

(b) Place the beetle twice as far from the axis and record the beetle's tangential velocity as V_{B1} .

(c) Move the beetle three times as far from the axis and record the beetle's tangential velocity as V_{B2} .

(d) Explain how the radius (distance from the axis of the turntable) affects the tangential velocity?

5. Double the angular velocity to $360^\circ/\text{s}$ and record the new tangential velocities. How does doubling the angular velocity affect the velocity of the bugs?

6. Since the angular velocity is currently $360^\circ/\text{s}$, the period T is 1 rotation/s.

(a) Calculate the tangential velocity the beetle would have if you moved him to the edge of the turntable (a radius of 4 m from the axis)

(b) Move the beetle to $r = 4$ m and record his tangential velocity. Does this value agree with your calculation?

7. If the huge beetle has a mass of 8.0 kg, find his centripetal acceleration a_c . What is the average centripetal force F_c on the beetle?

8. The ladybug has a mass of 6.0 kg and is at a distance $r = 1$ m. Calculate

(a) velocity

(b) centripetal acceleration

(c) centripetal force