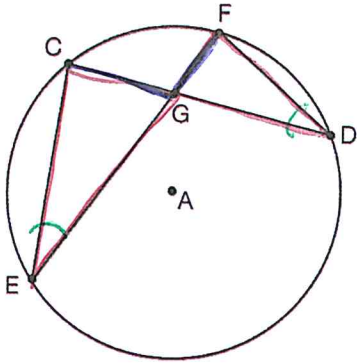


Special Angles in Circles

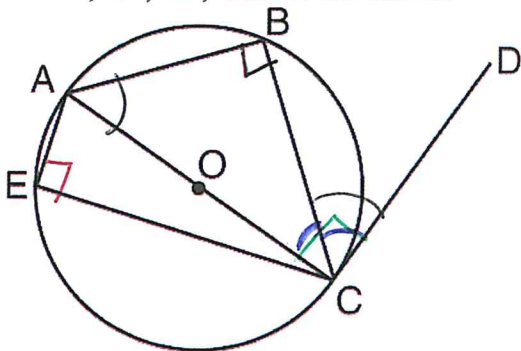
1. In the diagram of circle A shown below, chords \overline{CD} and \overline{EF} intersect at G , and chords \overline{CE} and \overline{FD} are drawn.



Which statement is *not* always true?

- 1) $\overline{CG} \cong \overline{FG}$ ~~X~~ not radii
- 2) $\angle CEG \cong \angle FDG$ \checkmark inscribed angles that intercept the same arc are congruent
- 3) $\frac{CE}{EG} = \frac{FD}{DG}$ \checkmark one pair corresponds, one pair is in the same triangle
- 4) $\triangle CEG \sim \triangle FDG$ \checkmark the angles are the same b/c inscribed angles that intercept the same arc are congruent and vertical angles are congruent.

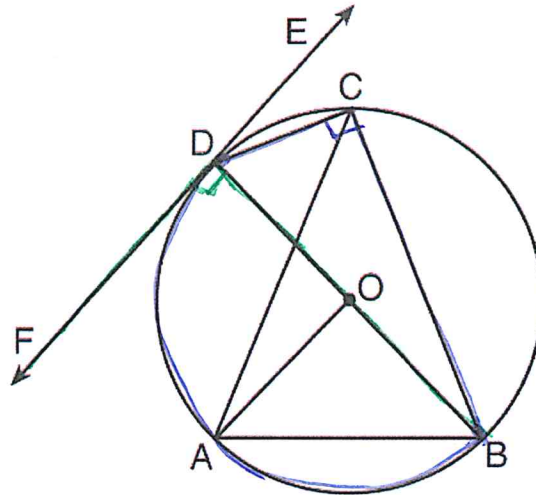
11. In circle O shown below, diameter \overline{AC} is perpendicular to \overline{CD} at point C , and chords \overline{AB} , \overline{BC} , \overline{AE} , and \overline{CE} are drawn.



Which statement is *not* always true?

- 1) $\angle ACB \cong \angle BCD$ ~~X~~ they don't intercept the same or congruent arcs.
- 2) $\angle ABC \cong \angle ACD$ \checkmark they are both right angles. An angle inscribed to a semi-circle and tangent/diameter
- 3) $\angle BAC \cong \angle DCB$ \checkmark They both intercept \widehat{BC}
- 4) $\angle CBA \cong \angle AEC$ \checkmark They are both right angles. Angles inscribed to semi-circles.

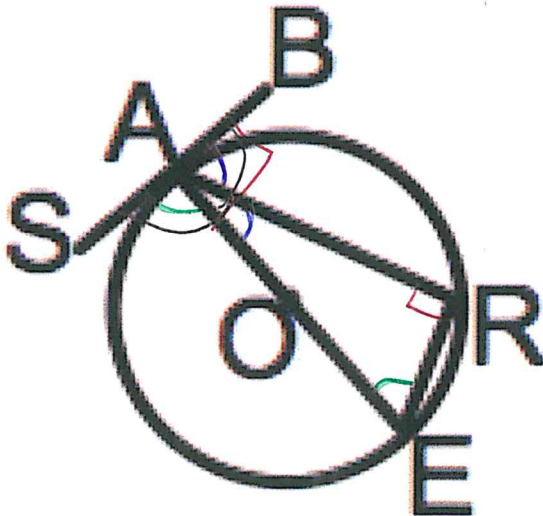
3. In the diagram below, \overline{DC} , \overline{AC} , \overline{DOB} , \overline{CB} , and \overline{AB} are chords of circle O , \overleftrightarrow{FDE} is tangent at point D , and radius \overline{AO} is drawn. Sam decides to apply this theorem to the diagram: "An angle inscribed in a semi-circle is a right angle."



Which angle is Sam referring to?

- 1) $\angle AOB$
- 2) $\angle BAC$
- 3) $\angle DCB$
- 4) $\angle FDB$ *this is a right angle but it is a tangent intersecting a diameter.*

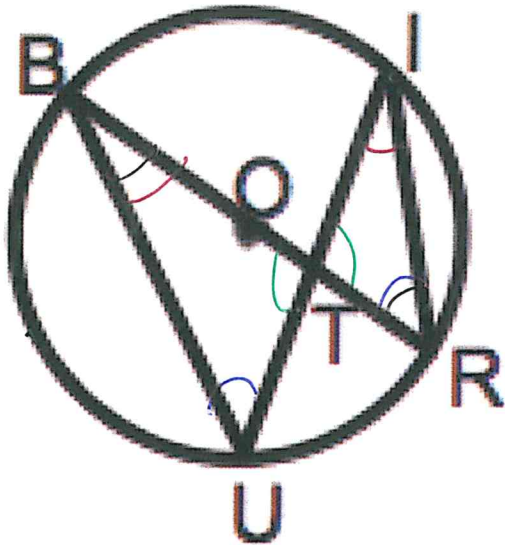
4. In circle O shown below, \overline{AE} is a diameter, \overline{SB} is a tangent, and chord \overline{AR} and \overline{RE} are drawn.



