

Learning Strand 3
Mathematical and Problem Solving Skills
CIRCUMFERENCE OF A CIRCLE

Accreditation and Equivalency (A&E) Program Module



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To the Learner

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1. Write your name clearly under the column **Name of Borrower**.
2. Use the following letters in recording the **condition** of the book before and after borrowing:

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C. used book in Fair Condition

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9. Do not sit on it.

Elementary

Learning Strand 3
Mathematical and Problem-Solving Skills
CIRCUMFERENCE OF A CIRCLE



Accreditation and Equivalency (A&E) Program Module

Learning Strand 3 – Elementary
Alternative Learning System
Circumference of a Circle
First Edition, 2023

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Published by the Department of Education

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User's Guide

For the ALS Learner:

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:



What Is This Module About?

This will give you an idea of the skills or competencies you are expected to learn in the module.



Let's See What You Already Know

This part includes an activity that aims to check what you already know about the lesson. If you get all the answers correct (100%), you may decide to skip



What Will You Learn from This Module?

This contains objective/s or the learning competencies in a lesson. This may include a brief rationale on what you will learn.



Let's Do This

This part gives instruction to the learner to perform the activity/ies as mentioned-above to ensure learning the competencies or the objectives.



Let's Study and Analyze

This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.



Let's Try This

This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.



Let's See What You Have Learned

This section provides an activity that will help you transfer your new knowledge or skill in real-life situations or concerns.



Let's Remember and Review

This contains key concepts taken from all the lessons covered in every module.



Explore More

This is an activity in a form that increase the strength of the response and tends to induce repetitions of actions/learning.



What Have You Learned?

This is a task which aims to evaluate your level of mastery in achieving the given learning competency.



Answer Key

This contains answers to all activities in the module.

Glossary

This portion gives information about the meanings of the specialized words used in the module.

Reference

This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer the Pre-assessment before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your ALS Teacher/Instructional Manager/Learning Facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your ALS Teacher/Instructional Manager/Learning Facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it.

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What is the Module About?

This Self-Learning Module (SLM) in Learning Strand 3 – Mathematical and Problem Solving Skills for Advanced Elementary Level contains information about the circumference of a circle.

Also, this material will help the Elementary Level learners to compute for the diameter, radius, and circumference of a circle using the value of Pi (π). **(LS3MP-M-PSD-AE-46)**



Let's See What You Already Know

Activity 1

Directions: Compute for the diameter, radius and circumference of a circle using the value of $\pi = 3.14$. Write your answer on a separate sheet/s of paper.

1. The diameter of a circle is 10 units. What is the radius of the circle?
2. Find the circumference of the circle with radius of 7 units.
3. A circle has a circumference of 30.75 units. What is the diameter of the circle?
4. A circle has a radius measuring 8 cm. What is the circumference?
5. The radius of the circle is 15 units. What is its diameter?

Activity 2

Directions: Read the following statements. Write True if the statement is correct and False if not.

1. A circle is a set of all points equidistant from a given point.
2. The distance around the circle is called circumference or the perimeter of a circle.
3. The distance from one edge of the circle to another passing through the center point is called diameter.
4. The diameter of a circle is equal to the radius.
5. The ratio of the circumference of a circle to the diameter is equal to π .

Check out and compare your answers with the given answer key. You might not get all the correct answers, but that is okay. You can learn all the answers by studying this module.



What Will You Learn From This Module?

The goal of this module is to understand the concept of radius, diameter, and circumference of the circle.

After going through this module, the learner is expected to:

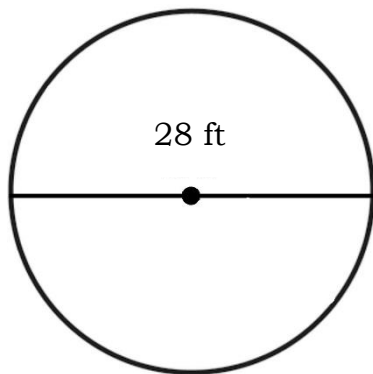
- compute the diameter, radius and circumference of a circle using the value of Pi.



Let's Solve This Problem

Directions: Find the radius, diameter and circumference of each given circle. Use 3.14 as the value of π . Write your answer on a separate sheet/s of paper.

