

## Arc Length & Sector Area

Name: \_\_\_\_\_

Date: \_\_\_\_\_

- Find the number of radians in a central angle of a circle whose radius is 5 inches if the central angle intercepts an arc 14 inches long.
- What is the length of the arc that subtends a central angle of  $139^\circ$  in a circle of radius 7.5 cm? Answer correct to 2 decimal places.
- What is the length of the arc that subtends a central angle of  $82^\circ$  in a circle of radius 9 cm? Answer correct to 2 decimal places.
- What is the length of the arc that subtends a central angle of 0.8 radians in a circle of radius 8.2 cm?
- What is the length of the arc that subtends a central angle of 2.3 radians in a circle of radius 7 cm?
- Find the number of inches in the radius of a circle in which a central angle of 4 radians intercepts an arc of 6 inches.
- In a circle a central angle intercepts an arc equal in length to the diameter of the circle. How many radians are there in this central angle?
- A stainless steel circle with a circumference of 100 cm is forged. A 22 cm arc of this circle is cut out. What is the measure of this arc in degrees?  
A.  $69.2^\circ$    B.  $72.9^\circ$    C.  $78^\circ$    D.  $79.2^\circ$
- Determine the angle at the center of a circle with radius 6.0 cm for an arc length of 8.0 cm.  
A.  $\frac{3}{4}$  radians                      B.  $\frac{4}{3}$  radians  
C.  $\frac{\pi}{12}$  radians                      D.  $\frac{2}{3}$  radians

10. A flea is taking a ride on the end of the minute hand of a clock. The minute hand is 6 inches long and the flea rides for 25 minutes. How far, to the nearest tenth of an inch, did the flea travel?

- A. 12.6 in                      B. 13.9 in  
 C. 15.7 in                      D. 18.4 in

11. An artist takes a round manhole cover that is 36 inches in diameter and divides into 8 equal sized sections. Approximately what is the area of each section?

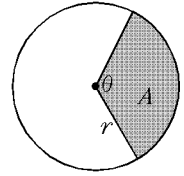
- A. 108 in<sup>2</sup>                      B. 127 in<sup>2</sup>  
 C. 139 in<sup>2</sup>                      D. 152 in<sup>2</sup>

12. Sarina orders a sixteen-inch diameter pizza. She divides it into equal slices by cutting every thirty degrees around the middle of the pizza. Approximately what is the area of each slice?

- A. 1.2 in<sup>2</sup>                      B. 3.1 in<sup>2</sup>  
 C. 5.8 in<sup>2</sup>                      D. 16.75 in<sup>2</sup>

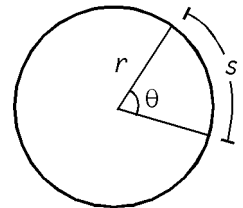
13. Given a circle with radius,  $r$ , and a sector with area,  $A$ , formed by angle of  $\theta$  radians. Find a formula for  $\theta$  in terms of  $A$  and  $r$ .

- A.  $\theta = \frac{r^2}{2A}$                       B.  $\theta = \frac{2A}{r^2}$   
 C.  $\theta = \frac{\pi A}{r^2}$                       D.  $\theta = \frac{2A}{r}$



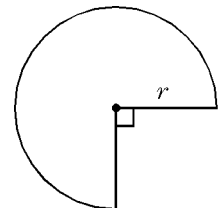
14. A particular baseball field is a quarter of a circle, like the sector of the circle shown in the figure below, where angle  $\theta$  is  $90^\circ$  and the radius is 100 yards. What is the approximate size of the playing area of the baseball field? [Use  $\pi \approx 3.14$ .]

- A. 314 yd<sup>2</sup>  
 B. 7854 yd<sup>2</sup>  
 C. 12,452 yd<sup>2</sup>  
 D. 31,416 yd<sup>2</sup>



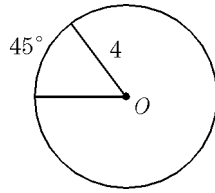
15. If  $r = 12$  cm, what is the area of this sector? Express your answer to the nearest tenth of a centimeter.

- A. 339.3 cm<sup>2</sup>  
 B. 361.8 cm<sup>2</sup>  
 C. 382.4 cm<sup>2</sup>  
 D. 493.6 cm<sup>2</sup>



16. The area of a sector of the circle with an arc measure of  $45^\circ$  and with a radius of 4 is \_\_\_\_\_.

- A.  $16\pi$       B.  $8\pi$   
C.  $2\pi$         D. 2



17. A circle has a circumference of 16 cm. The measure of a central angle of the circle is 90 degrees. What is the length of the arc associated with this angle?

- A. 2 cm    B. 4 cm    C. 8 cm    D. 12 cm

18. A fly lands on the edge of a record. The record has a radius of 3 inches and is making 45 revolutions per minute. How far, to the nearest inch, does the fly travel in 15 seconds?

- A. 45 in    B. 106 in    C. 135 in    D. 212 in

19. Find the number of radians in a central angle which intercepts an arc whose length is 3.2 times the radius of the circle.

20. The radius of a circle is 9 inches. Find the number of radians in a central angle which subtends an arc of 1 foot in this circle.

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| 1.<br>Answer: $2\frac{4}{5}$<br>Objective: G.C.5 | 15.<br>Answer: A<br>Objective: G.C.5             |
| 2.<br>Answer: 18.20 cm<br>Objective: G.C.5       | 16.<br>Answer: C<br>Objective: G.C.5             |
| 3.<br>Answer: 12.88 cm<br>Objective: G.C.5       | 17.<br>Answer: B<br>Objective: G.C.5             |
| 4.<br>Answer: 6.56 cm<br>Objective: G.C.5        | 18.<br>Answer: D<br>Objective: G.C.5             |
| 5.<br>Answer: 16.1 cm<br>Objective: G.C.5        | 19.<br>Answer: 3.2<br>Objective: G.C.5           |
| 6.<br>Answer: $1\frac{1}{2}$<br>Objective: G.C.5 | 20.<br>Answer: $\frac{4}{3}$<br>Objective: G.C.5 |
| 7.<br>Answer: 2<br>Objective: G.C.5              |  |
| 8.<br>Answer: D<br>Objective: G.C.5              |  |
| 9.<br>Answer: B<br>Objective: G.C.5              |  |
| 10.<br>Answer: C<br>Objective: G.C.5             |  |
| 11.<br>Answer: B<br>Objective: G.C.5             |  |
| 12.<br>Answer: D<br>Objective: G.C.5             |  |
| 13.<br>Answer: B<br>Objective: G.C.5             |  |
| 14.<br>Answer: B<br>Objective: G.C.5             |  |