Parts of a Circle

Apply the skill to decisions and designs

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

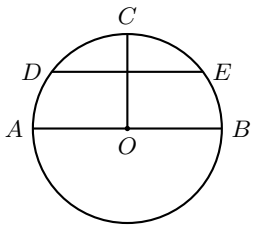
A diameter is 26 cm. Find a radius and explain the relationship.

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.

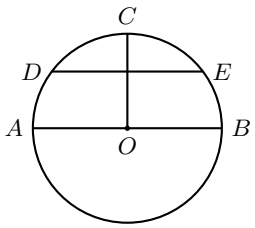
Practice Problems

Show your thinking.

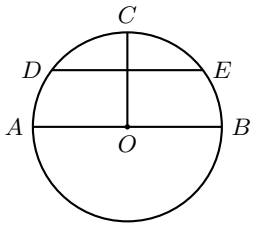
1. A circular wheel has hub O and one 6 cm spoke OC. How long are spokes OA, OB, and what is the full width of the wheel?



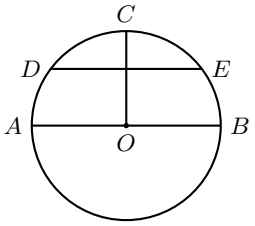
2. A rigid circular sign has radius 8 cm. Will it fit a straight slot 15 cm wide? Use its width through the center.



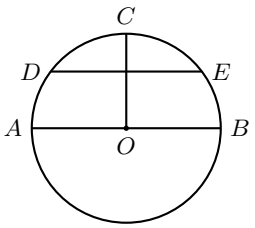
3. An 18 cm wide disk needs a brace joining rim points D, E but missing the center. Must that brace be shorter than 18 cm?



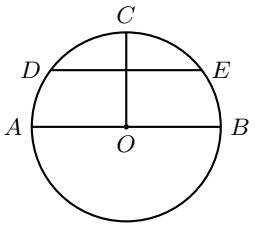
4. A 20 cm diameter frame needs two radius braces and one diameter brace. Is a 38 cm bar enough? Ignore cutting loss.



5. A guard follows the upper rim from A through C to B. Each kit covers one quarter of the rim. How many kits and degrees does the guard cover?



6. A manufacturer claims a 16 cm straight chord fits in a disk of radius 7 cm. Accept or reject and find how far it exceeds the longest chord.



Answer Key

1. $OA = OB = 6$ cm; width 12 cm.
2. No; the sign is 16 cm wide, 1 cm wider than the slot.
3. Yes. It is a chord, not a diameter.
4. No. It needs 40 cm, so it is 2 cm short.
5. 2 kits covering $180°$.
6. Reject; 16 cm is 2 cm too long.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. All three spokes reach from the hub to the same rim.
2. Each is a radius and measures 6 cm.
3. The width through the hub includes OA and OB: $6 + 6 = 12$ cm.

Problem 2

1. The widest line through the disk is a diameter.
2. Its length is $2(8) = 16$ cm.
3. $16 - 15 = 1$ cm; the slot is too narrow.

Problem 3

1. D and E are both on the rim, so the brace is a chord.
2. The route through O uses two radii and totals $9 + 9 = 18$ cm.
3. O is off the straight brace, so the direct route from D to E is shorter.

Problem 4

1. Each radius brace is $20/2 = 10$ cm.
2. Total stock: $10 + 10 + 20 = 40$ cm.
3. Compare $40 - 38 = 2$ cm, the amount still needed.

Problem 5

1. AB is a diameter, so the upper rim is half of the circle.
2. The guard covers $(1/2)(360°) = 180°$.
3. Each kit covers one quarter; $(1/2)/(1/4) = 2$ kits cover the half.

Problem 6

1. A chord cannot exceed two radii placed end to end.
2. The diameter attains that maximum: $2(7) = 14$ cm.
3. $16 - 14 = 2$ cm, so the proposed chord cannot fit.

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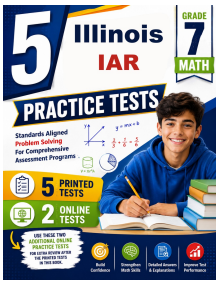

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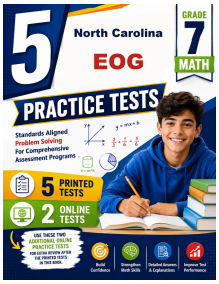

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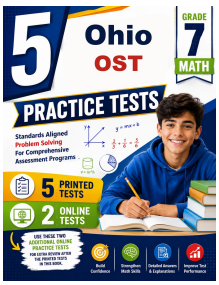

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