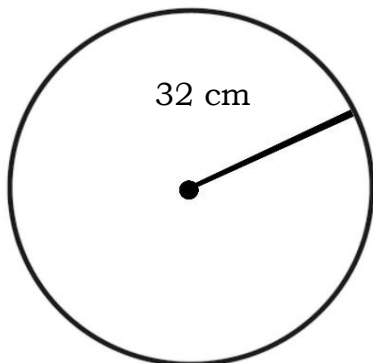
1.



Radius = _____

Circumference = _____

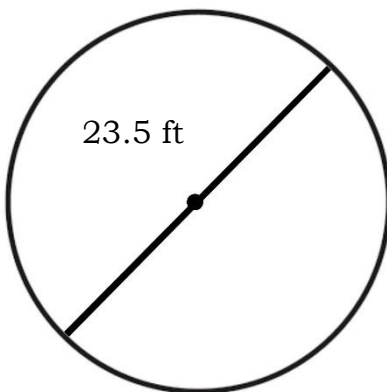
2.



Diameter = _____

Circumference = _____

3.



Radius = _____

Circumference = _____

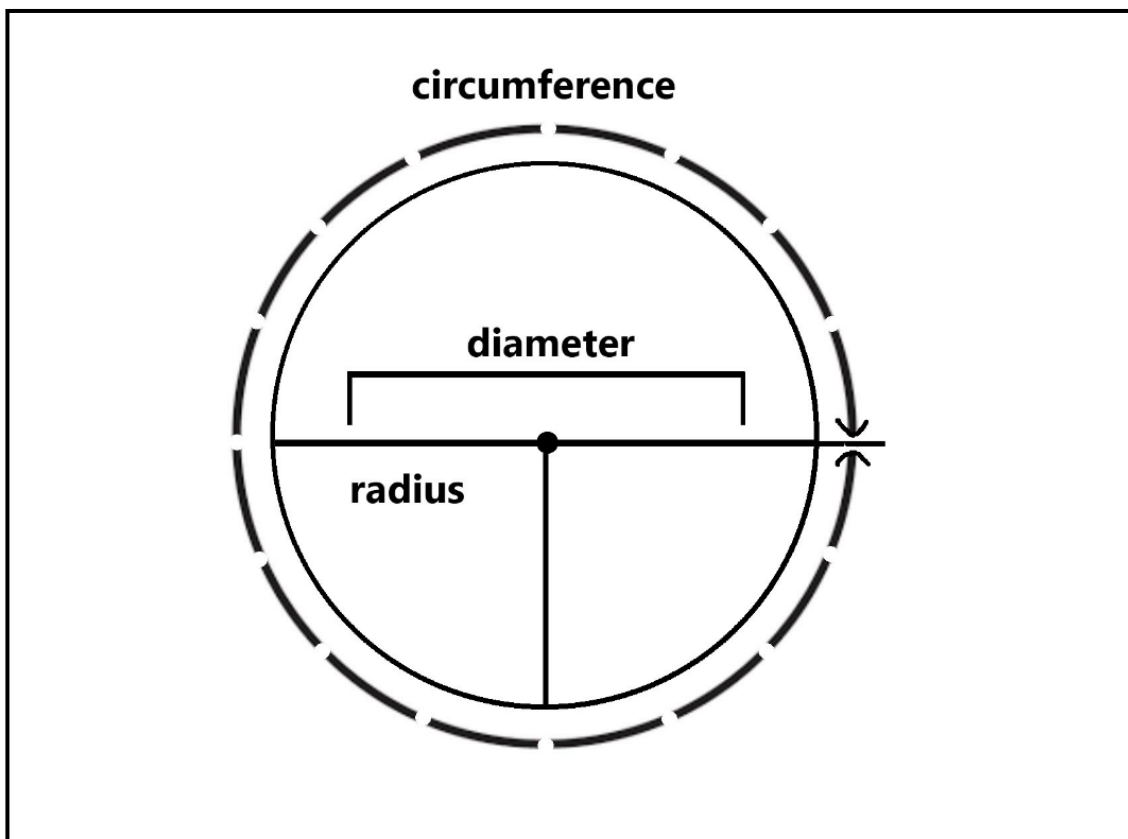


Let's Study and Analyze

Circumference of the circle or perimeter of the circle is the measurement of the boundary of the circle. If we open a circle and make a straight line out of it, then its length is the circumference. It is usually measured in units, such as cm or unit m.

The diameter of a circle is the distance from one edge of the circle to another passing through the center point of the circle usually denoted by the lower case d .

