

A ball is thrown at an original speed of 8.0 m/s at an angle of 30° above the horizontal. What is the speed (m/s) of the ball when it returns to the same horizontal level? use

* $g=10 \text{ m/s}^2$
(2 نقطة)



6

5

8

7

A ballistic pendulum consists of a (2 kg) block hanging vertically on a (1.5 m) length string. A (10 g) bullet is fired horizontally into a block with a velocity of (500 m/s). the bullet embedded in the block, and the entire system swings through a height h . The height h (in m) * above its initial position will the block

(2 نقطة)

2020

اساسي
عن الهندسة0.31 0.45 0.79 0.60

A mass m is traveling at an initial speed $v_0 = 25.0 \text{ m/s}$. It is brought to rest in a distance of 62.5 m by a force of 15.0 N . The mass (in Kg) is:

Select one:

3.00

1.50

3.75

37.5

6.00



A mass m is traveling at an initial speed $v_0 = 20.0 \text{ m/s}$.

It is brought to rest in a distance of 80.0 m by a force of 15.0 N . The mass (in kg) is



اختر أحد الخيارات

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6.00

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3.00

[Clear my choice](#)

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Select one

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A plane flies from a base a distance 580 km at a direction of 10.0° north of east for 2 hours and then flies 190 km 30.0° west of north for 1 hour. The magnitude and direction of the plane displacement at the end of this trip are.

Select one:

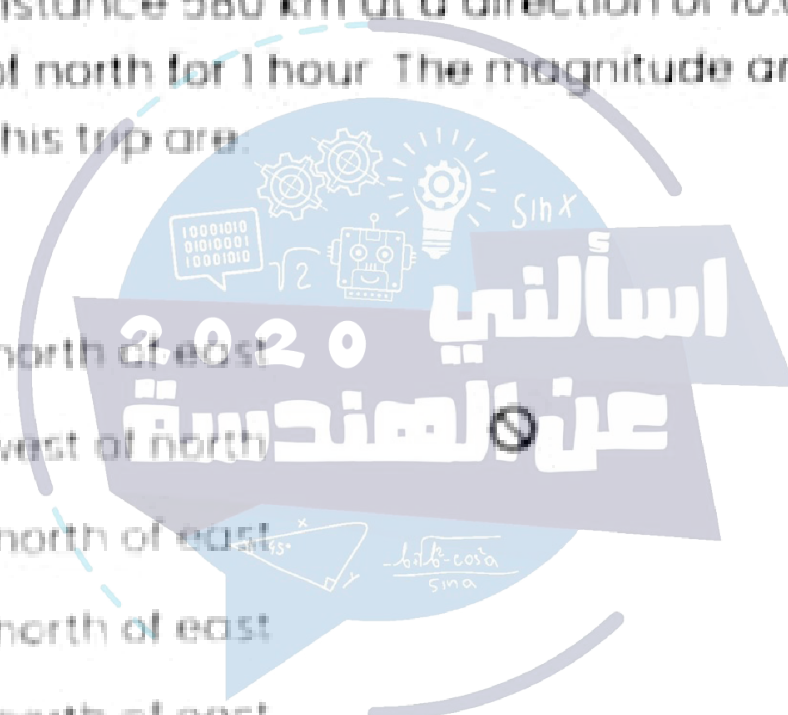
545 km at an angle 29° north of east

150 km at an angle 60° west of north

280 km at an angle 50° north of east

362 km at an angle 40° north of east

452 km at an angle 33° north of east



In the figure below, the coefficient of static friction between the 2 kg block and the wall is 0.15. What is the minimum value of the force F (in N) necessary to prevent (يمنع) the block from sliding down?



