|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parallel Lines: If lines are parallel…**  Image result for parallel lines cut by a transversal  **Corresponding angles** are congruent.    **Alternate interior angles** are congruent.    **Alternate exterior angles** are congruent.    **Consecutive interior angles** supplementary. | | **Quadrilaterals:** | | | | | | **Transformations:**    Reflections, rotations, translations result in isometry, or congruent figures.  Dilations result in similar figures.                  enlargement *k* > 1, reduction *k* < 1 |
| **Parallelogram:**   * opposite sides * opposite sides * opposite angles * consec angles supp (180\*) * diag bisect each other * 1 pair of opp sides&   **Rectangle, add:**   * 4 right angles * diagonals   **Rhombus, add:**   * 4  sides * diagonals * diagonals bisect angles   **Square: ALL from above** | | | **Optional Quadrilaterals:**  **Trapezoid:**   * Only one pair of sides * Median is to both bases and ½ the sum.   **Isosceles trapezoid:**   * Legs * Base angles * Diagonals * Opposite angles supplementary   **Kite:**   * two pairs of consecutive  sides | | |
| Image result for vertical angles**Angle Relationships:**  **Vertical** Angles: non-adjacent angles formed by two intersecting lines. Always congruent    **Linear Pair**: adjacent supplementary angles (measures add to 180º). | | | | **Circle Segments:**  In a circle, a radius **perpendicular** to the chord **bisects** the chord.  *Intersecting chords:* P × P = P × P  *Secant – secant:* **O**utside × **W**hole = **O**utside × **W**hole  *Secant – tangent:* **O**utside × **W**hole = (**Tan**gent)**2**  “Party Hats” tangents to a circle from the same point are congruent.  If two chords of a circle are congruent, then their intercepted arcs are congruent. | | | | |
| **Triangles:**   * 3 angles of a triangle add to 180º * Isosceles: congruent angles (angles opposite to congruent sides) * *Names by sides*:   Scalene – no congruent sides  Isosceles – two congruent sides  Equilateral – 3 congruent sides   * *Names by angles*:   Acute – all angles acute  Right – one right angle  Obtuse – one obtuse angle   * MIDSEGMENT: connects midpoints of two sides, Parallel to 3rd side, and equals ½ the 3rd side. | | **Circle angles, ask “Where is the vertex?”**  Center (central angle): angle = arc On (inscribed angle or tangent/chord) angle = ½ arc    Inside (formed by 2 chords) Outside (2 tangents, 2 secants, or tangent/secant) angle = ½(sum of arcs) angle = ½ (difference of arcs) | | | | | | |
| **4 Basic Constructions:**  *Copy a segment: Copy an Angle:*    *┴ Bisector of Segment Bisect an Angle:*    **Inscribed Square:** Perp Bisector of Diameter | | | **Concurrency Points:**   |  |  |  |  | | --- | --- | --- | --- | | *Segment* | *Point* | *Where* | *Character.* | | Angle Bisector | Incenter | inside | Equidistant from sides | | Perp. Bisector | Circumcenter | in  on  out | Equidistant from vertices | | Median | Centroid  “Center of Gravity” | inside | Vertex to centroid =  2/3 median | | Altitude | Orthocenter | in,  on,  out | None | | | | | **Right Triangle Trigonometry**    x on top, multiply**:**  x on bottom, divide**:**  sin-1, cos-1 and tan-1 find angle measures | | |
| **Circles and Sectors:**  *Equations*: radius = r and (h, k) is the center.  Center at origin:  Center not at origin:  *Area* of a Circle:  *Area* of a Sector:  *Circumference*:  *Arc Length*: | | | **Similar Figures: set up PROPORTIONS**  Definition: congruent angles, proportional sides.  *Similar Triangle Postulates/Theorems*  AA – two pairs of congruent angles.  SSS – three pairs of proportional sides  SAS – one pair of congruent angles included sides proportional.  Side Splitter (not the bottoms)  A line parallel to one side of a triangle divides the other two sides proportionally. | | | | **Congruent Triangles:**    Right triangles only, add Hypotenuse-Leg (HL) Use CPCTC after the triangles are congruent. | | |
| **Volume:** B = area of the base-shape  Prism:  Cylinder:  Pyramid:  Cone:  Sphere: | | | **Coordinate Geometry Formulas:**  Distance:  Midpoint:  Partition a directed segment: ratio  fraction | | | | **Slopes and Equations:**    Slope-intercept form:  Slopes of lines are equal.  Slopes of lines are opposite reciprocals. | | |
| **Probability:  Or** union  Fraction= **And** intersection | **Statistics:** Probability of A given B has occurred.  Conditional probability:  New Total | | | | | **P(A and B)** OVERLAP if Tables, Venn diagram  **P(A and B)** = P(A) × P(B) *(only true if Independent Events, picking marbles)*  *Addition Rule*: **P(A or B)** = P(A) **+** P(B) **–** P(A and B) | | | |