The radius of a circle is the distance from the center point to one edge of a circle usually denoted by the lower case r . It is one-half of the circle's diameter.



To find the circumference of a circle we can use two formulas. It depends on the values given in the stated problem. The two formulas use the irrational number Pi (π). The Greek letter π is a mathematical constant and it is also the ratio of the circumference of a circle to the diameter.

1. $C = \pi \times d$
2. $C = 2\pi r$

where:

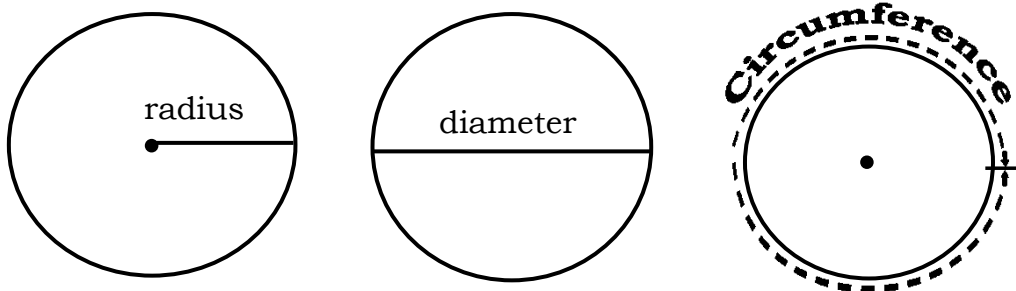
C is the Circumference

d is the diameter

r is the radius

Take note of these:

Radius, Diameter and Circumference



$$\frac{\text{Circumference}}{\text{Diameter}} = \pi = 3.14159\dots$$

While the Diameter is twice the Radius:

$$\text{Diameter} = 2 \times \text{Radius}$$

$$\text{Radius} = \frac{\text{Circumference}}{2\pi} \text{ or } \frac{\text{diameter}}{2}$$

Illustrative Examples in Finding the Radius of a Circle

1. Given the circumference of a circle, 75.36 cm. Find its radius.

Solution

Step 1: Write the formula

$$\text{radius} = \frac{\text{Circumference}}{2\pi}$$

Step 2: Substitute the given values

$$\text{radius} = \frac{75.36\text{cm}}{2(3.14)}$$

Step 3: Simplify and Divide

$$\text{radius} = \frac{75.36\text{cm}}{6.28} = 12 \text{ cm}$$

Step 4: Write the final answer

$$\text{radius} = 12 \text{ cm}$$

Therefore, the radius of the circle is 12 cm.

2. Find the radius of the circle below.

Step 1: Write the formula

$$\text{radius} = \frac{\text{diameter}}{2}$$

Step 2: Substitute the given values

$$\text{radius} = \frac{18 \text{ in}}{2}$$

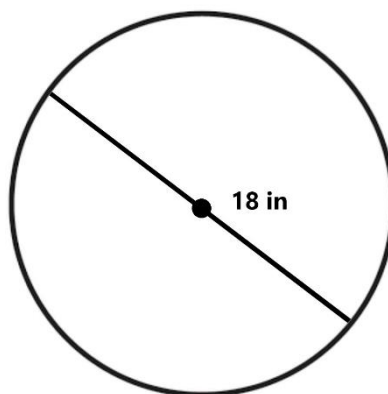
Step 3: Divide

$$\text{radius} = \frac{18 \text{ in}}{2} = 9 \text{ in}$$

Step 4: Write the final answer

$$\text{radius} = 9 \text{ in}$$

Therefore, the radius of the circle is 9 in.



Illustrative Examples in Finding the Diameter of a Circle

1. What will be the diameter of a circle if its circumference is 95.75 cm?

Step 1: Write the formula

$$d = \frac{\text{Circumference}}{\pi}$$

Step 2: Substitute the given values

$$d = \frac{95.75 \text{ cm}}{3.14}$$

Step 3: Divide

$$d = \frac{95.75 \text{ cm}}{3.14} = 30.49 \text{ cm}$$

Step 4: Write the final answer

$$d = 30.49 \text{ cm}$$

Therefore, the diameter of the circle is 30.49 cm.

