

The Common Denominator
A Family Math Newsletter
Mathematics 6 GT Unit 4: Representing Sets of Numbers and Shapes

Unit at a Glance:

Suggested Length of Unit: 15 days (45 minutes), 7.5 days (90 minutes)

- Three Little Words: Always, Sometimes, Never
- Properties of Numbers
- If-Then Statements
- Union and Intersection of Sets
- The Basic Figures of Geometry
- Unions and Basic Geometric Shapes
- What Makes a Good Definition?
- Classifying Shapes
- Classifying Numbers

Resources

- Textbook Resource: Viktora, Steven S, et al. Transition Mathematics. Wright Group/McGraw-Hill, 2008, pp. 202-275.
- Homework Help/Online book (teacher-provided code needed): [Online Textbook Portal](#)

Exploring Chapter 4

One major transition that students need to make in middle school is from induction to deduction. It requires that students understand what is meant by a generalization (a property that applies to all members of a set) and how generalizations can be utilized to make other generalizations.

The first three lessons of the chapter deal with ideas from logic. Lesson 4-1 begins by noting the difference among things that are always true, sometimes but not always true, or never true. It leads into Lesson 4-2, which deals with some simple properties of numbers, described with variables. Lesson 4-3 covers an important aspect of these properties, the if-then statement, and distinguishes these statements from their converses.

The next three lessons deal with sets and their use in geometry. The union and intersection of basic figures result in geometric figures. Lesson 4-4 deals with the union and intersection of sets; Lesson 4-5 discusses points and lines, and the basic figures of geometry; and Lesson 4-6 defines the idea of a polygon. Your student will learn and use set notation which adds to their repertoire of reading and writing mathematics.

The last third of the chapter deals with classification, a critical idea in deduction. In Lesson 4-7, various types of polygons are defined. The focus of this lesson is on *what makes a good definition*. Students use their prior knowledge of what they know about polygons to rewrite and refine definitions. They will return to the properties of a good definition in subsequent chapters. In Lesson 4-8, quadrilaterals are classified, and a hierarchy of them is established. Lastly, in Lesson 4-9, the same classification ideas are applied to some of the important subsets of real numbers.

As this description suggests, this chapter contains many ideas that students are expected to assimilate through their study of mathematics—ideas that are often brushed over lightly or dealt with only once. By concentrating on them here, we offer language that is useful in all the later mathematics that students will encounter.

Quote

“It is clear that the chief end of mathematical study must be to make the students think.” -John Wesley