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**Course:** CA&T Internet (70263)  
Galarneau

**Assignment:** 5.1 Angles and Their Measures

1. Complete the following statement.

A negative angle is formed by rotating the initial side in a \_\_\_\_\_ direction.

A negative angle is formed by rotating the initial side in a clockwise direction.

2. Complete the following statement.

An angle is in standard position if its vertex is at the origin of a coordinate system and its initial side lies on the \_\_\_\_\_.

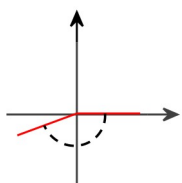
An angle is in standard position if its vertex is at the origin of a coordinate system and its initial side lies on the positive x-axis.

3. Draw the angle in standard position.

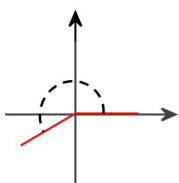
$$120^\circ$$

Choose the correct answer below.

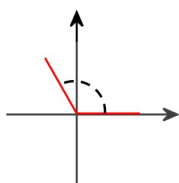
☐ A.



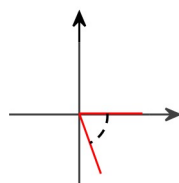
☐ B.



☒ C.



☐ D.

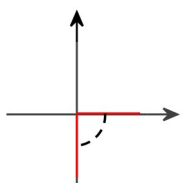


4. Draw the angle in standard position.

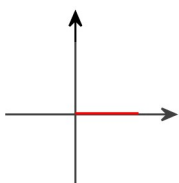
$$-90^\circ$$

Choose the correct answer below.

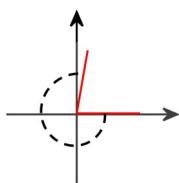
☒ A.



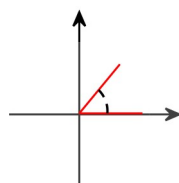
☐ B.



☐ C.



☐ D.

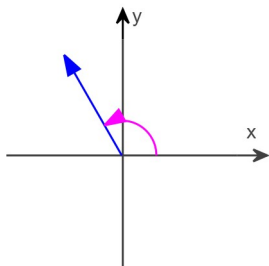


5. Draw the angle in standard position.

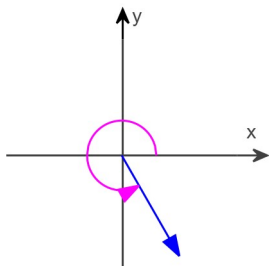
$$\frac{5\pi}{3}$$

Choose the correct graph below.

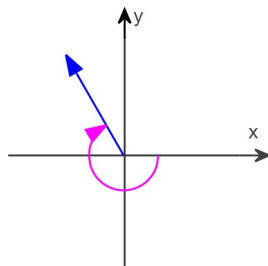
☐ A.



☒ B.



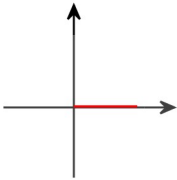
☐ C.



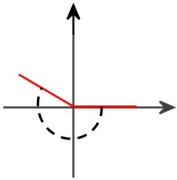
6. Choose the figure that shows an angle of  $-\frac{\pi}{6}$  radian in standard position.

Choose the correct answer below.

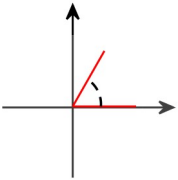
☐ A.



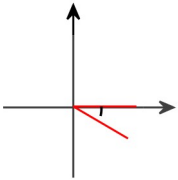
☐ B.



☐ C.



☒ D.



7. Convert the following angle to decimal degree notation.  
 $17^{\circ} 57'$

$17^{\circ} 57' \approx$ 

 $^{\circ}$   
 (Round to two decimal places as needed.)

8. Convert the following angle to decimal degrees.  
 $\alpha = 11^{\circ} 58' 29''$

$\alpha \approx$ 

 $^{\circ}$   
 (Round to four decimal places.)

9. Convert the following angle to decimal degrees.  
 $\alpha = -12^{\circ}20'53''$

The angle in decimal degrees is 
 $^{\circ}$ .  
 (Round to four decimal places as needed.)

10. Convert the angle to DMS notation.  
 $48.24^{\circ}$

$48.24^{\circ} =$ 

 $^{\circ}$ 

 $'$ 

 $''$

11. Convert the following angle to degrees, minutes, and seconds form.  
 $\alpha = 65.5344^{\circ}$

The answer is  

 $^{\circ}$ 

 $'$ 

 $''$ .  
 (Simplify your answer. Round to the nearest second as needed.)