2. The radius of a circle is 20.75 cm. What is the diameter?

Step 1: Write the formula

$$d = 2 \times \text{radius}$$

Step 2: Substitute the given values

$$d = 2 \times 20.75 \text{ cm}$$

Step 3: Multiply

$$d = 2 \times 20.75 \text{ cm}$$

$$d = 41.5 \text{ cm}$$

Step 4: Write the final answer

$$d = 41.5 \text{ cm}$$

Therefore, the diameter of the circle is 41.5 cm

Illustrative Examples in Finding the Circumference of a Circle

1. Caloy is riding in his bicycle. The diameter of his bicycle wheel is 67 centimeters. What is the circumference of Caloy's bicycle wheel?

Step 1: Write the formula

$$C = \pi d$$

Step 2: Substitute the given values

$$C = 3.14(67\text{cm})$$

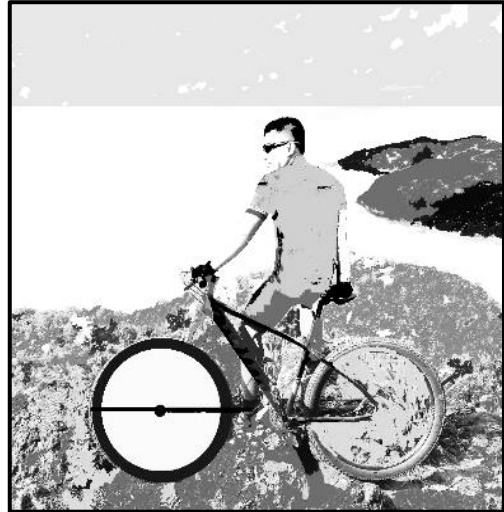
Step 3: Multiply

$$C = 3.14 \times 67\text{cm}$$

$$C = 210.38\text{cm}$$

Step 4: Write the final answer

$$C = 210.38\text{cm}$$



Therefore, the circumference of Caloy's bicycle wheel is 210.38 cm.

2. A plate has a radius of 8.5 centimeters. What is the circumference?

Step 1: Write the formula

$$C = 2\pi r$$

Step 2: Substitute the given values

$$C = 2 (3.14) (8.5\text{cm})$$

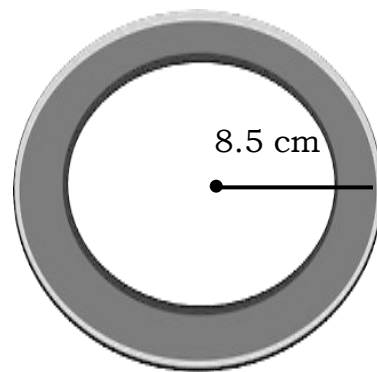
Step 3: Simplify and Multiply

$$C = 2 \times 3.14 \times 8.5\text{cm}$$

$$C = 53.38 \text{ cm}$$

Step 4: Write the final answer

$$C = 53.38 \text{ cm}$$



Therefore, the circumference of the plate is 53.38 cm.



Let's Try This

Directions: Answer the following problems below. Write your answer on a separate sheet of paper. Use $\pi = 3.14$ to calculate your answers.

A. Find the value of the following:

1. Radius = 9cm
Circumference = _____

2. Circumference = 70.65in
Diameter = _____

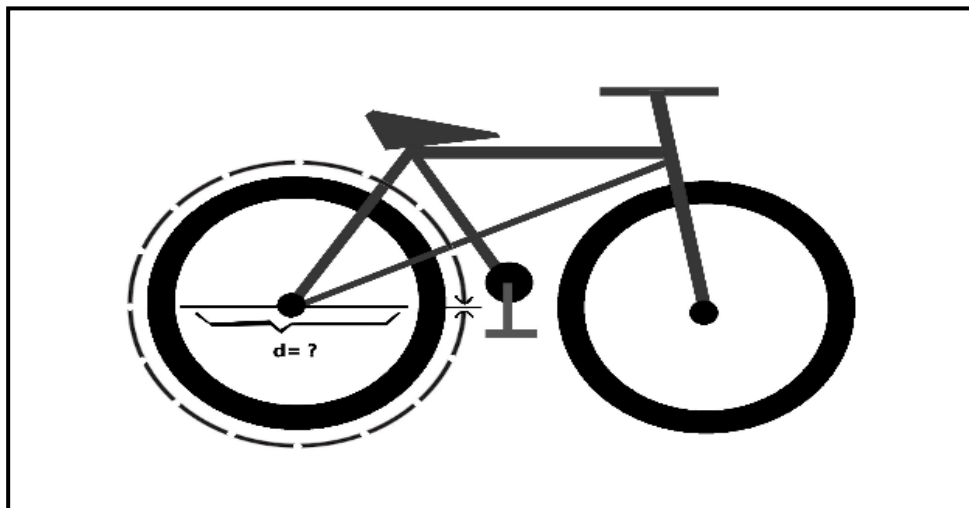
3. Circumference = 98.91cm
Radius = _____

