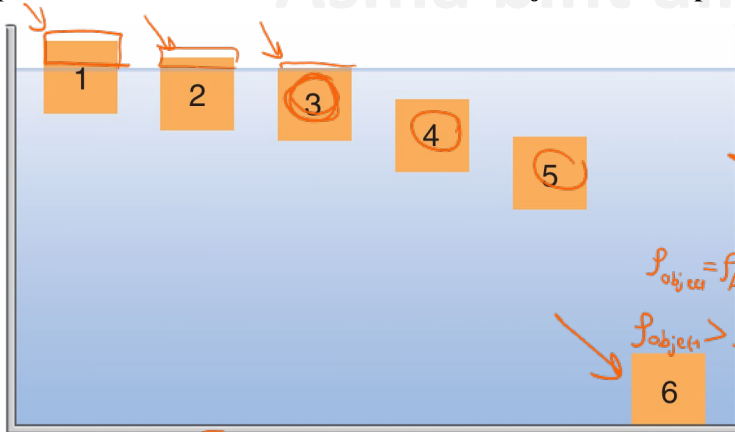
السؤال

4

10

A) Five objects with the following densities are put into a tank of water.

The density of water is 1.00 g/cm<sup>3</sup>. The diagram shows six possible positions for these objects. Select a position, from 1 to 6, for each of the five objects. Not all positions need to be selected.

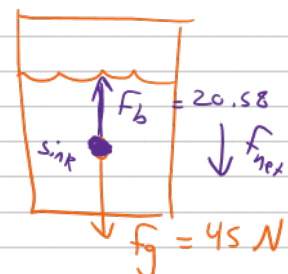


Object density	Object number
0.55 g/cm <sup>3</sup>	2
0.95 g/cm <sup>3</sup>	3
1.00 g/cm <sup>3</sup>	4, 5
85 g/cm <sup>3</sup>	6
0.16 g/cm <sup>3</sup>	1

B) What is the net force on a rock submerged in water (density of water is 1000 kg/m<sup>3</sup>) if the rock weighs 45 N in air and has a volume of 2.1 × 10<sup>-3</sup> m<sup>3</sup>?

$$F_{\text{net}} = F_b - F_g \\ = 20.58 - 45 \\ = -24.42 \text{ N}$$

$$F_b = \rho_{\text{fluid}} V g \\ = 1000 \times 2.1 \times 10^{-3} \times 9.8 \\ = 20.58$$



Question  
السؤال

5

10

## A) Match the following terms with their correct meaning

صل بين الكلمة و معناها

symbol	term
<u>B</u>	Kepler's first law
<u>E</u>	Kepler's second law
<u>C</u>	Kepler's third law
<u>A</u>	Gravitational force
<u>D</u>	Universal law of gravitation

meaning
A) The force of attraction between two objects
B) states that the paths of the planets are ellipses, with the Sun at one focus.
C) states that the square of the ratio of the periods of any two planets revolving about the Sun is equal to the cube of the ratio of their average distances from the Sun.
D) states that objects attract other objects with a force that is proportional to the product of their masses and inversely proportional to the square of the distance between them.
E) states that an imaginary line from the Sun to a planet sweeps out equal areas in equal time intervals

B) Ali and his bike have a combined mass of 45.0 kg. Shawn rides his bike 1.80 km in 10.0 min at a constant velocity. What is the system's kinetic energy?

(ب) يبلغ كتلة علي ودراجته مجتمعة 45.0 كجم. يركب شون دراجته لمسافة 1.80 كم في 10.0 دقيقة بسرعة ثابتة. ما هي الطاقة الحركية للنظام؟

$$KE = \frac{1}{2} m v^2$$

$$= \frac{1}{2} \times 45.0 \times (3)^2$$

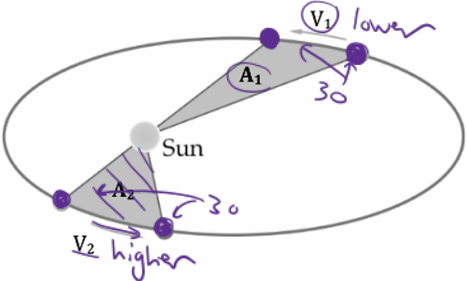
$$= 202.5 \text{ J}$$

$$v = \frac{d}{t} = \frac{1800}{600} = 3 \text{ m/s}$$

Question	1	السؤال
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During its rotation about the sun, Earth moves with a speed  $V_1$  as it sweeps the area  $A_1$  and it moves with a speed  $V_2$  as it sweeps the area  $A_2$ .  
 $A_1 < A_2$  and  $V_1 < V_2$

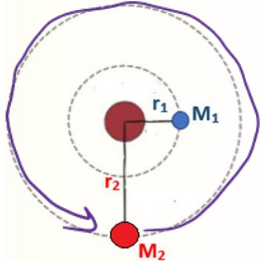
If Earth sweeps each area in 30 days, which of the following is true?



