Flatland: Multidimensional Explorations

NAME:_____

Flatland is available in electronic format for free. http://www.flatlandthefilm.com/novel.php

1. Although stressing symmetry, Abbott is mathematically careful when he states that "If our sides were unequal our angles *might be* unequal." He is obviously aware that there are exceptions.

   Give an example of a polygon with unequal sides, but with equal angles and of a polygon with equal sides, but with unequal angles.

2. Describe two key differences between *Flatland: the Book* and *Flatland: the Movie*. Explain why you think the makers of the movie chose to make each of the described changes.

3. At the beginning of Chapter 11 (Concerning our priests), the narrator explains that he must omit explanations of many Flatland matters, which may have been of interest to the reader. These topics include the following:

   - Their method of propelling and stopping themselves, although destitute of feet.
   - The means by which they give fixity to structures of wood, stone, or brick, although of course we have no hands, nor can they lay foundations as we can.
   - The manner in which the rain originates in the intervals between their various zones, so that the northern regions do not intercept the moisture from falling on the southern.
   - The nature of their hills and mines, their trees and vegetables, their seasons and harvests.
   - Their Alphabet and method of writing, adapted to their linear tablets.

   Pick one of the aforementioned topics (or another that topic pertaining to unexplained Flatland matters) and provide an explanation for how the Flatlanders may have accomplished it.

4. Complete the following table by determining patterns that must hold between dimensions.

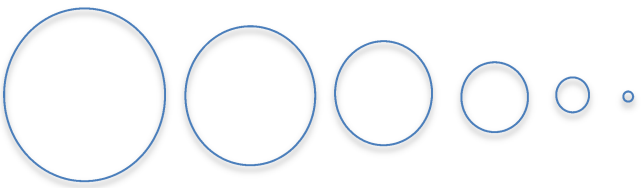
	0 Dimensions (Point)	1 Dimension (Line Segment)	2 Dimensions (Square)	3 Dimensions (Cube)	4 Dimensions (Hypercube)
Vertices (Corner Points)	1	2			
Edges (Lines)	0	1			
Faces (Squares)	0	0			
Cubes	0	0			

5. Describe how a higher dimensional object or being would appear when it enters a lower dimensional world? How could the lower dimensional beings determine to true form of this higher dimensional object?

6. Below are cross sections of objects as they pass through Flatland. Identify each 3D object.

a.

b.



7. Make a sequence of cross sections for two of the following objects as it passes through Flatland.

apple, baseball bat, donut, shoe, mug, candy cane, golf club, football, soda bottle, pencil