4. Diameter = 9cm
Circumference = _____

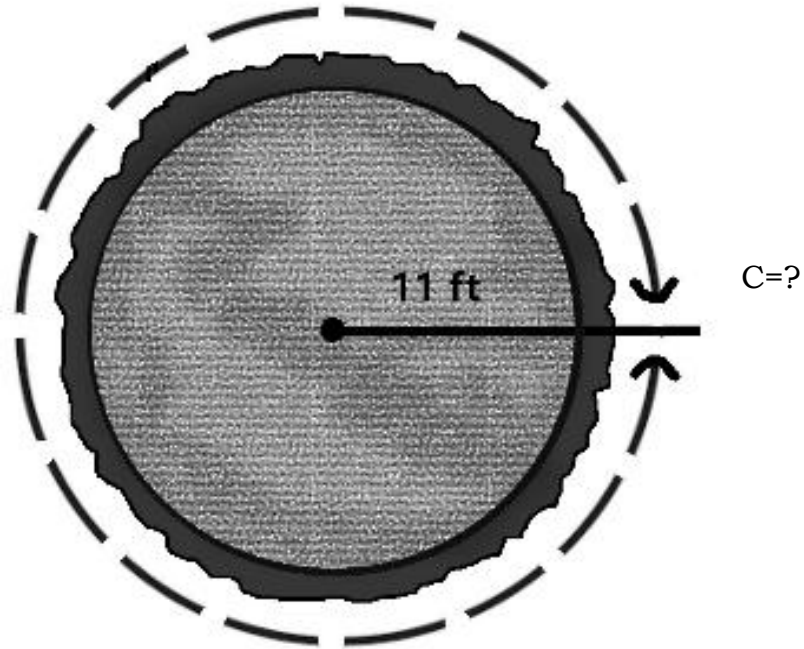
5. Radius = 20.75cm
Diameter = _____

B. Solve the following word problems. Show your complete solution on a separate sheet of paper.

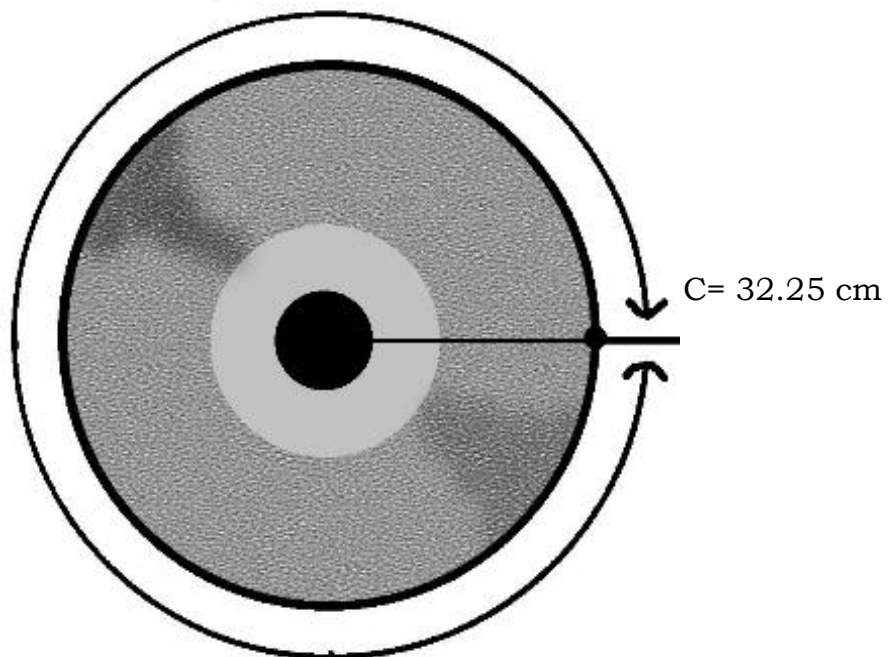
1. The circumference of a bicycle wheel is 55.50 inches. What is the diameter?



2. The radius of a circular rug is 11 feet. What is the circumference?



3. The circumference of a compact disc is 32.25 centimeters. What is the radius?





Let's See What You Have Learned

Directions: Match the statement in Column A with each appropriate answer in Column B. Use 3.14 as the value of π . Write only the letter of your answer on a separate sheet of paper.

