

Geometry #11

Before Tuesday, October 30, 11 pm

Read *Geometry for Middle School Teachers: Companion Problems for the Connected Mathematics Curriculum*, Sections 2.3, 2.4, 2.5, 2.11, and *Notes on Geometry*, Chapter 12. Go to the Forum “Polyhedra” and make at least one substantive contribution by 11 pm, Tuesday, October 30, and at least one substantive response to others’ postings before class on Thursday, November 1. Write about the following: Choose several of the following plane figures and suggest what appropriate three-dimensional analogs of each might be. Explain why you think the analogy is a good one. Plane figures to consider: triangles, isosceles triangles, equilateral triangles, scalene triangles, quadrilaterals, trapezoids, parallelograms, rectangles, kites, rhombi, squares, polygons, regular polygons.

Thursday, November 1, 7–9 pm

Attend the Adobe Connect session to discuss the readings, forum, and comments and questions on the assigned homework due on Sunday. We will also have the two class presentations.

Before Sunday, November 4, 11 pm

Homework problems due Sunday, November 4, 11 pm, uploaded to the Moodle site as a single file less than 2 MB, or else emailed to the address lee@ms.uky.edu. Please use Word or pdf files only.

1. Consider and solve the following two exercises together: Exercises 2.13 and 2.14 of *Geometry for Middle School Teachers: Companion Problems for the Connected Mathematics Curriculum*, pp. 11–12. Do not use outside sources for this problem, though you may discuss it with each other.
2. Exercise 2.17 of *Geometry for Middle School Teachers: Companion Problems for the Connected Mathematics Curriculum*, pp. 12–13. Do not use outside sources for this problem, though you may discuss it with each other.
3. Use outside sources to find a proof of Euler’s Relation, $V - E + F = 2$, for convex polyhedra. Provide a sketch of the proof.
4. Exercise 12.3.6 of *Notes on Geometry*, p. 134. Do not use outside sources for this problem, though you may discuss it with each other.

5. Exercise 2.76 of *Geometry for Middle School Teachers: Companion Problems for the Connected Mathematics Curriculum*, p. 29. Then prove that your formula is correct, using Euler's Formula and the previous exercise. Do not use outside sources for this problem, though you may discuss it with each other.