A Ball is swung in a vertical circle of radius 3m. If the 2kg ball creates a tension of 5N at point "D", what is the KE at point "D"?

What will be the tension at point "E"?

A car rounds a 40m radius turn. If this car travels at 7.8m/s, what must be $\mu_{\text{min}}$ so the car does not slide?

A 1.5m rope pulls on a wrench, what will be the wrench's torque if the pull is 50N?

A Ball swings in a cone shaped path. If the string is 20° from equilibrium, what is $\tau_c$?

A mass oscillates back and forth as shown above. If $K = 120 \, \text{Nm}$, what is the speed at point B? What is the acceleration at point B?

Two pendulums of mass $m$ are pictured here. What will be the ratio of $F : G$'s period?

Two students stand 1 meter apart in picture A. If they moved to 2m apart, and one student became 5x as massive, what is the new Force between them?
\[ \frac{1}{2} K x^2 = \frac{1}{2} m v^2 \]
\[ 120 \cdot (1)^2 = m v^2 \]
\[ V = \sqrt{\frac{1.2}{m}} \cdot 63 \text{ m/s} \]

At point B, \( a = 0 \)

because \( F = -kx = 0 \)

\[ T = \frac{V^2}{g} \quad \text{vs} \quad T = \frac{V^2}{g} \]

\[ T \quad \text{vs} \quad \frac{V^2}{g} \]

\[ 1 : \sqrt{2} \]

\[ 1 : 1.4 \]

\[ F = G \frac{m_m}{d^2} \quad F_{or} = G \frac{m_m}{d^2} \]

\[ F_{new} = G \frac{5m}{(2d)^2} \]

\[ F_{new} = G \frac{m \cdot 5}{d^2 \cdot 4} \]

\[ F_{new} = \frac{5}{4} \frac{G m m}{d^2} \]

1.25 or \( \frac{5}{4} \times \text{original} \)

\[ F_{rx} = \Sigma F_x = F \]

\[ F_{ry} = \Sigma F_y = 0 \]

\[ \tan 20 = \frac{a}{g} = \frac{F_{rx}}{F_{ry}} \]

\[ a_c = 3.6 \text{ m/s}^2 \]

\[ \tan 20 = \frac{a_c}{g} \]

\[ \Sigma F = m \cdot g + F_t = F \]

\[ m \cdot g + F_t = \frac{m v^2}{F} \]

\[ m \cdot g + F_t = \frac{2v^2}{kg} \]

\[ m \cdot g + 5N = \frac{2v^2}{3} \]

\[ \Sigma F = F_r - m \cdot g = F \]

\[ F_r = F - m \cdot g \]

\[ \Sigma F = \frac{1}{2} m v^2 \]

\[ K = \frac{1}{2} \cdot (6.1)^2 \]

\[ V = 6.1 \text{ m/s} \]

\[ K = 36.85 \]

\[ \Sigma F = \frac{1}{2} m v^2 \]

\[ m \cdot g \]

\[ m \cdot g = \frac{m v^2}{r} \]

\[ m = ? \]

\[ m \cdot g \cdot r = V^2 \]

\[ g = 9.8 \text{ m/s}^2 \]

\[ r = 40 \text{ m} \]

\[ V = 7.8 \text{ m/s}^2 \]

\[ m \cdot g \cdot r = V^2 \]

\[ m = 0.16 \]

\[ F_f = F_r \]

\[ F_r = m \cdot v \cdot \frac{g}{r} \]

\[ N \cdot F_r = m \cdot g \]

\[ m \cdot g \cdot r = V^2 \]

\[ T = 50 \cdot 5 \sin 90 \]

\[ T = 25 \text{Nm} \]

\[ \Sigma \tau = \Sigma F \cdot d \sin \theta \]

\[ \tau = 50 \cdot 5 \sin 90 \]

\[ \tau = 25 \text{Nm} \]

\[ \Sigma \tau = \Sigma F \cdot d \sin \theta \]

\[ \tau = (m \cdot g) \cdot 2 + (1 \cdot g) \cdot 1.5 + (1 \cdot g) \cdot 1 + (2 \cdot g) \cdot 2 \]

\[ \times \]

\[ m = 0.175 \text{ kg} \]