

MATH IS  
AWESOME!

# WORKSHEET

## CENTER ANGLE AND CIRCUMFERENCE ANGLE IN A CIRCLE

For Middle School (Grade 8)

Explore, learn,  
and succeed!



Geometry  
makes sense!

Name : .....  
Class : .....  
Date : .....



# 1

## LET'S START!



**Look around you!**

A clock, a bicycle wheel, a Ferris wheel, or even a pizza slice are all circle shapes! In this worksheet, we will learn about center angles and circumference angles in a circle. Let's explore and have fun!



### LEARNING OBJECTIVES

1. Explain the meaning of center angle and circumference angle.
2. Determine the measure of a given angle if the center angle is known, and vice versa.
3. Solve everyday problems related to center angles and circumference angles.
4. Communicate ideas and solutions clearly.
5. Work together and be confident in presenting your results.



### DIRECTIONS

1. Read each activity carefully.
2. Work on the activities in order.
3. Discuss with your group if there is something you don't understand.
4. Write your answers in the spaces provided.
5. Present your group's work with confidence!



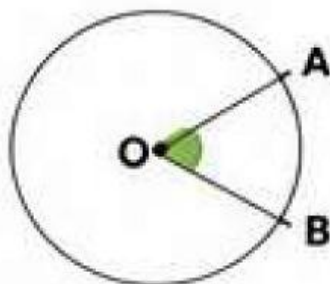
## 2 UNDERSTANDING THE CONCEPTS



### A. Center Angle

A center Angle is an angle whose vertex is at the center of the circle.

Example:



$\angle AOB$  is a center angle.

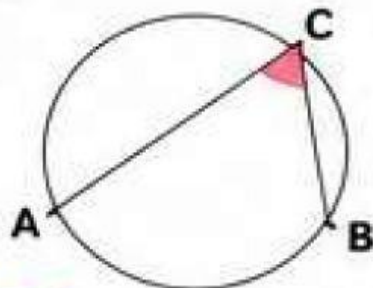
Vertex : O (center)

Sides : OA and OB (radii)

### B. Circumference Angle

A circumference angle is an angle whose vertex is on the circumference of the circle and whose sides are chords of the circle.

Example:



$\angle ACB$  is a circumference angle.

Vertex : C (on the circle)

Sides : CA and CB (chords)



### REMEMBER!

If a center angle and a circumference angle intercept the same arc, the measure of the center angle is twice the measure of the circumference angle.

Center angle =  $2 \times$  circumference angle

2

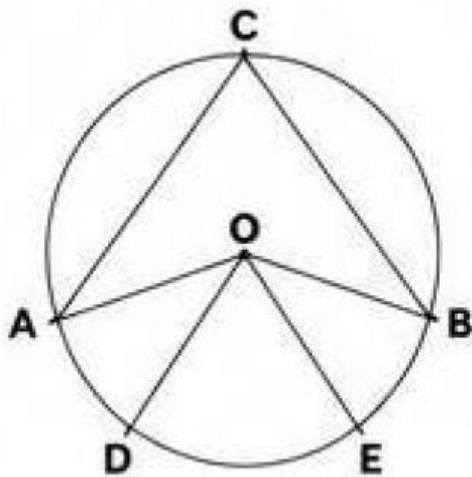


### 3 ACTIVITY 1



#### Identifying Center Angles and Circumference Angles

Look at the figure below, then complete the table!



No.	Angle	Type of Angle (Center / Circumference)	Vertex	Sides
1.	$\angle AOB$			
2.	$\angle COD$			
3.	$\angle CBE$			
4.	$\angle DAE$			
5.	$\angle CDE$			



#### TIP!

Center angle has its vertex at the center (O).

Circumference angle has its vertex on the circle. 😊



Great job! Keep going!

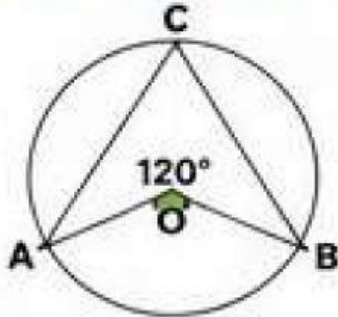
## 4 ACTIVITY 2



### Finding Measures of Angles

Find the measure of the unknown angle in each figure!

1

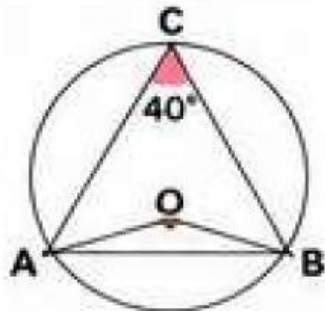


Given:  $\angle AOB = 120^\circ$  (center angle)

Find:  $\angle ACB$  (circumference angle)

Answer:

2

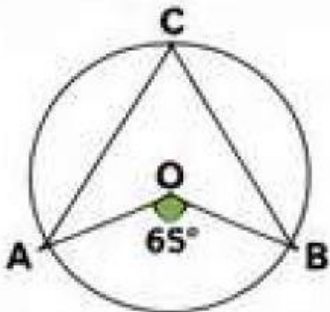


Given:  $\angle ACB = 40^\circ$  (circumference angle)

Find:  $\angle AOB$  (center angle)

Answer:

3



Given:  $\angle ACB = 65^\circ$  (circumference angle)

Find:  $\angle AOB = x^\circ$  (center angle)

Answer:



Remember: Center angle =  $2 \times$  circumference angle

4

## 5 ACTIVITY 3



### Real-World Problems

Solve the following problems using the concept of center and circumference angles!

- 1 In a bicycle wheel, an angle formed by two spokes is  $70^\circ$ . What is the measure of the circumference angle that intercepts the same arc?

Answer:



- 2 In a clock, the minute hand and hour hand form a central angle of  $150^\circ$  at 3:00 PM. What is the measure of the circumference angle that intercepts the same arc?

Answer:



## REFLECTION

Check (✓) the statements that are true for you!

- I understand the meaning of center angle and circumference angle.
- I can find angle measures using the relationship.
- I can solve problems using center and circumference angles.
- I worked well with my group and helped others.
- I gave my best effort in this worksheet!

Write a message to yourself!

.....  
.....  
.....



You are capable, you are amazing,  
and you can achieve great things!

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