Select one:

- a. 94.3
- b. 70.7
- c. 47.1
- d. 24.6
- e. 80.3

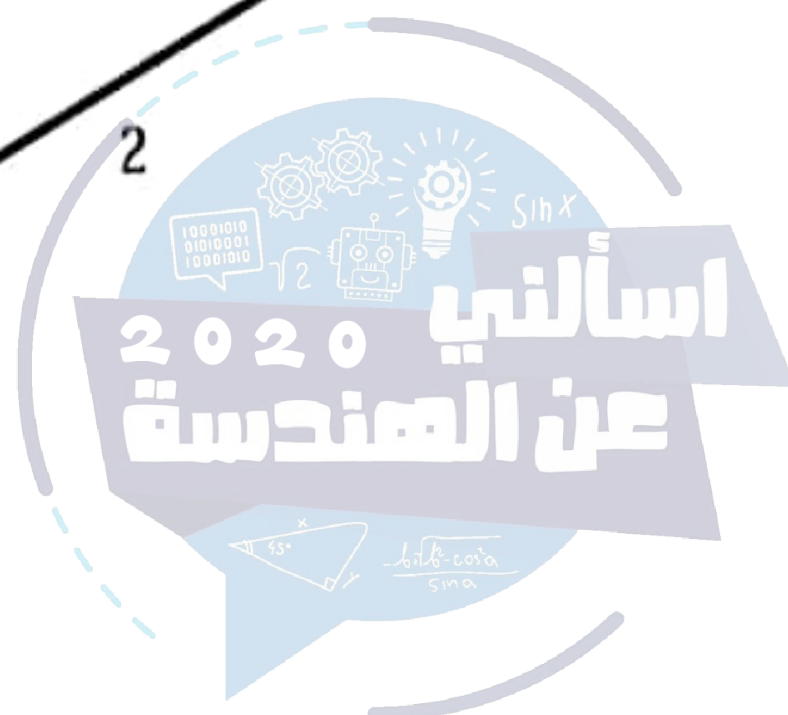
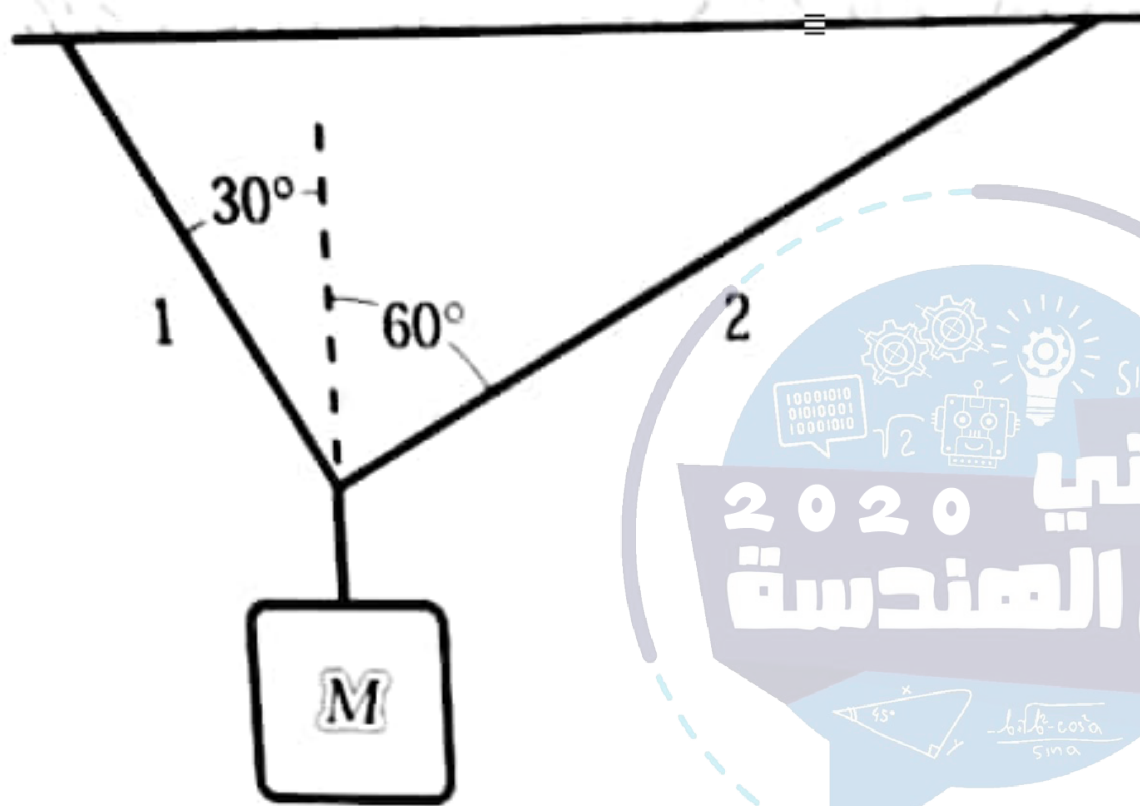
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An object of mass M is suspended from the ceiling by two cords as shown. The ratio of the magnitude of the vertical component of the tension in T_2 to the vertical component in T_1 is:



