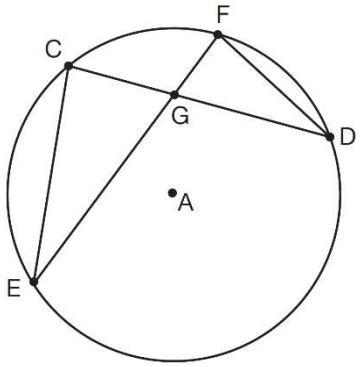
Name _____ Date _____
Mr. Schlansky Geometry

Special Angles in Circles

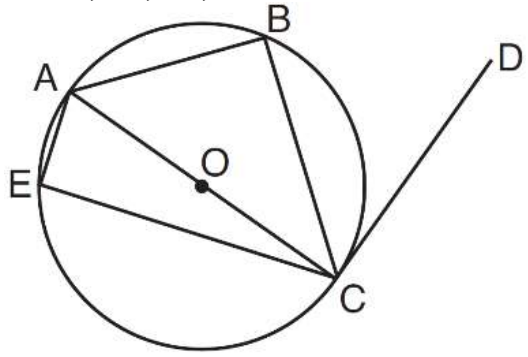
1. In the diagram of circle *A* shown below, chords $\overline{CD}$ and $\overline{EF}$ intersect at *G*, and chords $\overline{CE}$ and $\overline{FD}$ are drawn.



Which statement is *not* always true?

1) $\overline{CG} \cong \overline{FG}$
2) $\angle CEG \cong \angle FDG$
3) $\frac{CE}{EG} = \frac{FD}{DG}$
4) $\Delta CEG \sim \Delta FDG$

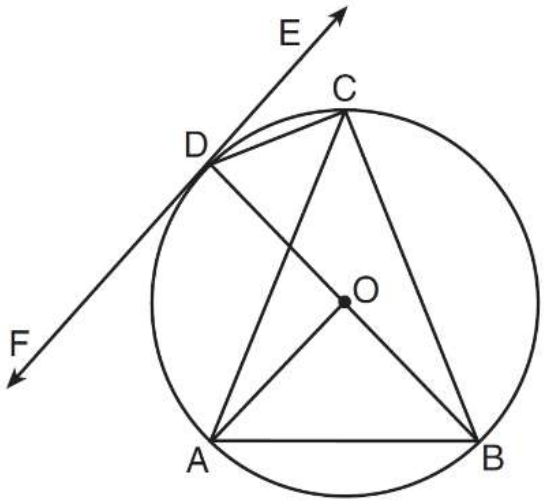
2. In circle *O* shown below, diameter $\overline{AC}$ is perpendicular to $\overline{CD}$ at point *C*, and chords $\overline{AB}$, $\overline{BC}$, $\overline{AE}$, and $\overline{CE}$ are drawn.



Which statement is *not* always true?

1) $\angle ACB \cong \angle BCD$
2) $\angle ABC \cong \angle ACD$
3) $\angle BAC \cong \angle DCB$
4) $\angle CBA \cong \angle AEC$

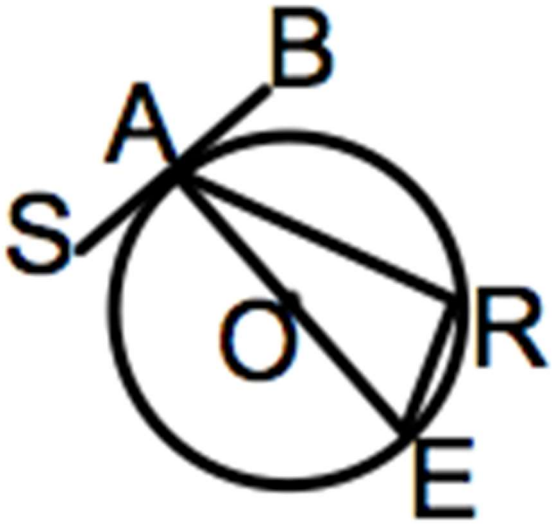
3. In the diagram below, $\overline{DC}$, $\overline{AC}$, $\overline{DOB}$, $\overline{CB}$, and $\overline{AB}$ are chords of circle O, $\overleftrightarrow{FDE}$ is tangent at point D, and radius $\overline{AO}$ is drawn. Sam decides to apply this theorem to the diagram: "An angle inscribed in a semi-circle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



Which angle is Sam referring to?

