

## First Homework

This assignment is to be completed before the first session of this seminar. At that first session, we will be reading and talking about each other's written work, and we will be discussing the casebook reading.

### Portfolio assignment: Key ideas about geometric shapes

In this seminar we will examine a set of mathematical ideas related to both two-dimensional and three-dimensional geometric shapes. Topics will include properties and definitions of various figures, angles, the ways 3-D objects can be represented in 2-D, congruence, and similarity. We will also work with geometric vocabulary, definitions, and development of geometric reasoning. Some of these topics may seem familiar to you and may already be part of your work with children; other topics might seem less familiar.

For our first class, please respond in writing to this question:

What are the key ideas of geometry that you want your students to work through during the school year?

Your answer to this question is not expected to be final or definitive. We expect your ideas will change, expand, and deepen throughout the seminar. You will have opportunities to revisit this question and to refine your answer as we continue our work together. At the first session, you will share your ideas with other participants as well as read and consider their responses to this question.

Write your response *before* you do the casebook reading assignment. If the reading generates new ideas that you want to include in your written response, feel free to write an addendum to your comments.

Please bring three copies of your writing to the session so that it may easily be shared with other participants.

### Reading assignment: Starting the casebook

In preparation for the first session, read the introduction to the casebook, *Examining Features of Shape*. Then read all of chapter 1, the introductory text as well as cases 1–6.

# Creating and Applying Definitions

## Session Agenda

Sharing homework (Student thinking on angles)	Groups of three	30 minutes
Sharing homework: Math (Summary of angles)	Whole group	30 minutes
Small-group case discussion	Groups of four	35 minutes
Break		15 minutes
Whole-group case discussion	Whole group	25 minutes
Math activity (“Make Polygons That...”)	Groups of four Whole group	30 minutes 10 minutes
Homework and exit cards	Whole group	5 minutes

### Background Preparation

#### Read

- the casebook, chapter 4
- “Maxine’s Journal” for Session 4 (p. 148)
- the agenda for Session 4

#### Work through

- the math activity, “Make Polygons That...” (p. 69)

### Materials

#### Prepare

- your responses to participants’ third portfolio homework, “Reflections on the Seminar”

#### Duplicate

- “Focus Questions: Chapter 4” (p. 68)
- “Make Polygons That...” (p. 69)
- “Fifth Homework” (p. 70)

#### Obtain

- geo-strips or polystrips, straws and paper clips, geoboards, or another manipulative for making polygons; plastic polygons such as pattern blocks or Power Polygons (recommended, but optional)
- graph paper, rulers, protractors
- index cards or NCR paper (for exit cards)

## Agenda

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### TERMS USED IN THIS SESSION

EQUILATERAL	Refers to a figure in which all sides have the same length.
EQUIANGULAR	Refers to a figure in which all angles are the same measure.
REGULAR	Refers to figures that are both equilateral and equiangular. The bases of the pattern blocks are regular polygons.
PARALLELOGRAM	A quadrilateral (a four-sided figure) with two pairs of parallel sides. Parallelograms with certain attributes have special names. A parallelogram with all right angles is known as a <i>rectangle</i> . One with four sides the same length is called a <i>rhombus</i> . If a parallelogram has both four right angles and four equal sides, then it is a <i>square</i> . A square is both a rectangle and a rhombus.

You'll have to be careful about the timing of this session. The first hour is devoted to ideas about angle. At the end of that time, it is important that participants turn to other issues in the cases and in the math activity. To help participants make this transition, let them know that even though there is more to say about angle, it is now time to discuss other matters. Remind them that they can certainly continue thinking about angles throughout the seminar.

### Sharing homework

(30 minutes)

Organize the participants into non-grade level groups for this discussion of their papers on student thinking about angles. Explain that you want them to examine the thinking of students from a variety of grade levels. Remind them to read the three papers for their group before beginning any discussion, and tell them they will have 30 minutes for reading and discussion. General questions relating to all the papers might include these:

What surprised you about these examples of student thinking?

How were these students the same or different from those we read about in the cases or saw on the video?