Parts of a Circle

Explore ideas and representations

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

A radius joins center to rim; a chord joins two rim points. A diameter is a chord through the center and has length $d = 2r$. For $r = 2.5$ cm, $d = 5$ cm. Each arc between diameter endpoints is a semicircle, or 180°.

Worked example

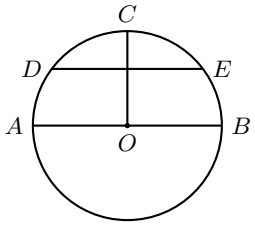
A diameter is 26 cm. Find a radius and explain the relationship.

1. The center splits the diameter into two equal radii.
2. $r = 26/2 = 13$ cm.
3. Check by adding the radii: $13 + 13 = 26$ cm.
Answer: 13 cm.

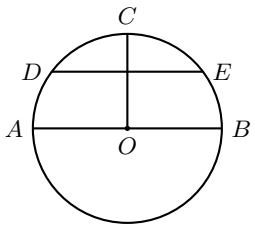
Practice Problems

Show your thinking.

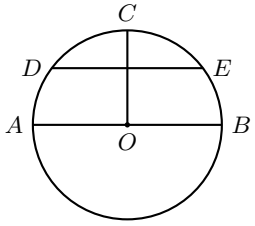
1. Center O and point C are 4 cm apart. Name two radii on this figure and give their lengths.



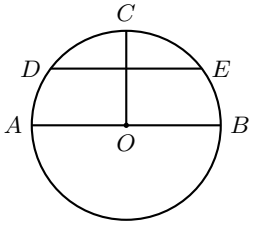
2. For a new circle, $OC = 6$ cm. Use the diagram to find the full width along AB.



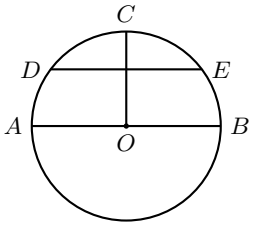
3. Which of AB and DE are chords? Use the location of O to explain how they differ.



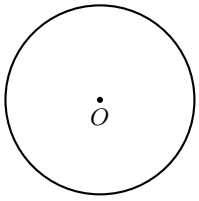
4. The diameter of this circle is $AB = 16$ cm. Recover OA and OB and explain why they are equal.



5. The upper arc from A to B passes through C. Name this kind of arc and give its fraction of the rim and central angle.



6. This blank circle has radius 5 cm. Draw a longest possible chord, label endpoints P, Q, and explain its length.



Answer Key

1. For example, $OA = OC = 4$ cm.
2. $AB = 12$ cm.
3. Both are chords; only AB is a diameter.
4. $OA = OB = 8$ cm.
5. Semicircle: $1/2$ of the rim; $180°$.
6. Any diameter, such as PQ through O, is 10 cm.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. OA, OB, and OC all connect the center to the rim.

2. Each such segment is a radius. In the same circle, all radii are equal.

3. Since $OC = 4$ cm, a second radius such as OA also measures 4 cm.

Problem 2

1. Point O lies between A and B.

2. $OA = OB = OC = 6$ cm because all three are radii.

3. Add the two halves: $AB = 6 + 6 = 12$ cm.

Problem 3

1. AB and DE each join two points on the rim, so both are chords.

2. AB crosses O, the center. DE misses O.

3. A diameter must be a chord through the center, so only AB is a diameter.

Problem 4

1. Both segments run from the center to the rim, so they are equal radii.

2. Together they form the 16 cm diameter. Divide: $16/2 = 8$ cm.

3. Check: $8 + 8 = 16$ cm.

Problem 5

1. A and B are opposite ends of the diameter.

2. The upper and lower arcs are equal halves. The upper one is a semicircle.

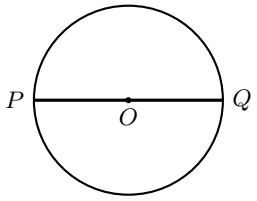
3. Its central angle is $(1/2)(360°) = 180°$.

Problem 6

1. Draw a straight line through O and mark the two rim points P, Q.

2. The two halves are radii: $PO = OQ = 5$ cm, so $PQ = 5 + 5 = 10$ cm.

3. For any off-center chord, the path from one endpoint through O to the other uses two radii and is longer than the straight chord. Thus 10 cm is the maximum.



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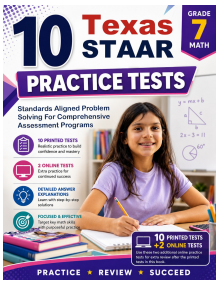

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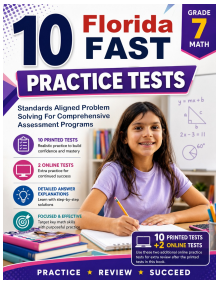

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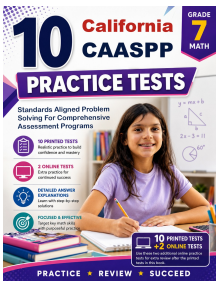

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