Select one:

- 1/2
- 1/3
- 2/3

A rod with a cross sectional area $A = 4.0 \times 10^{-5} \text{ m}^2$ and a length of $L = 5.00 \text{ m}$ stretches $\Delta L = 0.004 \text{ m}$ when subjected to a tension force of $F = 20000 \text{ N}$. Young's modulus E for this rod is

- a) $5.00 \times 10^{11} \text{ N/m}^2$
- c) $6.25 \times 10^{11} \text{ N/m}^2$
- e) $4.00 \times 10^5 \text{ N/m}^2$

2020

اسألني
عن الهندسة

- b) $3.33 \times 10^{11} \text{ N/m}^2$
- d) $7.50 \times 10^{11} \text{ N/m}^2$

A box weighing 100 N made of Aluminum is pushed on a horizontal surface made of steel. Using the information given in the Table shown below, the minimum force needed to let the box start skidding is

a) 57 N

b) 47 N

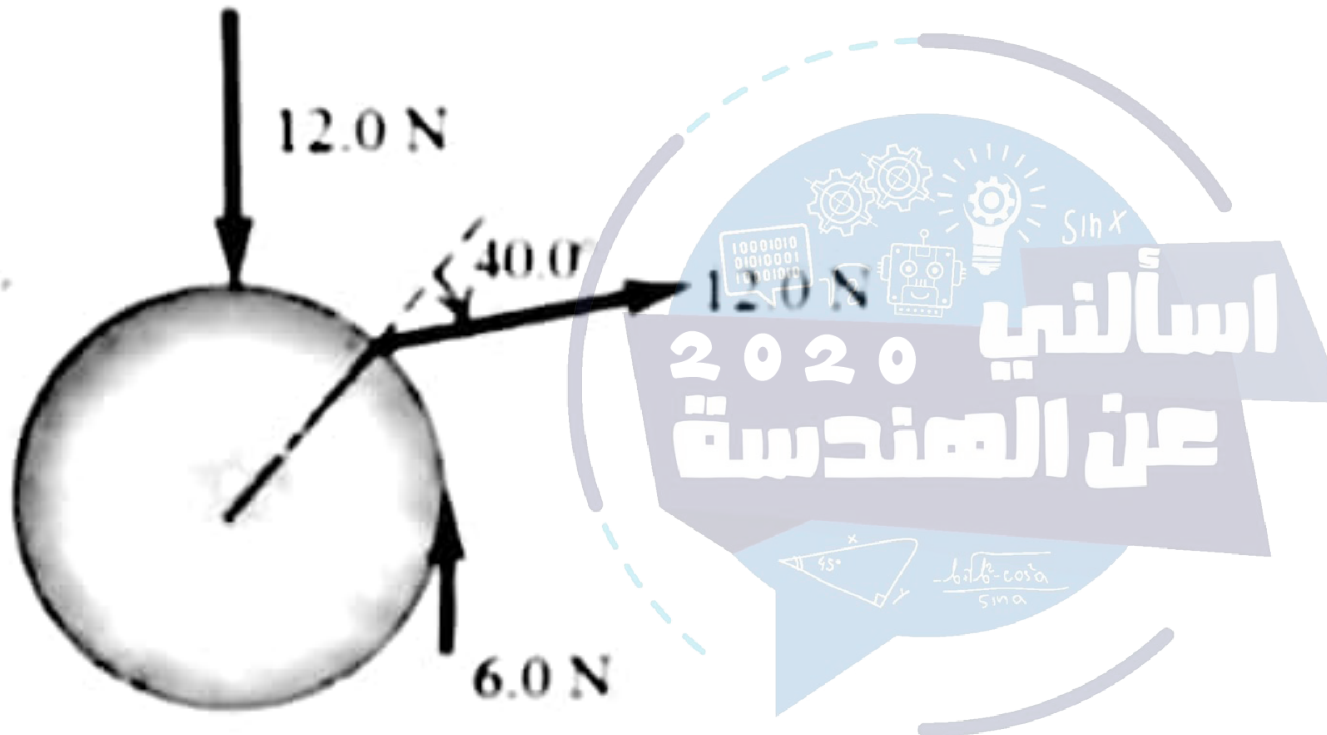
c) 74 N

d) 61 N

e) 52 N

Coefficients of Friction ^a		
	μ_s	μ_k
Steel on steel	0.74	0.57
Aluminum on steel	0.61	0.47
Copper on steel	0.53	0.36
Rubber on concrete	1.0	0.8
Wood on wood	0.25–0.5	0.2
Glass on glass	0.94	0.4
Waxed wood on wet snow	0.14	0.1
Waxed wood on dry snow	—	0.04
Metal on metal (lubricated)	0.15	0.06
Ice on ice	0.1	0.03
Teflon on Teflon	0.04	0.04
Synovial joints in humans	0.01	0.005

The wheel of radius 0.80 m shown in the figure has three forces applied to it. Taking torques that produce counterclockwise rotation as positive, the net torque (in N m) on the wheel due to these three forces for an axis perpendicular to the wheel and passing through its center is.



