

Find the degree and radian measure of the angle in standard position formed by rotating the terminal side by the given amount. Leave radian measures in terms of π .

1. $\frac{2}{3}$ of a circle

Radians _____

Degrees _____

2. $\frac{7}{6}$ of a circle

Radians _____

Degrees _____

Convert each angle to decimal degree form. Round to three decimal places. You must show all work.

3. $85^\circ 18' 30'' =$ _____

4. $54^\circ 45' =$ _____

5. $-408^\circ 16' 20'' =$ _____

6. $2^\circ 2' 10'' =$ _____

Convert each angle measure to D°M'S" form. You must show work.

7. $-345.12^\circ =$ _____

8. $0.45^\circ =$ _____

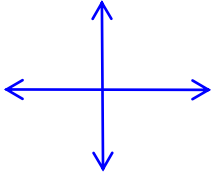
9. $3.58^\circ =$ _____

Find the complement of the given angle. Leave answer in terms of π .

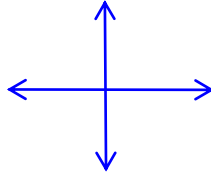
10. $\frac{\pi}{12}$ _____

Draw the given angles. Show direction and label the terminal side.

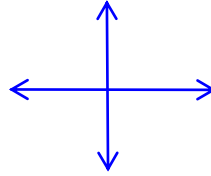
11. 123°



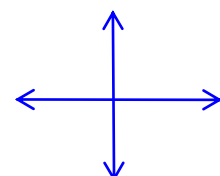
12. $\frac{17\pi}{12}$



13. 7

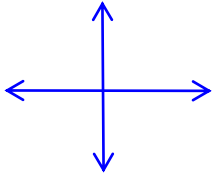


14. -310°

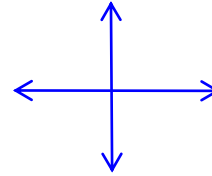


Name the quadrant in which or the axis on which the terminal side of the give angle would be located. Draw the angle labeling the direction.

15. 800°



16. $-\frac{31\pi}{6}$



Find the following. Show all your work.

17. A circle has a radius of 4 inches. Find the length of the arc intercepted by an angle of 240° . _____

18. A sprinkler on a golf course is set to spray water over a distance of 70 feet and rotates through an angle of 120° . Find the area of the fairway watered by the sprinkler. Round to the nearest square foot. _____

19. Find the degree measure of the angle θ of a sector in a circle whose diameter is 150 cm and an arc length of 360 cm.

20. The second hand of a clock is 5 cm long. How far does it travel in 2 minutes and 15 seconds? _____

21. Hans rides a vehicle with large tires of radius 16 inches at 24 miles per hour.

a) Find the angular velocity of a tire in radians per minute. _____

b) How many revolutions per minute does the tire make? _____

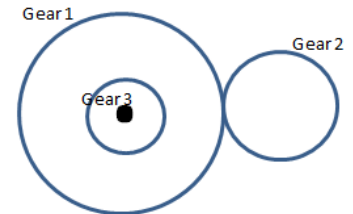
22. Determine the angular velocity of the tip of the second hand of a clock in radians per second

23. A ferris wheel with a diameter of 250 feet makes one rotation every 45 seconds. Determine the linear velocity in feet per minute of a car on the rim of the wheel. _____

24. A toy racing car is traveling around a circular racing track that is 3.2 m in diameter. Its linear velocity is 0.5 m/sec, What is its angular velocity in rev/ min? _____

25. In the diagram to the right Gear 1 and Gear 3 share the same axle. Gear 1 is driven by Gear 2. Which two gears have the same angular velocity and which two have the same linear velocity?

Same Angular Velocity _____ Same linear velocity _____



ANSWERS

1. radians; $\frac{4\pi}{3}$ degrees: 240° 2. radians: $\frac{7\pi}{3}$ degrees: 420° 3. 85.308° 4. 54.750° 5. -408.272°
 6. 2.036° 7. $-345^\circ 7' 12''$ 8. $0^\circ 27' 0''$ 9. $3^\circ 34' 48''$ 10. $\frac{11\pi}{12}$ 11. QII 12. QIII
 13. QII 14. QI 15. QI 16. QII 17. 16.755 18. 5131 ft^2 19. 275.020° 20. **70.686 cm**
 21. a. 1584 rad/min b. 252 rev/min 22. 0.105 rad/sec 23. 1047.198 ft/min 24. 2.984 rev/min 25. Same AV- gear 1 and 3, Same LV- Gear 1 and 2