12. Convert the angle from degrees to radians.  
 $150^{\circ}$

$150^{\circ} =$ 

 radian(s)  
 (Simplify your answer. Type an exact answer in terms of  $\pi$ . Use integers or fractions for any numbers in the expression.)

13. Convert the angle in degrees to radians.  
 $720^{\circ}$

$720^{\circ} =$ 

 radian(s)  
 (Simplify your answer. Type an exact answer in terms of  $\pi$ . Use integers or fractions for any numbers in the expression.)

14. Convert the angle in degrees to radians.  
 $315^{\circ}$

$315^{\circ} =$ 

 radian(s)  
 (Simplify your answer. Type an exact answer in terms of  $\pi$ . Use integers or fractions for any numbers in the expression.)

15. Convert the angle in degrees to radians.  
 $-390^{\circ}$

$-390^{\circ} =$ 

 radians  
 (Simplify your answer. Use integers or fractions for any numbers in the expression.)

16. Convert the angle in radians to degrees.

$$\frac{3\pi}{4}$$

$$\frac{3\pi}{4} = \boxed{135}^{\circ}$$

(Simplify your answer.)

17. Convert the following radian measure to degree measure.

$$-\frac{2\pi}{3}$$

$$-\frac{2\pi}{3} = \boxed{-120}^{\circ}$$

18. Convert the angle in radians to degrees.

$$\frac{5\pi}{4}$$

$$\frac{5\pi}{4} = \boxed{225}^{\circ} \text{ (Simplify your answer.)}$$

19. Convert the angle from radians to degrees.

$$\frac{19\pi}{6}$$

$$\frac{19\pi}{6} = \boxed{570}^{\circ} \text{ (Simplify your answer.)}$$

20. Convert the angle from degrees to radians.

$$295^{\circ}$$

$$295^{\circ} \approx \boxed{5.15} \text{ radian(s) (Round to two decimal places as needed.)}$$

21. Convert the angle in degrees to radians.

$$-34^{\circ}$$

$$-34^{\circ} = \boxed{-.59} \text{ radian(s)}$$

(Type an integer or decimal rounded to two decimal places as needed.)

22. Convert the angle from radians to degrees.

$$0.67$$

$$0.67 \text{ radians} = \boxed{38.39}^{\circ}$$

(Type an integer or a decimal rounded to the nearest hundredth as needed.)

23. Convert the angle from radians to degrees.

$$-7.57$$

$$-7.57 \text{ radians} = \boxed{-433.73}^{\circ}$$

(Type an integer or a decimal rounded to the nearest hundredth as needed.)

24. Find the complement and the supplement of the given angle or explain why the angle has no complement or supplement.

$$55^\circ$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ A. The complement of the angle is   $^\circ$ .
- ☐ B. There is no complement because the measure of the angle is greater than  $180^\circ$ .
- ☐ C. There is no complement because the measure of the angle is greater than  $90^\circ$ .
- ☐ D. There is no complement because the measure of the angle is less than  $360^\circ$ .

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ A. The supplement of the angle is   $^\circ$ .
- ☐ B. There is no supplement because the measure of the angle is less than  $360^\circ$ .
- ☐ C. There is no supplement because the measure of the angle is greater than  $90^\circ$ .
- ☐ D. There is no supplement because the measure of the angle is greater than  $180^\circ$ .

25. Find the complement and the supplement of the given angle or explain why the angle has no complement or supplement.

$$112^\circ$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The complement of the angle is   $^\circ$ .
- ☐ B. There is no complement because the measure of the angle is greater than  $180^\circ$ .
- ☐ C. There is no complement and no supplement because the measure of the angle is less than  $360^\circ$ .
- ☒ D. There is no complement because the measure of the angle is greater than  $90^\circ$ .

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ A. The supplement of the angle is   $^\circ$ .
- ☐ B. There is no supplement because the measure of the angle is greater than  $180^\circ$ .
- ☐ C. There is no supplement because the measure of the angle is greater than  $90^\circ$ .
- ☐ D. There is no supplement because the measure of the angle is less than  $360^\circ$ .

26. Find the radian measure of an angle at the center of a circle with radius 74.0 cm that intercepts an arc length of 125 cm.

The measure of the angle is  .  
(Round to two decimal places as needed.)

27. Find the missing quantity. Let  $\theta$  represent the central angle of a circle,  $r$  represent the radius of the circle, and  $s$  represent the length of the intercepted arc.

$$r = 6 \text{ m}, \theta = 25^\circ, s = ?$$

$s =$   m  
(Type an integer or decimal rounded to the nearest thousandth as needed.)

