

Name:

Partners:

Math Academy I

Date:

Review 5 Version A

[A] Circle whether each statement is true or false.

- T F 1. The measure of a semicircle is 180° .
- T F 2. Two complementary angles total 180° .
- T F 3. An inscribed 100° angle intercepts a 50° arc.
- T F 4. Alternate exterior angles are supplementary.
- T F 5. The set of all points a given distance from a given point is a circle.
- T F 6. If a right triangle is inscribed in a circle, one of its sides is a diameter.
- T F 7. A tangent to any point on a circle is perpendicular with the diameter to that point.
- T F 8. If a circle is inscribed within a square, each side of the square is tangent to the circle.
- T F 9. The length of an arc intercepted by a central 24° angle in a circle of radius r is $\frac{24}{360}(2\pi r)$.
- T F 10. A central angle that intercepts an arc equal in length to the radius is slightly larger than 60° .
- T F 11. Solving for the length of an external secant segment using the segments of secants theorem requires solving a quadratic equation.

[B] Use a two-column proof to prove the stated theorem, and show the theorem with a diagram.

1. In the same circle, or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.

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Review 5 Version B

[A] Circle whether each statement is true or false.

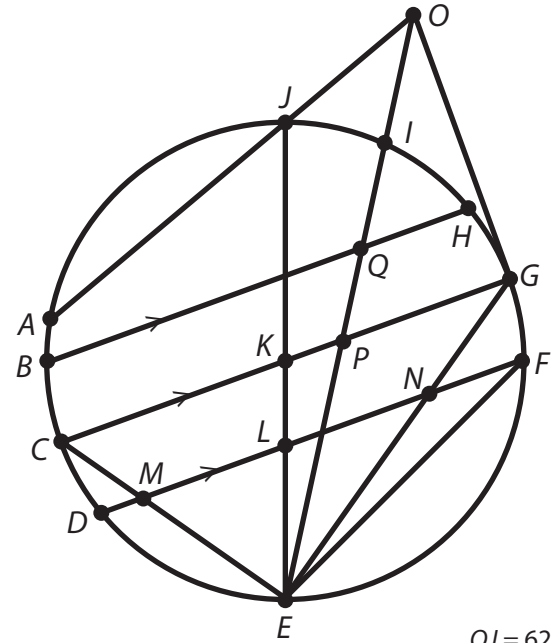
- T F 1. The measure of a semicircle is 180° .
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- T F 3. An inscribed 100° angle intercepts a 50° arc.
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- T F 6. If a right triangle is inscribed in a circle, one of its sides is a diameter.
- T F 7. A tangent to any point on a circle is perpendicular with the diameter to that point.
- T F 8. If a circle is inscribed within a square, each side of the square is tangent to the circle.
- T F 9. The length of an arc intercepted by a central 24° angle in a circle of radius r is $\frac{24}{360}(2\pi r)$.
- T F 10. A central angle that intercepts an arc equal in length to the radius is slightly larger than 60° .
- T F 11. Solving for the length of an external secant segment using the segments of secants theorem requires solving a quadratic equation.

[B] Use a two-column proof to prove the stated theorem, and show the theorem with a diagram.

1. A quadrilateral can be inscribed in a circle if and only if its opposite angles are supplementary.

[C] Based on the diagram and the information below the circle, identify each of the following values. Label them, and all values you use to find them, on the diagram. Justify each value with a definition, theorem, etc.

1. the length of \overline{OI}



$OJ = 62$
 $NF = 38$
 $KG = 90$
 $NG = 52$
 $PE = 100$
 $EG = 147$
 $OE = 226$
 $BH = 170$
 $BQ = 126$
 $DN = 130$
 $OG = 105$
 $m\angle FLJ = 70^\circ$
 $m\angle IOG = 32^\circ$
 $m\angle GEF = 10^\circ$
 $m\angle PEN = 23^\circ$
 $m\angle OGP = 90^\circ$
 $m\angle BQI = 122^\circ$
 $m\angle OGE = 124^\circ$
 K is the center.

2. the length of \widehat{GE}

[D] Bonus. The GREAT-CIRCLE DISTANCE between two points on a sphere is the shortest distance between them on the sphere.

1. Look up a formula for great-circle distance.
2. Look up the latitude and longitude of Santa Cruz and of Berlin.
3. Use the formula to calculate the direct distance between Santa Cruz and Berlin.

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Review 5 Version C

[A] Circle whether each statement is true or false.

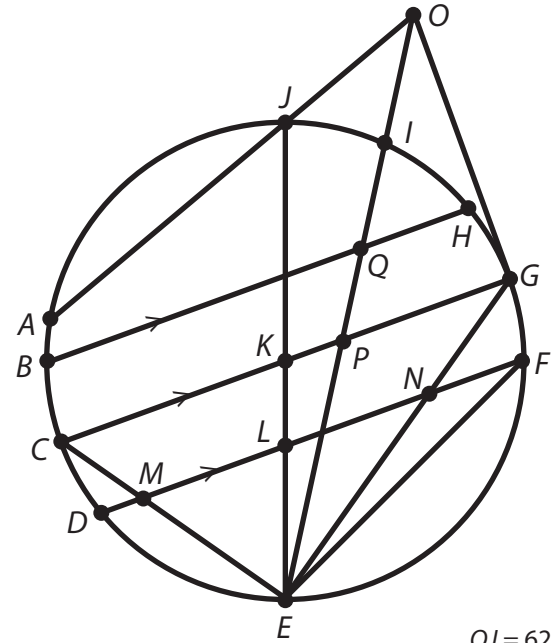
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- T F 10. A central angle that intercepts an arc equal in length to the radius is slightly larger than 60° .
- T F 11. Solving for the length of an external secant segment using the segments of secants theorem requires solving a quadratic equation.

[B] Use a two-column proof to prove the stated theorem, and show the theorem with a diagram.

1. The measure of a circumscribed angle is equal to 180° minus the measure of the central angle that intercepts the same arc.

[C] Based on the diagram and the information below the circle, identify each of the following values. Label them, and all values you use to find them, on the diagram. Justify each value with a definition, theorem, etc.

1. the length of \overline{AJ}



- $OJ = 62$
- $NF = 38$
- $KG = 90$
- $NG = 52$
- $PE = 100$
- $EG = 147$
- $OE = 226$
- $BH = 170$
- $BQ = 126$
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- $m\angle FLJ = 70^\circ$
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- $m\angle GEF = 10^\circ$
- $m\angle PEN = 23^\circ$
- $m\angle OGP = 90^\circ$
- $m\angle BQI = 122^\circ$
- $m\angle OGE = 124^\circ$
- K is the center.

2. the length of \widehat{IJ}

[D] Bonus. The GREAT-CIRCLE DISTANCE between two points on a sphere is the shortest distance between them on the sphere.

1. Look up a formula for great-circle distance.
2. Look up the latitude and longitude of Santa Cruz and of Tokyo.
3. Use the formula to calculate the direct distance between Santa Cruz and Tokyo.

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Review 5 Version D

[A] Circle whether each statement is true or false.

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- T F 4. Alternate exterior angles are supplementary.
- T F 5. The set of all points a given distance from a given point is a circle.
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- T F 10. A central angle that intercepts an arc equal in length to the radius is slightly larger than 60° .
- T F 11. Solving for the length of an external secant segment using the segments of secants theorem requires solving a quadratic equation.

[B] Use a two-column proof to prove the stated theorem, and show the theorem with a diagram.

1. If a diameter of a circle is perpendicular to a chord, then the diameter bisects the chord and its arc.

