**Trigonometry**

**Practice with Arc Length and Area of a Sector**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Find the length of the arc and the area of the circular sector given the indicated radius and central angle. Simplify and leave answers in terms of $π$.

a) $r=13 mi, θ= \frac{5π}{6}$ b) $r=3.0 ft, θ=14°$

2. A windshield wiper that is 11 inches long (blade and arm) rotates 65$°.$ If the rubber part is 7 inches long, what is the area cleared by the wiper? Round to the nearest inch.

3. A low Earth orbit (LEO) satellite is in an approximate circular orbit 300 km above the surface of the Earth. If the ground station tracks the satellite when it is within a 45° cone above the tracking antenna (directly overhead), how many km does the satellite cover during the ground station track? Assume the radius of the Earth is 6,400 km. Round your answer to the nearest km.

4. The London Eye is a wheel that has 32 capsules and a diameter of 400 ft. What is the distance someone has traveled once they reach the highest point for the first time?

5. The smaller gear shown below has a radius of 5 cm, and the larger gear has a radius of 12.1 cm. If the smaller gear rotates 120°, how many degrees has the larger gear rotated? Round the answer to the nearest degree.

