|  |  |  |
| --- | --- | --- |
| **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 sidesIsosceles – two congruent sidesEquilateral – 3 congruent sides* *Names by angles*:

Acute – all angles acuteRight – one right angleObtuse – 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 | inonout | 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 sidesSAS – 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-shapePrism:  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** unionFraction= **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) |