1.   a) How many rotations does the minute hand of a clock make in one day? How many radians is this?

      b) How many rotations does the second hand of a clock make in one day? How many radians is this?

2. If you run 300 meters around a 800m circular track, how many radians have you rotated around the track?

3. If a fishing reel has a spool with diameter 3 inches, how many inches of line does the reel take up if . . .
                    a) it turns through 4 radians?   b) it makes 10 revolutions?
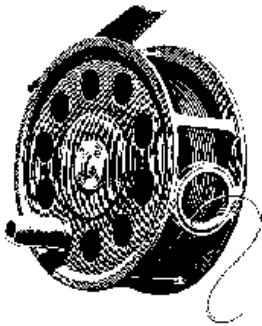
4. How many times do you have to turn the reel in #3 to take up 250 feet of line?

5. The chain drive of a bicycle is shown below.

   a) If the pedals make 1 full revolution, will the rear
      gear make more than one revolution or less?

   r = 4 cm

   14cm
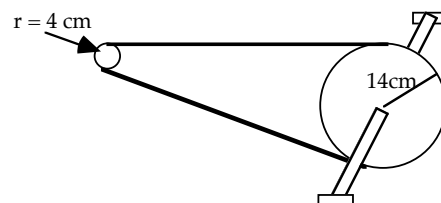
   b) If the pedals turn through 10 radians, how many radians will the rear gear turn through?

c) If the wheel around the rear gear is 30cm in radius, how far will this propel the bike?

d) If the pedals make 5 full revolutions, how many revolutions will the rear gear make? How many radians is this?

e) If you turn the pedals at 8 radians per second and the rear wheel is as in (c), how fast will the bicycle go?

6. Consider the diagram of the chain drive to a bicycle below. How fast do you have to pedal in order to make the bicycle go 30 mph? Give your answer in rotations per minute and in radians per second.

6 in.

20 in.

r = 4 in.
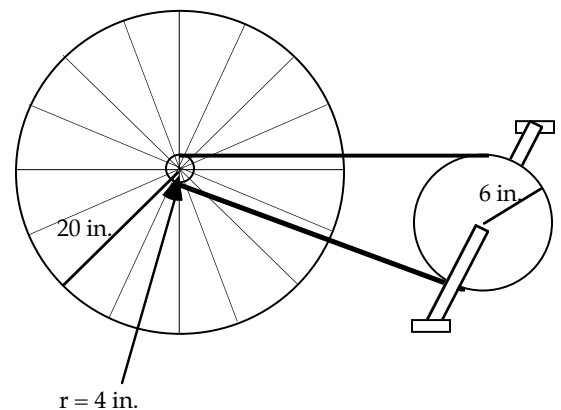
7. Provide the missing angle equivalents below.

120°, ____

135°, ____

150°, ____

$\dfrac{11\pi}{6}$, ____

$\dfrac{7\pi}{4}$, ____

$\dfrac{5\pi}{3}$, ____
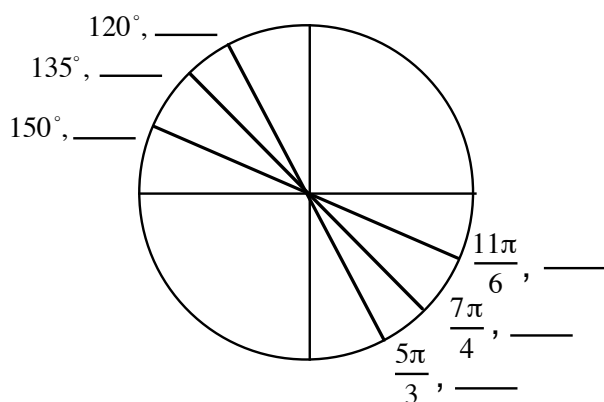
8. Determine the coordinates of point A.

A

3

$\dfrac{2\pi}{3}$