COLUMN A

1. The measurement of the boundary of a circle
2. Circumference divided by the diameter of the circle is equal to _____
3. One-half of the circle's diameter
4. Twice the radius is equal to the value of _____
5. The circumference of a circular rug is 182.50 cm. What is the measure of its diameter?
6. Mike's circular garden has a diameter of 198.50 cm. Determine the value of its circumference.
7. The circumference of a circle is 100.25 cm. What is the radius?
8. A circular coffee table has a radius of 38.75 cm. What is the diameter?
9. What is the radius of a circle with the diameter of 120.25 cm?
10. The diameter of a circle is 91.4 cm. Find the value of its circumference.

COLUMN B

- a. Pi
- b. 58.12 cm
- c. 60.13 cm
- d. Circumference
- e. Radius
- f. 623.29 cm
- g. 77.50 cm
- h. Diameter
- i. 287 cm
- j. 15.96 cm
- k. 68.23 cm



Let's Remember and Review

Remember the following:

- The radius of a circle is the distance from the center to any point on the circle.
- The diameter of a circle is equal to twice its radius.
- The distance around the circle is called circumference.
- The two formulas used to find the circumference of a circle C , depending on the given information are:
 $C = \pi \times d$
 $C = 2\pi r$
- The approximate value of π is 3.14.



What Have You Learned?

A.

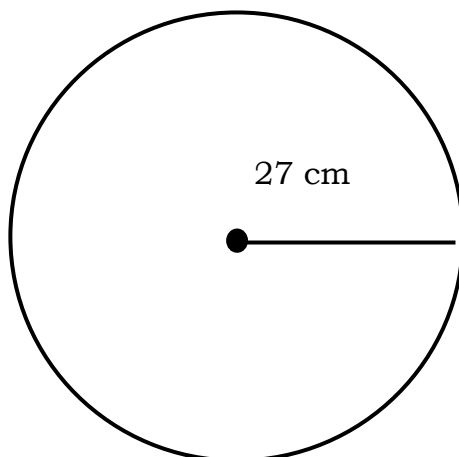
Directions: Read and solve the following problems. Use 3.14 as an approximation of π and write the letter of your answer on a separate sheet of paper.

1. Which of the following is/are formula for circumference?
a. $C = 2\pi r$ b. $C = \pi d$ c. $C = \pi r$ d. $C = \pi r^2$
2. Circle B has a radius of 13.5 m. What is its diameter?
a. 26.25 m b. 26.50 m c. 27.5m d. 27 m
3. Asha Yzabelle made a giant donut. The hole of the donut has a diameter of 1 inch. What is the circumference of the hole?
a. 3.14 in b. 6.28 in c. 0.14 in d. 2.28 in
4. What is the radius of a wheel whose circumference is 282.6 cm?
a. 45 cm b. 54 cm c. 44 cm d. 56 cm

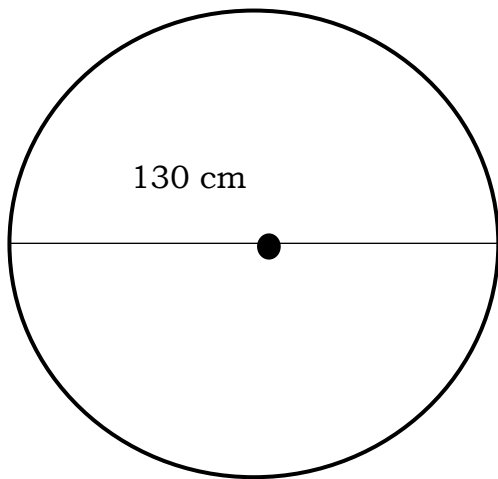
5. A circular table has a circumference of 314 inches. What is its diameter?
a. 101 in b. 102.4 in c. 100 in d. 101.14 in
6. A circular mat has a diameter of 53 centimeters. Miel Carlisle wants to sew a decorative braid around the mat. How many centimeters of braid does he need?
a. 166.42 cm b. 146.42 cm c. 166.24 cm d. 144.66 cm
7. The circumference of the rim of a wheel is 301.44 centimeters. Find the diameter of the rim.
a. 69 cm b. 96 cm c. 89cm d. 98 cm
8. The diameter of a circular fountain in a city park is 28 feet. What is the circumference?
a. 82.97 ft b. 89.72 ft c. 78.92 ft d. 87.92 ft
9. Andrew Perez bought a circular table with a diameter of 120 dm. What is the circumference of the table?
a. 376.80 dm b. 367.08 dm c. 378.80 dm d. 388.70 dm
10. Mang Ruben wanted to fence his circular garden that has a radius of 65 meters. How many meters of wire will he need?
a. 480.02 m b. 408.20 m c. 488.20 m d. 482.20 m

B.

