**MT Breakout for L4 video list**

MT 1: Reasoning, Basic Rules and Constructions

* ***Basic Rules***
  + Postulates/axioms
    - 1.1: Through any 2 points is exactly one line
    - 1.2: If 2 lines intersect they intersect in exactly one point
    - 1.3: If 2 planes intersect then they intersect in exactly one line
    - 1.4: Through any 2 non-collinear points there is exactly one plane
  + Theorems
  + Properties
* ***Reasoning***
  + Inductive
    - The use of patterns to reach a logical conclusion
  + Deductive
    - The use of statements or known facts to reach one logical conclusion
* Constructions
  + Lines
    - Copy a line segment
    - Perpendicular bisector of a line segment
    - Divide a segment into n equal parts
    - Parallel line through a point(angle copy method)
  + Angles
    - Bisecting an angle
    - Copy an angle
    - Construct a 30 degree angle
    - Construct a 45 degree angle
    - Construct a 90 degree angle
  + Triangles
    - Copy a triangle
    - Isosceles Triangle, given a base and side
    - Equilateral Triangle
    - Triangle ***Median***

MT 2: Pythagorean Theorem, Coordinate Geometry and Transformations

* ***Pythagorean Theorem***
  + prove and use the Pythagorean theorem to determine distance and find missing lengths of sides of right triangles
* ***Coordinate Geometry***: Prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.
  + find the distance between two points in the coordinate plane
  + Recall the slope-intercept form, the point-slope form and standard forms of a linear equation
  + Relate slopes of parallel and perpendicular lines
  + Find the length of a segment by using the distance formula or a grid triangle and the Pythagorean Theorem.
  + Find a line parallel or perpendicular to a given line and write and equation for that line.
  + Determine the equation of a circle given a graph or the center (h, k), and determine the graph given an equation in form (x-h)² + (y-k)² = r²
* ***Transformations***
  + Perform a translation, rotation, or reflection to move a shape in a plane.
  + Determine the line (including x- or y- axis) a figure is reflected across.
  + Determine a position after a composition of translations.
  + Describe a translation using vectors or words.

MT3 – Parallel Lines, Quadrilaterals and Angles

* ***Parallel Lines***
  + Use theorems involving the properties of parallel lines cut by a transversal
  + Identify corresponding, alternate interior, and same-side interior angles in 2 dimensional figures
* ***Quadrilaterals***
  + Classify quadrilaterals (parallelogram, square, rectangle, rhombus, trapezoid, and kite) based on their angles and sides
  + Prove and use theorems involving the properties of Parallelograms
  + Prove and use theorems involving the diagonals of rhombuses and rectangles
  + Prove and use theorems involving the properties of Trapezoids and Kites
* ***Interior and Exterior angles and angle Pairs***
  + Find and use measures of sides and of interior and exterior angles of any polygon to classify figures and solve problems.
  + Prove relationships between angles in polygons by using properties of complementary, supplementary, vertical, and exterior angles

MT 4 – Triangle Congruence and Similarity and Triangle Inequalities

* ***Congruence and Similarity***
  + Prove that triangles are congruent or similar, and they are able to use the concept of corresponding parts of congruent triangles.
    - Congruency Patterns (AAS, ASA, SAS, SSS)
    - Similarity Patterns (AA~, SAS~, SSS~)
* ***Triangle Inequality***
  + Know and are able to use the triangle inequality theorem.