1. Assuming 4 bytes per index, how many bytes are required for the *winged-edge* representation of an cube? Do not count the vertex data (*i.e.*, position), but just the topological information.

2. Consider a *closed manifold triangle mesh* of N faces. How many edges does the mesh have? Justify your answer.

3. Diagram a scenegraph for a space-station with a central spherical hub and four radial arms at 90-degree angles connecting the hub to an outer ring that is a torus. Assume that your geometric primitives are canonical spheres, cylinders, and tori (*i.e.*, doughnuts).