Circular Motion Questions

1. The wheels of a car are spinning at a rate of 200 rpm's (revolutions per minute). If the radius of the wheels are 22 inches, then determine the following:
   (a) Angular speed in radians per minute.
   (b) Speed of the car in miles per hour.

2. The wheels of a truck are spinning at a rate of 350 rpm's (revolutions per minute). If the radius of the wheels are 28 inches, then determine the following:
   (c) Angular speed in radians per minute.
   (d) Speed of the car in miles per hour.

3. A car is moving at a rate of 60 miles per hour with 28-inch radius wheels.
   (a) Determine the angular speed of the wheels in radians per minute.
   (b) Determine the angular speed of the wheels in revolutions per minute.

4. A truck is moving at a rate of 70 miles per hour with 62-inch diameter wheels.
   (a) Determine the angular speed of the wheels in radians per minute.
   (b) Determine the angular speed of the wheels in revolutions per minute.

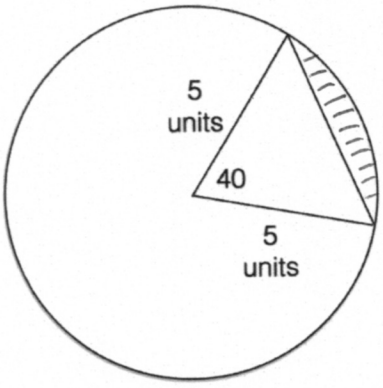
5. **Rotation of the Earth**. The radius of the Earth at the equator measures 3,960 miles. If a person is standing on the equator and the Earth is spinning on its axis of rotation at the rate of 1 revolution per day (24 hours), how far would the person travel in:
   (a) One minute?
   (b) One hour?
   (c) One day?
   (d) One week?
   (e) One month (30 days)?

6. **Orbit of the Earth**. Assume that the Earth orbits the sun in a circle with radius 93,000,000 miles, that is circular motion. If a year is 365 days, how far does the earth travel in:
   (a) One day?
   (b) One week?
   (c) One month (30 days)?
   (d) One year?
   (e) Two years?

7. **Rotation of the Earth**. The radius of the Earth at the equator measures 3,960 miles. If a person is standing on the equator and the Earth is spinning on its axis of rotation at the rate of 1 revolution per day (24 hours), how fast is the person traveling on the equator? That is, what is the linear speed of a person on the equator in miles per hour?

8. **Orbit of the Earth**. Assume that the Earth orbits the sun in a circle with radius 93,000,000 miles, that is circular motion. If a year is 365 days, how fast is the Earth traveling in its orbit? That is, what is the linear speed of the Earth in miles per hour?

9. Find the area of the shaded region.



10. Find the area of the shaded region.