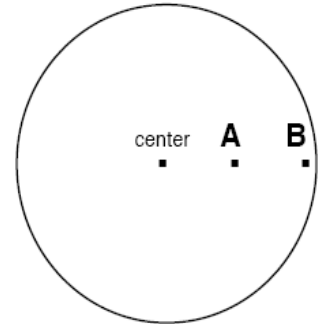# Rotational Speed

Rotational Speed (angular speed) is the amount of rotation in a given amount of time. While **angular speed** is the number of rotations per unit of time. Rotational speed and angular speed are same for circular motion.

Period and frequency are reciprocals of each other $T = \dfrac{1}{f}$ and $f = \dfrac{1}{T}$

Linear or tangential speed = $\dfrac{\text{distance (circumference)}}{\text{time for 1 rev. (period)}}$ $v = \dfrac{2\pi r}{T}$

Questions

1. At the center of rotating system the tangential speed is_____

2. At the center of rotating system the rotational speed is _____

3. As you move away from center….the tangential speed_____

4. As you move away from center ….the rotational speed _____

5. Tangential speed depends on _____ & _____

6. Which part of the Earth has the greatest linear speed relative to Earth's axis?

7. On a merry-go-round, the horses along the outer rail are located three times farther from the axis of rotation than the horses along the inner rail. If a boy sitting on a horse near the inner rail has a rotational speed of 4 RPM and a tangential speed of 2 m/s, what will be the rotational speed and tangential speed of his sister who is sitting on a horse along the outer rail?

8. Trains ride on a pair of tracks. For straight-line motion, both tracks are the same length. But which track is longer for a curve, the one on the outside or the one on the inside of the curve?

9. During track and field longer sprinting events, such as the 440m dash, why do the runners begin at staggered starting points instead of all at the same starting point as they do with shorter sprinting events such as the 100m dash?