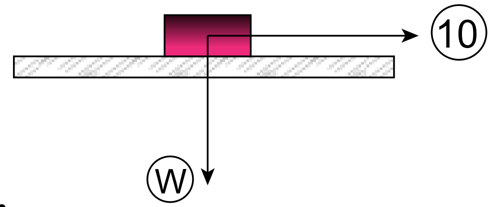
1

In the figure shown,



a body of weight (w) kg.wt is placed on a rough horizontal plane,

a horizontal force of magnitude 10 kg.wt acts on the

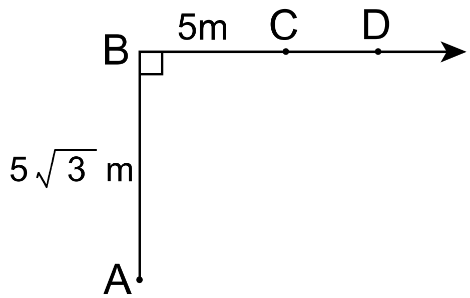
body making it a bout to move. If the resultant reaction is 10 $\sqrt{2}$ kg.wt,

then weight of the body (w) = …….. kg.wt.

- 10
- 10 $\sqrt{2}$
- 20
- 20 $\sqrt{2}$

2

In the figure shown:



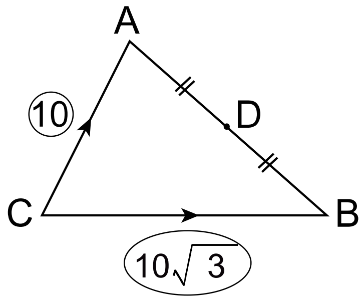
$\overline{AB} \perp \overrightarrow{BD}$ **, AB = $5\sqrt{3}$ m, BC = 5 m,**

if a force $\vec{F}$ acts at point C in direction inclines to $\overrightarrow{CD}$ by an angle

of measure θ downwards and the moment of the force $\vec{F}$ a bout point A vanishes, then measure of θ = ……….º

- 120
- 150
- 60
- 30

3



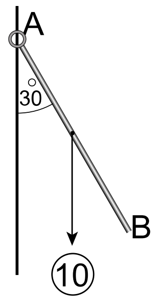
In the figure shown:

Δ ABC , m (∠ A) = 2 m (∠ B), D is the mid-point of $\overline{AB}$, the two forces of magnitudes 10 Newton and $10\sqrt{3}$ Newton act along $\overrightarrow{CA}$ and $\overrightarrow{CB}$ respectively, if the resultant of the two forces passes throng D,

then m (∠ B) =...........º

- 30
- 90
- 45
- 60

4

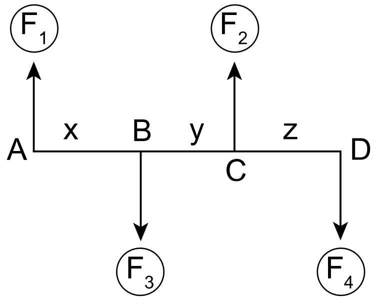
In the figure shown: 

$\overline{AB}$ is a uniform rod of length 2 m and weight 10 kg.wt is hinged by a hinge at its end A in a vertical wall, when a mass (m) was suspended at the end B and a couple of magnitude 10 kg.wt. meter acts on the rod making it in equilibrium position inclines to the vertical by an angle of measure 30º,

then m = ……. kg.

- 5
- 10
- $10\sqrt{3}$
- $5\sqrt{3}$

5



In the figure shown:

$\overrightarrow{F_1} /\!/ \overrightarrow{F_2} /\!/ \overrightarrow{F_3} /\!/ \overrightarrow{F_4}$, if $F_3 = F_1 + F_2$ where B is the point of action of resultant of $\overrightarrow{F_1}$, $\overrightarrow{F_2}$.

