MATH 101 **STUDY GUIDE** **TEST 1**

1. Know the two angle formulas we developed in class (angle sum and angle measure)
2. Know the names of polygons (all of them from 3-sided up to 12-sided)
3. Be able to use knowledge of angle formulas and properties to find the measure of any given angle.
4. Be able to list the polygons that tessellate.
5. Be able to explain why (mathematically) certain polygons tessellate and others do not.
6. Be able to determine properties of a 4-dimensional cube (hypercube) - number of edges, cubes, etc.
7. Be able to extend our work with a 4-dimensional cube to higher dimensions, 5^{th}, 6^{th}, etc.
8. Be able to explain a bit about what a 4-dimensional being could do that would seem like magic to us.
9. Be able to name and define the types of dimensionality we have covered in class.
10. Be able to determine if a graph is traversable or not.
11. Be able to determine if a traversable graph has an Euler path/trail or an Euler circuit.
12. Be able to explain the mathematics and logic behind traversability - paths and circuits.
13. Be able to 'Eulerize' graphs that are not traversable in order to make them traversable.
14. Be able to draw an equivalent graph based on a given graph.
15. Be able to represent a situation (bridges, rooms, Towers of Hanoi, etc.) using a graph.
16. Be able to find a 'cheap' Hamilton circuit using Brute Force or a given approximation algorithm.
17. Be able to the shortest network for a given set of vertices.
18. Be able to identify a tree.
19. Know what a Steiner point is, how it helps us with networks, and where it can be found in nature.
20. Be able to find and use patterns as with the Towers of Hanoi Problem in your extended syllabus