Directions: Determine the radius, diameter and circumference of each circle. Use 3.14 as the value of π . Write your answer on a separate sheet of paper.

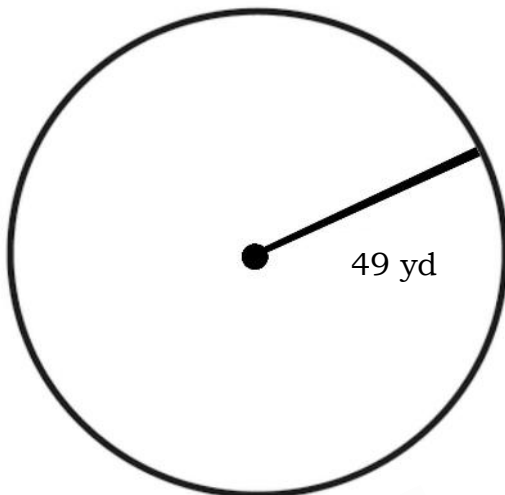


1. Diameter = _____
2. Circumference = _____



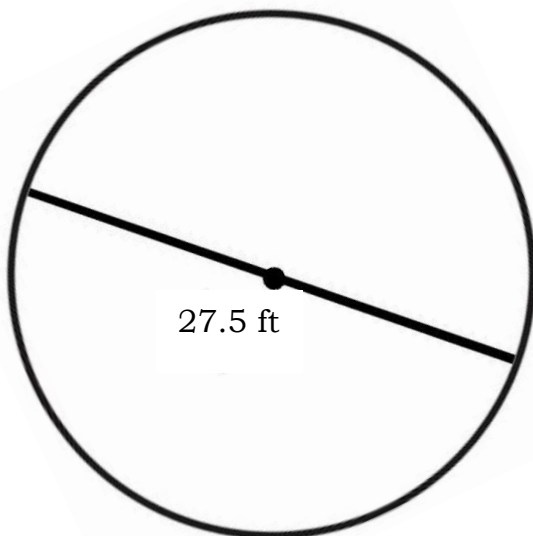
3. Radius = _____

4. Circumference = _____



5. Diameter = _____

6. Circumference = _____



7. Radius = _____

8. Circumference = _____



Answer Key

Let's Solve This Problem

1. $r = 14\text{ft}$, $C = 87.92\text{ ft}$
2. $d = 64\text{ cm}$, $C = 200.96\text{ cm}$
3. $r = 11.75\text{ ft}$, $C = 73.79\text{ ft}$

Let's Try This

- A.
1. 56.52 cm
 2. 22.50 in
 3. 15.75 cm
 4. 28.26 cm
 5. 41.50 cm
- B.
1. 17.68 in
 2. 69.08 ft
 3. 5.14 cm

Let's See What You Have Learned

1. d
2. a
3. e
4. h
5. b
6. f
7. j
8. g
9. c
10. i

What Have You Learned

- A.
1. a, b
 2. d
 3. a
 4. a
 5. c
 6. a
 7. b
 8. d
 9. a
 10. b
- B.
1. 54 cm
 2. 169.56 cm
 3. 65 cm
 4. 408.2 cm
 5. 98 yd
 6. 307.72 yd
 7. 13.75 ft
 8. 86.35 ft

Let's See What You Already Know

- Activity 1
1. 5 units
 2. 43.96 units
 3. 9.79 units
 4. 50.24 cm
 5. 30 units
- Activity 2
1. True
 2. True
 3. True
 4. False
 5. True

Glossary

Circumference – is the measurement of the boundary of the circle.

Diameter- the distance of the line from one edge of the circle to another passing through the center of the circle.

Pi – an irrational number symbolized by the Greek letter π which is approximately equal to 3.14159...

Radius – the distance from the center to any point on the circle

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- Villa, Ma. Melanie S. First Edition 2020. Quarter 3-Module 18: Visualizing the Circumference of a Circle. Published by the Department of Education

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