$\overrightarrow{F_4}$ is the resultant of $\overrightarrow{F_1}$ and $\overrightarrow{F_3}$, then …………

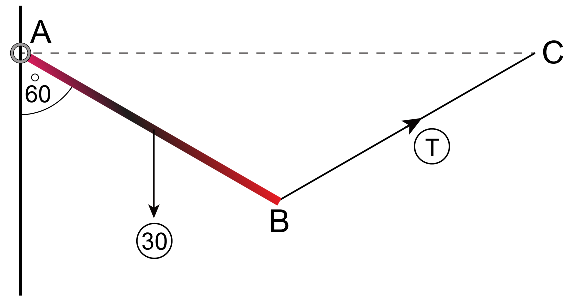
- $F_2 = F_4$, $Z = 0$
- $F_1 = F_4$, $Z = x$
- $F_1 = F_4$, $Z = y$
- $F_2 = F_4$, $Z = x + y$

6

A force $\vec{F}$ of magnitude 10 kg.wt acts at point A (2 , 5 , 3) in direction parallel to the positive direction of the Y-axis , then moment of the force $\vec{F}$ about the origin point equals ………..

- $-30 \vec{i} + 20 \vec{k}$
- $30 \vec{i} + 20 \vec{k}$
- $30 \vec{i} - 20 \vec{k}$
- $20 \vec{i} - 30 \vec{k}$

7



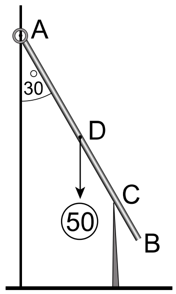
In the figure shown:

$\overline{AB}$ is a uniform rod of weight 30 Newton is hinged by its end A with a hinge fixed in a vertical wall, its end B is connected by a light inelastic string and the other end of the string is fixed at appoint C in the same horizontal level of A, if the rod became in equilibrium when the tension in the string is 15 Newton, if AB = BC, A, B, C are in the same vertical plane perpendicular to the wall and the rod inclines to the vertical by an angle of measure 60º,

then the reaction at the hinge makes with $\overrightarrow{AC}$ an angle of measure ……… º

- 120
- zero
- 180
- 90

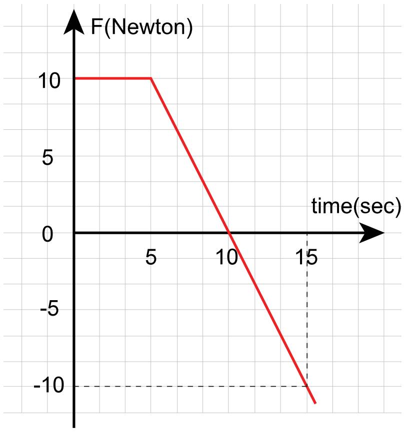
8

In the figure shown: 

$\overline{AB}$ is a uniform rod of length 30 cm and weight 50 gm.wt the end A is hinged by a hinge in a vertical wall and rests at one of its point C which is 5 cm from the point B on a vertical smooth wedge. if the rod becomes in equilibrium position when it inclines to the vertical by an angle of measure 30º, then the reaction of the wedge = ……. gm.wt.

- 15
- $25\sqrt{3}$
- 25
- $15\sqrt{3}$

9



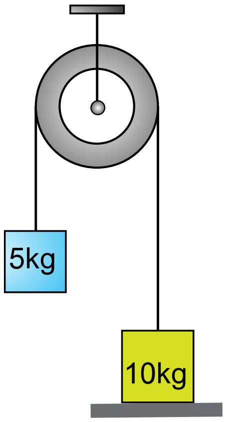
The figure shown represents the (force - time) curve of a force acts on a body which moving in a straight line

,then the impulse of the force during interval time [10 , 15] equals..........N.sec

- **- 25**
- **- 50**
- **50**
- **25**

10

Two masses 5 kg and 10kg are connected by a light string passing over a smooth pully and the mass