Which of the following statements is true?

- 1) $\angle EAR \cong \angle RAB$ *x different arcs*
- 2) $\angle REA \cong \angle SAE$ *x different arcs*
- 3) $\angle SAR \cong \angle BAE$ *x different arcs*
- 4) $\angle ERA \cong \angle BAE$ *both right angles. Angle inscribed to a semi-circle and tangent/diameter.*

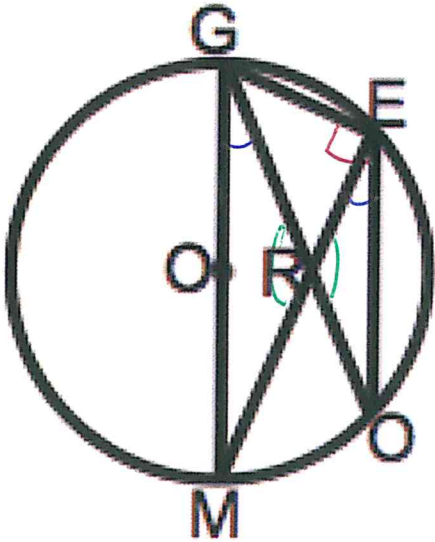
5. In circle O shown below, \overline{BR} is a diameter and chords \overline{BU} , \overline{IU} , and \overline{IR} are drawn.



Which of the following statements is *not* true?

- 1) $\angle BUI \cong \angle BRI$ ✓ both intercept $\overset{BI}{\text{arc}}$
 2) $\angle ITR \cong \angle BTU$ ✓ vertical angles
 3) $\angle UBT \cong \angle BRI$ ✗ don't intercept the same or congruent arcs
 4) $\angle RBU \cong \angle RIU$ ✓ both intercept $\overset{RU}{\text{arc}}$

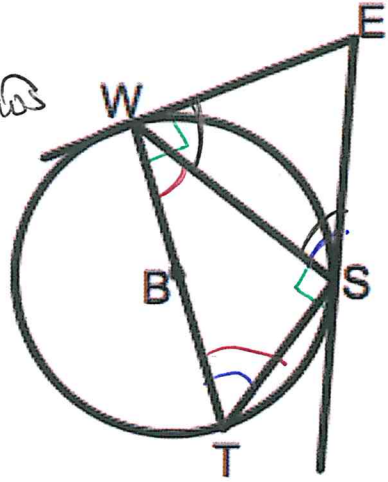
6. In circle O shown below, \overline{GM} is a diameter and chords \overline{EM} , \overline{OG} , \overline{EG} and \overline{EO} are drawn.



- Which of the following statements is *not* true?
- ✓ 1) $\angle MEO \cong \angle OGM$ ✓ both intercept $\overset{MO}{\text{arc}}$
 2) $\angle GRM \cong \angle ORE$ ✓ vertical angles
 3) $\triangle MGR \cong \triangle EOR$ ✗ None of the sides are congruent
 4) $\angle GEM$ is a right angle ✓ angle inscribed to a semi-circle

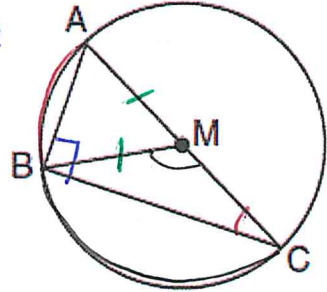
7. In circle B shown below, \overline{TW} is a diameter, tangents \overline{EW} and \overline{ES} are drawn and chords \overline{WS} and \overline{TS} are drawn.

- Which of the following statements is *not* true? *intercept WS*
- ✓ 1) $\angle ESW \cong \angle WTS$ *intercept WS*
 - ✓ 2) $\angle WST \cong \angle EWT$ *both right angle inscribed to semi-circle and tangent/diameter*
 - 3) $\angle EWS \cong \angle ESW$ *intercept WS*
 - ✗ 4) $\angle TWS \cong \angle STW$ *don't intercept the same arc.*



8. In circle M below, diameter \overline{AC} , chords \overline{AB} and \overline{BC} , and radius \overline{MB} are drawn.

- Which statement is *not* true?
- ✓ 1) $\triangle ABC$ is a right triangle. *angle inscribed to a semi-circle*
 - ✓ 2) $\triangle ABM$ is isosceles. *All radii are congruent*
 - ✓ 3) $m\widehat{BC} = m\angle BMC$ *(central) angle = intercepted arc*
 - ✗ 4) $m\widehat{AB} = \frac{1}{2} m\angle ACB$
 $\frac{1}{2} m\widehat{AB} = m\angle ACB$



9. In the diagram below, \overline{BC} is the diameter of circle A .

not D in random spots

- Point D , which is unique from points B and C , is plotted on circle A . Which statement must always be true?
- 1) $\triangle BCD$ is a right triangle. *angle inscribed to a semi-circle*
 - ✗ 2) $\triangle BCD$ is an isosceles triangle.
 - ✗ 3) $\triangle BAD$ and $\triangle CBD$ are similar triangles. *AB is reflexive nothing else.*
 - ✗ 4) $\triangle BAD$ and $\triangle CAD$ are congruent triangles. *not even close*

