Question A16

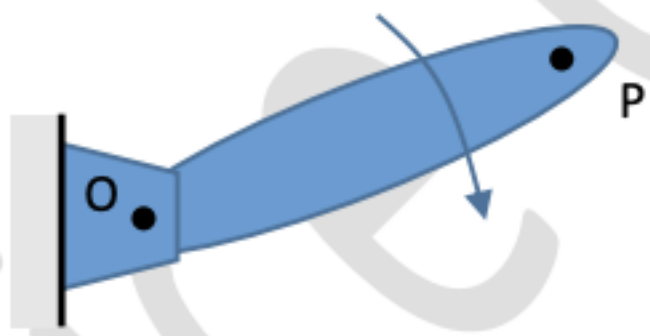
Modern vehicles are designed so that in a collision they crumple to protect the driver.

Which of the following principles/equations best provides the motivation for this design feature?

A. Impulse = change in momentum (i.e. $F\Delta t = m\Delta v$)
B. $T_1 + V_1 = T_2 + V_2$
C. Every action has an equal and opposite reaction
D. $v^2 = v_0^2 + 2a\Delta x$

Question A17

The object shown has an angular velocity of 2 rad/s in the clockwise direction.

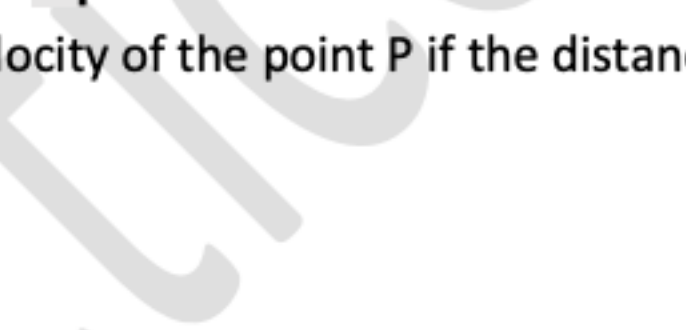


Determine the magnitude of the velocity of the point P if the distance from the pin O to P is 1.5 m.

A. 2 m/s
B. 3 m/s
C. 4 m/s
D. 6 m/s
E. None of the above

Question A18

The object shown has an angular velocity of 2 rad/s in the clockwise direction.



Determine the magnitude of the acceleration of the point P if the angular acceleration of the object is 4.5 rad/s^2 and the distance from the pin O to P is 1.5 m.

A. 9.03 m/s^2
B. 6.75 m/s^2
C. 4 m/s^2
D. 6 m/s^2