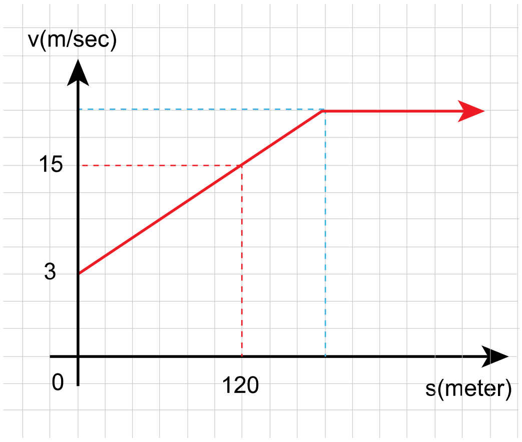


10kg rests on a horizontal ground and the string is tensioned,

then the reaction of the ground=............Newten

- **5g**
- **Zero**
- **10g**
- **15g**

11



The given graph shows, the (velocity-displacement) curve of a particle moving in a straight line,

if the displacement 120 meters, then the acceleration a =..............m/sec^2

- **1.5**
- **1**
- **15**
- **12**

12

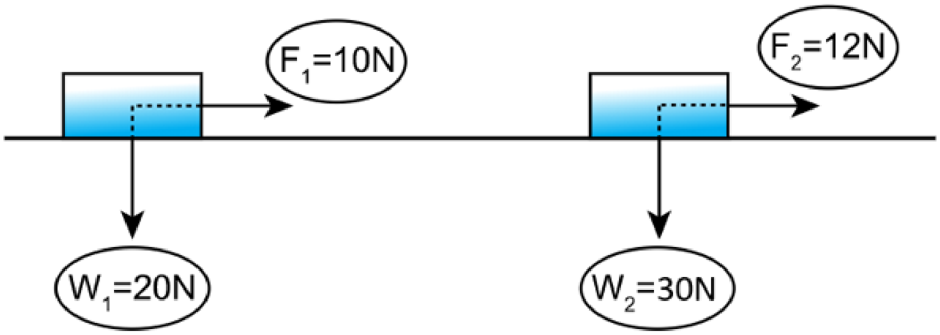
A particle moves in a straight line with acceleration a (m/sec^2) is given as a function in velocity v (m/sec)

as : a = $2v\sqrt{v}$, **if the particle started its motion from the origin point with velocity 4 m/sec ,**

then the velocity v at the position x = 3 m equals...........m/sec

- **25**
- **4**
- **9**
- **16**

13

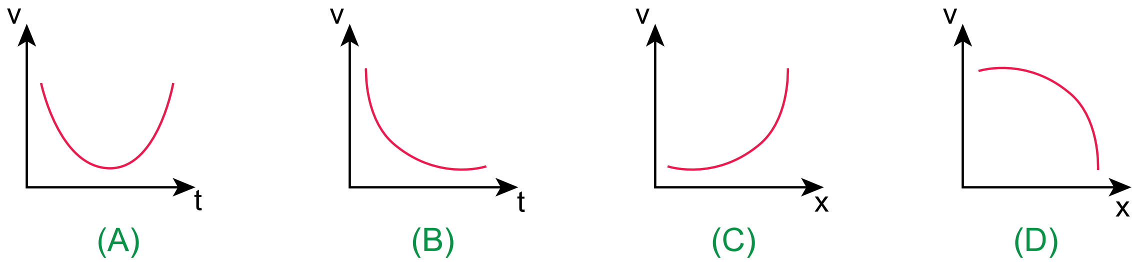


In the figure shown:

Two bodies of the same material of weight 20 and 30 newton are placed on a horizontal rough plane. Two horizontal forces of magnitude 10 and 12 newton act on them respectively ,the first body becomes about to move, while the other moves with uniform velocity , then the ratio between the coefficient of static friction and the coefficient of kinetic friction is ....

- **5 : 4**
- **3 : 2**
- **4 : 3**
- **6 : 5**

14



The graph that represents the motion of a particle moving with a constant acceleration with negative algebraic measure is figure............

- **D**
- **A**
- **B**
- **C**

15

A body of mass 350 gm fell down in a time $\frac{1}{2}$ second before it collides with a horizontal surface and did not rebound, if the reaction of the surface on the body is 2.1 kg.wt,

then collision time =..........sec.

- $\frac{1}{10}$
- $\frac{1}{5}$
- $\frac{1}{4}$
- $\frac{49}{50}$

16

A car moves in a straight line such that the algebraic measure of its velocity v(m/sec.)

is given as a function in time t(sec.) as: v =2t - 4 , if the average velocity during the time interval [0 , t]

equals 5 m/sec, then t=............seconds

- **8**
- **1**
- **9**
- **20**