1) $\angle AOB$
2) $\angle BAC$
3) $\angle DCB$
4) $\angle FDB$

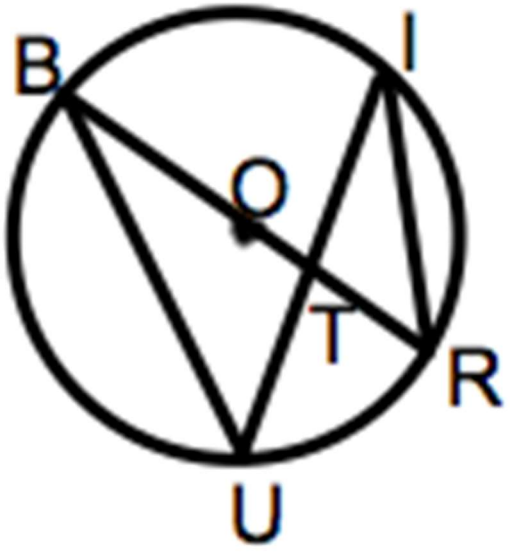
4. In circle O shown below, $\overline{AE}$ is a diameter, $\overline{SB}$ is a tangent, and chord $\overline{AR}$ and $\overline{RE}$ are drawn.



Which of the following statements is true?

1) $\angle EAR \cong \angle RAB$
2) $\angle REA \cong \angle SAE$
3) $\angle SAR \cong \angle BAE$
4) $\angle ERA \cong \angle BAE$

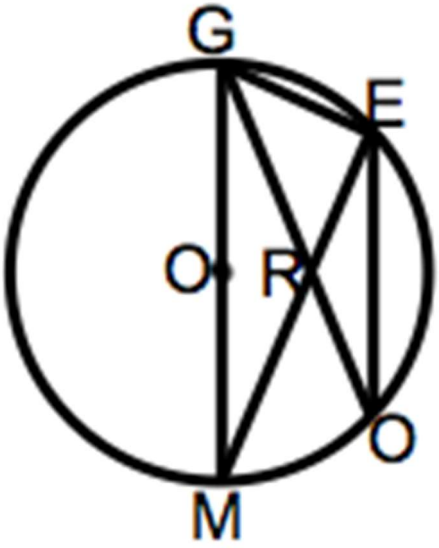
5. In circle O shown below, $\overline{BR}$ is a diameter and chords $\overline{BU}$, $\overline{IU}$, and $\overline{IR}$ are drawn.



Which of the following statements is *not* true?

1) $\angle BUI \cong \angle BRI$
2) $\angle ITR \cong \angle BTU$
3) $\angle UBT \cong \angle BRI$
4) $\angle RBU \cong \angle RIU$

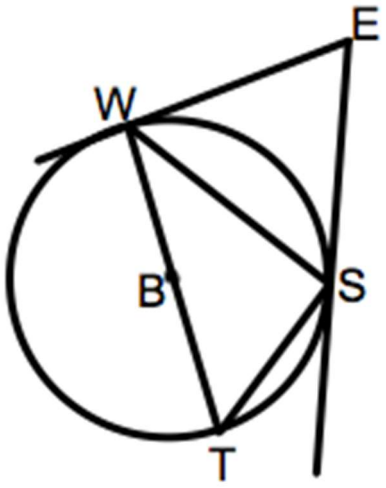
6. In circle O shown below, $\overline{GM}$ is a diameter and chords $\overline{EM}$, $\overline{OG}$, $\overline{EG}$ and $\overline{EO}$ are drawn.



Which of the following statements is *not* true?

1) $\angle MEO \cong \angle OGM$
2) $\angle GRM \cong \angle ORE$
3) $\Delta MGR \cong \Delta EOR$
4) $\angle GEM$ is a right angle

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.



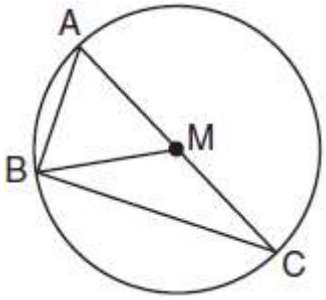
Which of the following statements is *not* true?

1) $\angle ESW \cong \angle WTS$
2) $\angle WST \cong \angle EWT$
3) $\angle EWS \cong \angle ESW$
4) $\angle TWS \cong \angle STW$

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.
2) $\triangle ABM$ is isosceles.
3) $m\overset{\frown}{BC} = m\angle BMC$
4) $m\overset{\frown}{AB} = \frac{1}{2} m\angle ACB$



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

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.
2) $\triangle BCD$ is an isosceles triangle.
3) $\triangle BAD$ and $\triangle CBD$ are similar triangles.
4) $\triangle BAD$ and $\triangle CAD$ are congruent triangles.