A	
B	$A_1 < A_2$ and $V_1 > V_2$
C	$A_1 = A_2$ and $V_1 < V_2$
D	$A_1 = A_2$ and $V_1 = V_2$

Question	2	السؤال
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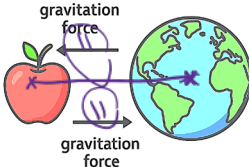
Two moons M1 and M2 with different masses are moving in their orbits around a planet, as shown in the figure. Which of the following is true for their periods in the orbits ?



A	M2 has a smaller period than M1
B	M2 has a greater period than M1
C	M2 and M1 have the same period
D	It can't be determined

Question	3	السؤال
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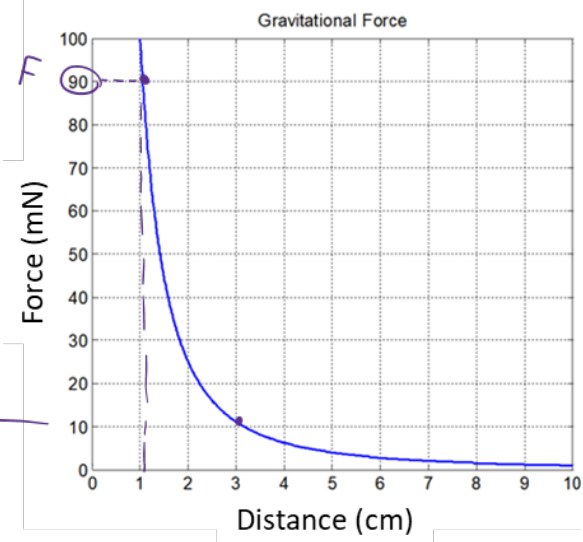
When an apple falls from a tree, Earth exerts a gravitational force on the apple. According to the law of gravitation, the apple also exerts a gravitational force on Earth. Why do we observe only the apple falling and not Earth moving toward the apple?



$F_g = mg$   
 $F_g = 0.1 \times 9.8$

A	Because The force the apple exerts on earth is much smaller than the force exerted by earth on the apple
B	Because gravity works on small objects only
C	the attraction forces are relatively very big and are equal , but Because earth has a very large mass, it will not be effected by the gravitational force
D	The attraction forces are relatively small and are equal , but Because earth has a very large mass, it will not be effected by the gravitational force

the following graph that describes the relationship between the distance in centimeters and gravitational force in millinewtons, between two identical objects with equal masses, find the mass of each object



$m_1 = m_2 = m$

$F = \frac{90 \text{ mN}}{1000} = 0.09 \text{ N}$

$r = \frac{1 \text{ cm}}{100} = 0.01 \text{ m}$

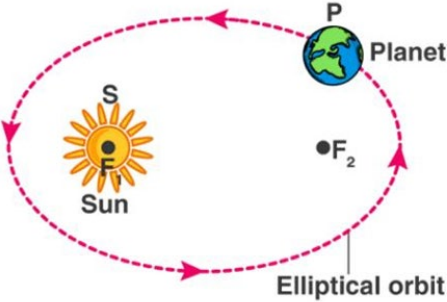
$F = \frac{G m^2}{r^2}$

$0.09 = \frac{6.67 \times 10^{-11} \times m^2}{(0.01)^2}$

$m = 367 \text{ kg}$

A	367 kg
B	134932 kg
C	90 kg
D	3673 kg

Which of the following laws describes the planets orbits as represented by the figure below?



A	Kepler's first law
B	Kepler's second law
C	Kepler's third law
D	The universal law of gravitation

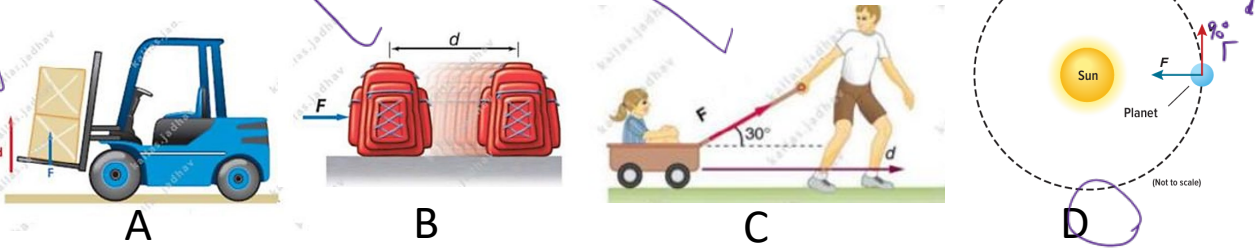


Question

6

السؤال

In which of the following cases is the work done by the force zero ?



A	A
B	B
C	C
D	D

Question

7

السؤال

Ahmad uses a rope to stop a wooden crate of mass 20 kg from moving , if the box crossed a distance of 15.0 m on a frictionless floor. The rope makes an angle of 130 degrees with the horizontal. If Ahmad pulls the rope with a force of 150 N, how much work does the rope do on the crate? Is the crate gaining or losing energy?

