Angular and Linear Velocity
Worksheet 2.5A

Questions 1-3: Find the missing arc length, central angle, or radius.

1. s=10; r=15

2. $\theta=\frac{3\pi}{7}$; r=21

3. $\theta=\frac{\pi}{4}$; $s=3\pi$

Questions 4-5: Point P is on the edge or a rotating tray. Find the angular displacement in radians for the given number of revolutions and the angular velocity in radians per minute for the given time.

4. $\frac{1}{5}$ revolution in 3 minutes

5. $12\frac{3}{8}$ revolutions in 7 minutes

Questions 6-7: Calculate the linear velocity, V, of an object rotating at angular velocity, ω, at a distance r from the center.

6. r=12 cm; $\omega=5\pi$ rad/sec

7. r=49 cm; $\omega=\frac{\pi}{7}$ rad/sec

Questions 8-12: Applications of angular & linear velocity.

8. A flywheel rotates with an angular velocity of 2 rps. Find the linear velocity if the radius is 15 in.

9. The radius of a soccer ball is 18 cm. What is the length of an arc of the ball for a central angle of 45°.

10. Find the length of a pendulum if it oscillates through an angle of 10°, and swings a distance of 6π in. from one end to the other.

11. Calculate the linear velocity of a reflector located 10 in. from the center of a bicycle wheel rotating 7π rad per sec.

12. Calculate the angular velocity of an LP record spinning at $33\frac{1}{3}$ rotations per minute.