Select one.

112

48

The mass of planet X is 3.0×10^{24} kg and the acceleration of gravity on its surface is 3.5 m/s^2 , if the gravitational constant $G = 6.67 \times 10^{-11} \text{ N}\cdot\text{m}^2/\text{kg}^2$, the radius of this planet R is

- a) $3.40 \times 10^6 \text{ m}$
- c) $4.03 \times 10^6 \text{ m}$
- e) $5.72 \times 10^{13} \text{ m}$

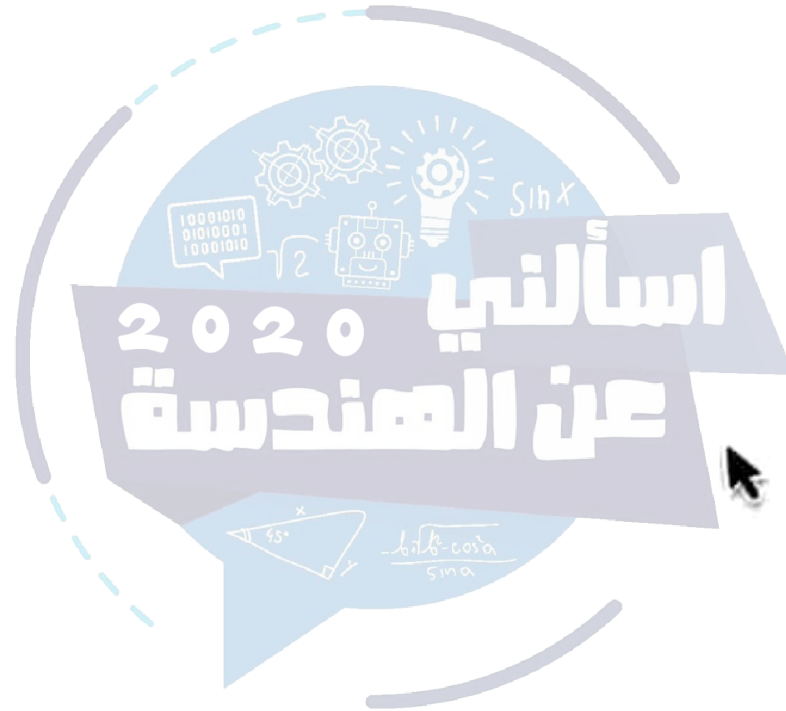
- b) $2.98 \times 10^6 \text{ m}$
- d) $7.56 \times 10^6 \text{ m}$.

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Select one:

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- 1.50
- 3.75



A 1.0-kg particle moving horizontally with a speed of 10 m/s strikes a vertical wall for 1.0 ms. It then rebounds (يرتد) with the same speed. The magnitude of the average force (in kN) on the particle by the wall is:

- (A) zero
- (B) 20
- (C) 1.0
- (D) 5.0
- (E) 10



*Take $g = 9.8 \text{ m/s}^2$

**Assume that an object is in equilibrium.
One of the following statements is false
* ?. Which one
(2 نقطة)**

**The speed of the object remains
constant**

**The net force acting on the object
is zero**

**The acceleration of the object is
constant**

.The object must be at rest