A	$W = Fd \cos(\theta)$ $= 150 \times 15.0 \cos(130)$ $= -1446$	-826 J , object is losing energy
B		826 J , object is gaining energy
C		-1446 J , object is losing energy
D		+1446 J , object is gaining energy

Question

8

السؤال


Ahmad does 176 J of work lifting himself 0.3 m at a constant speed through 10 seconds, what is Ahmad's power?




A	17.6 w
B	52.8 w
C	1760 w
D	528 w

G10 A	Physics – inspire	Inspire - الفيزياء	2024-2025
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Question	9	السؤال
which of the following is not a unit of energy		
A	J	
B	N.m	
<input checked="" type="radio"/> C	N/m	
D	kg.m <sup>2</sup> /s <sup>2</sup>	

Question	10	السؤال
<p>A juggler throws a <u>2.5 kg</u> ball from her hand, which is <u>0.70 m</u> above the floor, to a height that is 1.8 m above the floor. What is work done by gravity on the ball? What kind of energy transformations happens during this motion? Use the floor as the reference level</p> <p><math>W = -mg(h_f - h_i)</math>  <math>W = -2.5 \times 9.8 \times (1.80 - 0.70)</math></p> <p><math>h_f = 1.80\text{m}</math>  <math>h_i = 0.70\text{m}</math>  <math>W = -2.5 \times 9.8 \times (1.80 - 0.70) = -26.95\text{ J}</math></p> 		

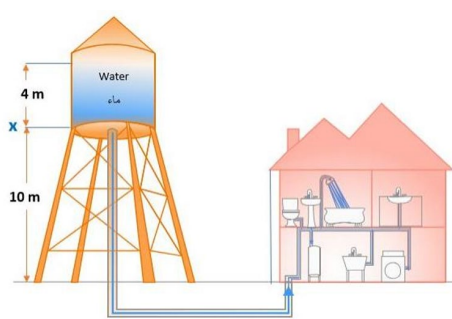
<input checked="" type="radio"/> A	-26.95 J	$W = -26.95\text{ J}$	Kinetic energy converts to potential energy
B	26.95 J		Potential energy converts to kinetic energy
C	-45.5 J		Kinetic energy converts to potential energy
D	45.5 J		Potential energy converts to kinetic energy

Question	11	السؤال
<p>How much net-work is required to accelerate a 1000 kg car from 20 m/s to 30 m/s?</p> <p><math>W = \frac{1}{2}mV_f^2 - \frac{1}{2}mV_i^2</math></p> <p><math>W = \frac{1}{2} \times 1000 \times (30)^2 - \frac{1}{2} \times 1000 \times (20)^2</math></p> <p><math>v_1 = 20 \text{ m/s}</math>      <math>v_2 = 30 \text{ m/s}</math></p> 		
A	100 000 J	
B	150 000 J	
C	200 000 J	
D	250 000 J	

Question	12	السؤال
<p>On a playground, some children push a merry go round so that it turns twice as fast as it did before they pushed it. What is the relative change in the rotational kinetic energy of the merry go round?</p> <p><math>W</math> is double ✓  Ratio  <input checked="" type="radio"/> C</p>		
A	The rotational kinetic energy stays the same	
B	The rotational kinetic energy will double in its amount	
<input checked="" type="radio"/> C	The rotational kinetic energy will quadruple in its amount	
D	The rotational kinetic energy will reduce by half	

Question	13	السؤال
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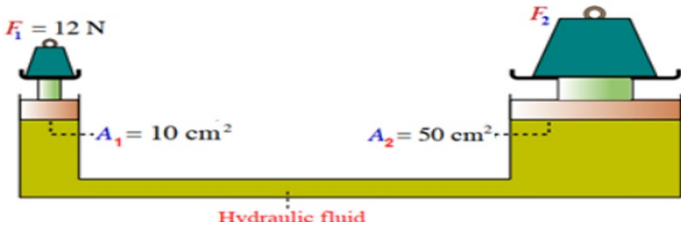
The figure shows a tank that supplies water to a house..  
What is the pressure at (x) at the bottom of the tank?  
(density of water is  $1000\text{ kg/m}^3$ )



A	$3.92 \times 10^4$
B	$1.37 \times 10^5$
C	$9.81 \times 10^4$
D	$5.89 \times 10^4$

Question	14	السؤال
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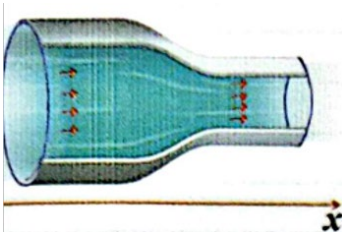
The figure shows a hydraulic system. If a force of 12 N is exerted on the small piston, what is the output force on the large piston?



A	60.0 N
B	24.0 N
C	120 N
D	2.8 N

Question	15	السؤال
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A fluid flows through a frictionless horizontal pipe with a varying cross sectional area as shown in the figure. Which of the following graphs represents the change in pressure P along the x axis



A		C	
B		D	