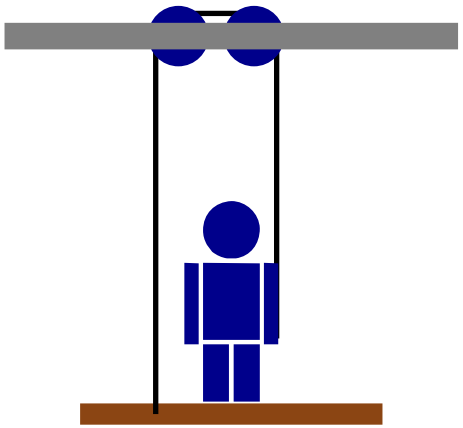
Question 1

A man, with mass m_{M} stands on a platform with mass m_{P} and holds a massless rope that runs through two pulleys that are fixed at the ceiling and returns to a point where it is tied to the platform. The man is at rest.

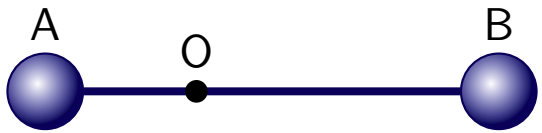


Which of the following is true regarding the tension, T, in the rope?

1. $T = \dfrac{(m_{\mathrm{M}} + m_{\mathrm{P}})}{2} g$
2. $T = (m_{\mathrm{M}} + m_{\mathrm{P}}) g$
3. $T = \dfrac{m_{\mathrm{M}}}{2} g$
4. $T = m_{\mathrm{M}} g$
5. $T = g$

Question 2

A rigid barbell rotates about point O. The distance from O to B is twice that from O to A.

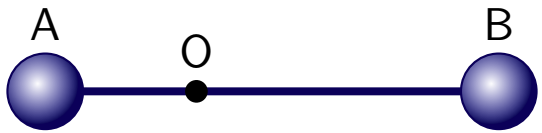


The angular velocity of A is

1. the same as that of B.
2. half of that of B.
3. twice of that of B.
4. four times that of B.

Question 3

A rigid barbell rotates about point O. The distance from O to B is twice that from O to A.

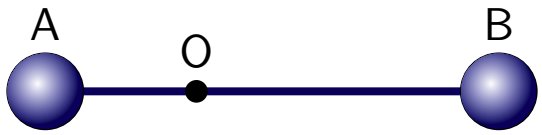


The speed of B (magnitude of the tangential or linear velocity) is

1. the same as that of A.
2. one quarter of that of A.
3. half of that of A.
4. twice of that of A.
5. four times that of A.

Question 4

A rigid barbell rotates about point O. The distance from O to B is twice that from O to A.



The magnitude of the acceleration of B is

1. the same as that of A and both are zero.
2. the same as that of A and both are non-zero.
3. half of that of A.
4. twice of that of A.
5. four times that of A.