

Geometry Final (Chapters 6, 7, 8, and Circles (10 and 12))

Chapter 6: Quadrilaterals (6.1-6.5)

- Definitions:
 - **Quadrilateral**- a four sided figure.
 - **Trapezoid**-A quadrilateral with exactly one pair of parallel sides.
 - **Isosceles trapezoid**-A trapezoid with nonparallel opposite sides that are congruent.
 - **Parallelogram**-A quadrilateral with both pairs of opposite sides parallel.
 - **Rectangle**- Parallelogram with 4 right angles.
 - **Rhombus**- Parallelogram with 4 congruent sides.
 - **Square**- Parallelogram with 4 right angles and 4 congruent sides.
 - **Kite**- a quadrilateral with two pairs of adjacent sides that are congruent and no opposite sides congruent.
 - **Bases of a Trapezoid**- The parallel sides of a trapezoid.
 - **Base angles of a Trapezoid**- two angles that share a base.
 - **Legs of a Trapezoid** - the nonparallel sides of a trapezoid.
- 5 ways to prove that a quadrilateral is a parallelogram
 - Show both pairs of opposite sides congruent
 - Show both pairs of opposite angles congruent
 - Show both pairs of opposite sides are parallel (By definition)
 - Show one pair of opposite sides both parallel and congruent
 - Show diagonals bisect each other
- Quadrilateral Rules
 - Properties of Parallelograms see above
 - Each diagonal bisects two angles of the rhombus/square.
 - The diagonals of a rhombus/square/kite are perpendicular.
 - The diagonals of a rectangle/square/ isosceles trapezoid are congruent.
 - The base angles of an isosceles trapezoid are congruent.
- Solving for side lengths and angles within quadrilaterals using quadrilateral rules
- Midsegment of a trapezoid (In section 6.7)
- Don't worry about the most precise name of quadrilateral

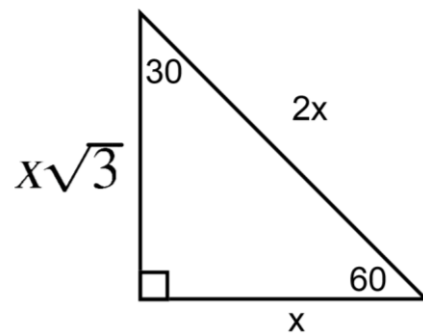
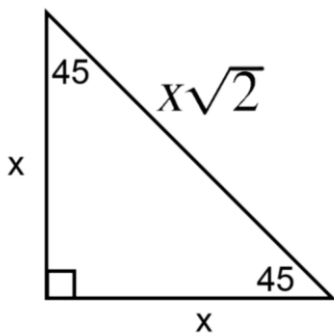
Chapter 7: Similarity (7.1-7.5)

- Definitions:
 - **Ratio**-a comparison of two quantities by division.
 - **Proportion**-an equation that states that two ratios are equal.
 - In the statement $\frac{a}{b} = \frac{c}{d}$
 - b and c are the **means**.
 - a and d are the **extremes**.
 - **Similar**-Two figures that have the same shape but not necessarily the same size.

- **Similar Polygons**-two polygons with corresponding angles congruent and corresponding sides are proportional.
- Solving proportions/Ratios
- Three ways to prove triangles similar
 - AA Similarity ($\sim$), SSS Similarity ($\sim$), SAS Similarity ($\sim$)
- Definition of Similar
 - Corresponding Angles are congruent and corresponding sides are proportional
- Geometric Mean- answers should be in simplest radical form
- Finding side lengths when given similar figures (Doesn't have to just be triangles)
- Right Triangle Similarity – answers should be in simplest radical form

Chapter 8: Right Triangles and Trigonometry (8.1-8.5)

- Definitions
 - **Angle of Elevation**- the angle formed by a horizontal line and the line of sight to an object above the horizontal line.
 - **Angle of Depression**- the angle formed by a horizontal line and the line of sight to an object below the horizontal line.
- Pythagorean Theorem- $a^2 + b^2 = c^2$ – answers in simplest radical form
- Classify as acute, right, or obtuse
 - $a^2 + b^2 > c^2$ —Acute
 - $a^2 + b^2 = c^2$ —Right
 - $a^2 + b^2 < c^2$ —Obtuse
- 45-45-90/30-60-90 Triangles



- SOHCAHTOA meaning
 - Sine(Sin), Opposite, Hypotenuse
 - Cosine (Cos), Adjacent, Hypotenuse
 - Tangent (Tan), Opposite, Adjacent
- Solving for triangle side lengths using SOHCAHTOA

Chapter 10/12: Circles (10.6, 10.7, 12.1-12.4)

- Definitions
 - **Circle**- a set of all points equidistant from a given point
 - **Radius**- a segment that has one endpoint at the center and the other endpoint on the circle.

- **Diameter**- a segment that contains the center of a circle and has both endpoints on the circle.
- **Central Angle**- an angle whose vertex is the center of the circle
- **Arc**- part of a circle
- **Minor Arc**- an arc smaller than 180 degrees
- **Semicircle**- half of a circle
- **Major Arc**-an arc greater than 180 degrees
- **Tangent**- a line in the plane of the circle that intersects the circle at exactly one point.
- **Point of Tangency**- point where a circle and a tangent intersect
- **Chord**- a segment whose endpoints are on a circle
- **Inscribed Angle**- an angle whose sides are chords and whose vertex is on the circle
- **Intercepted Arc** - the arc formed by the endpoints of the inscribed angle.
- **Secant**- a line that intersects a circle at two points.
- Classify parts of a circle
- Area/Circumference Formulas
 - $C = \pi d$ or $C = 2\pi r$
 - $\text{Length of } \widehat{AB} = \frac{m\widehat{AB}}{360} \cdot 2\pi r$
 - Area of a Circle = πr^2
 - Area of a Sector = $\frac{m\widehat{AB}}{360} \cdot \pi r^2$
 - Area of a Segment = $\frac{m\widehat{AB}}{360} \cdot \pi r^2 - \frac{1}{2}bh$
- Tangent Lines with the radius of a circle create right angles
- Inscribed Angles/Intercepted Arcs- The measure of an inscribed angle is half the measure of the intercepted arc.
- Find arcs and angles
 - Intersect inside a circle is half the sum of the measures of the intercepted arcs. $m < 1 = \frac{1}{2}(x + y)$
 - Intersect outside the circle is half the difference of the measures of the intercepted arcs. $m < 1 = \frac{1}{2}(x - y)$
- Find segment lengths
 - Two chords $a \cdot b = c \cdot d$
 - Two secants $w(w + x) = y(y + z)$
 - A secant and a tangent $y(y + z) = t^2$