Parts of a Circle

Spot mistakes, reason, and work backward

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

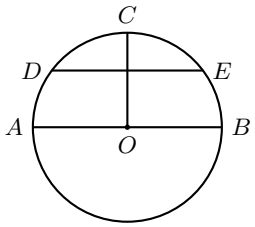
A diameter is 26 cm. Find a radius and explain the relationship.

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.

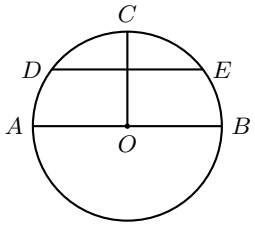
Practice Problems

Show your thinking.

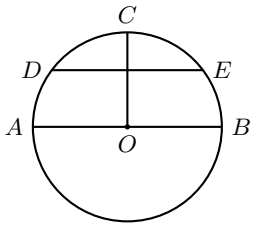
1. A student labels OC a diameter of 5 cm. Correct its name and find the true diameter.



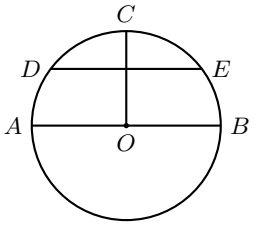
2. When $AB = 14$ cm, a student writes $r = 28$ cm. Repair the operation and verify the radius.



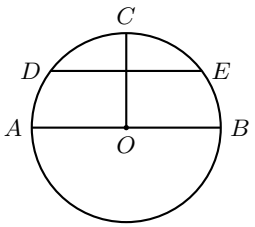
3. An 8 cm chord DE is replaced with a chord through O. If $OC = 8$ cm, identify the new chord type and find the extra length.



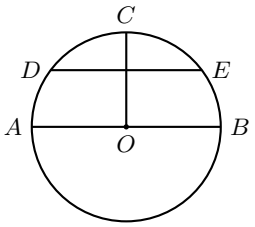
4. Given $OA + OB = 18$ cm, a student labels them 8 and 10 cm. The sum is right. Why do the labels still fail?



5. A student says the arc from A through C to B spans 90°. Explain the mistake and give the correct angle and rim fraction.



6. Can a chord of 13 cm lie in a circle of radius 6 cm? Use the center to explain the bound.



Answer Key

1. OC is a radius; the diameter is 10 cm.
2. Divide by 2: $r = 7$ cm.
3. A diameter; 8 cm longer.
4. The two lengths must both be 9 cm.
5. 180° and $1/2$ of the rim.
6. No; the longest possible chord is 12 cm.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. O is the center and C is on the rim, so the segment is a radius.

2. A diameter, such as AB, crosses the whole circle through the center.

3. It contains two radii, so its length is $2(5) = 10$ cm.

Problem 2

1. AB crosses the center, so 14 cm is the full diameter.

2. One radius is half the full length, $14/2 = 7$ cm, not $14(2) = 28$ cm.

3. Check the repair: $2(7) = 14$ cm.

Problem 3

1. The new chord goes through O, so it is a diameter.

2. Its length is $2(8) = 16$ cm from the two radii.

3. Compare with the old chord: $16 - 8 = 8$ cm longer.

Problem 4

1. OA and OB start at the same center and end on the same circle.

2. They are equal, so a sum of 18 cm gives $18/2 = 9$ cm for each.

3. The proposed labels have the right sum but fail the equal-length condition.

Problem 5

1. The ends of AB lie across the center, making a straight angle.

2. A straight angle spans 180°; a right angle spans 90°.

3. The rim fraction is $180/360 = 1/2$, not $90/360 = 1/4$.

Problem 6

1. Each rim point is 6 cm from the center.

2. The path from one rim point through O to the other is $6 + 6 = 12$ cm. The straight chord cannot be longer.

3. A diameter attains 12 cm; the proposed 13 cm exceeds this by 1 cm.

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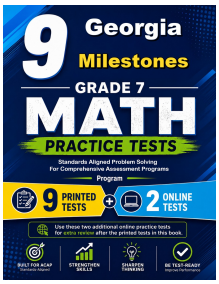

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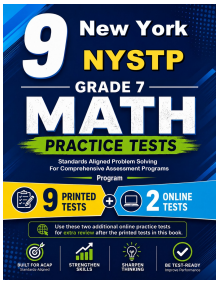

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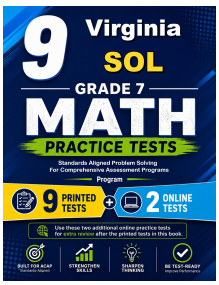

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