28. Find the length of the arc,  $s$ , intercepted by the given central angle,  $\theta$ , in a circle of radius,  $r$ .

$$\theta = 55 \text{ rad}; r = 4 \text{ mi}$$

$$s =$$
  mi

29. Use the formula  $v = r\omega$  to find the value of the missing variable.

$$v = 5 \text{ m per sec}, r = 8 \text{ m}$$

$\omega =$   radians per sec  
(Type an integer or a simplified fraction. Type an exact answer, using  $\pi$  as needed.)

30. For an arc length  $s$ , area of sector  $A$ , and central angle  $\theta$  of a circle of radius  $r$ , find the indicated quantity for the given values.

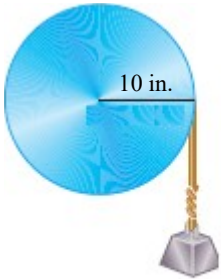
$$A = 0.0152 \text{ ft}^2, \theta = 338.0^\circ, r = ?$$

$r =$   ft (Type an integer or decimal rounded to four decimal places as needed.)

31. A slice of pizza whose edges form a  $37^\circ$  angle with an outer crust edge 4 inches long was found in a gym locker. What was the diameter of the original pizza?

The diameter of the original pizza was  inches.  
(Round to the nearest inch as needed.)

32. Use the figure to estimate the angle  $\theta$  through which the pulley should be rotated to raise the weight 6 inches.

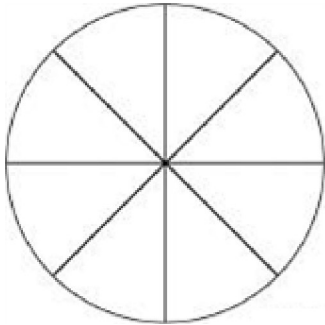


The pulley should be rotated approximately   $^\circ$ .  
(Type an integer or a decimal. Do not round until the final answer. Then round to the nearest tenth as needed.)

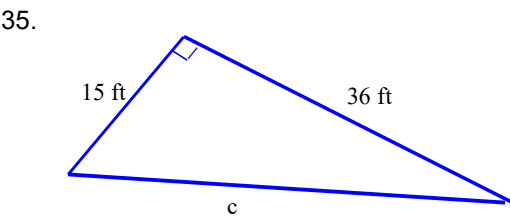
33. A bicycle's wheels are 20 inches in diameter. If the bike is traveling at a rate of 16 miles per hour, find the angular speed of the wheels.

The angular speed is  radians per hour.  
(Round to two decimal places as needed.)

34. An umbrella top is made from a material in the shape of a circle of diameter 2 feet. It has eight equally spaced ribs. Find the area between two consecutive ribs of the umbrella.



The area between two consecutive ribs of the umbrella is   $\text{ft}^2$ .  
(Simplify your answer. Round to the nearest feet as needed.)



Use the Pythagorean Theorem to determine the third side of the triangle.

The length of the third side is  ft.

36. A right triangle has hypotenuse  $c = 9$  inches and leg  $b = 4$  inches. Find the exact length of the missing side.

The exact length of the missing side is  $a =$   inches.  
(Type an exact answer, using radicals as needed.)

37. Watch the video and then solve the problem given below.

[Click here to watch the video.](#)<sup>1</sup>

Convert  $160^\circ$  to radians.

$160^\circ =$   radians (Type an exact answer, using  $\pi$  as needed.)

1: <http://mediaplayer.pearsoncmg.com/assets/DruH7BtuEDt9hU4uTGn5Xb6QsMRN2ebw?clip=2>

38. Watch the video and then solve the problem given below.

[Click here to watch the video.](#)<sup>2</sup>

Convert 4 radians to degrees.

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4 radians  $\approx$   (Round to the nearest tenth as needed.)

2: <http://mediaplayer.pearsoncmg.com/assets/DruH7BtuEDt9hU4uTGn5Xb6QsMRN2ebw?clip=3>

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39. Watch the video and then solve the problem given below.

[Click here to watch the video.](#)<sup>3</sup>

A circle has a radius of 24 inches. Find the length of the arc intercepted by a central angle with measure  $240^\circ$ .

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s  $\approx$   inches (Round to two decimal places as needed.)

3: <http://mediaplayer.pearsoncmg.com/assets/DruH7BtuEDt9hU4uTGn5Xb6QsMRN2ebw?clip=5>

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