

## PROGRAM OVERVIEW

# Unit Structure

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All of the instructional units have common features. Each lesson begins with a pre-assessment, followed by the list of standards addressed in the lesson; Essential Questions; vocabulary (titled “Words to Know”); and a list of recommended websites to be used as additional resources.

Each sub-lesson begins with a list of identified prerequisite skills that students need to have mastered in order to be successful with the new material in the upcoming sub-lesson. This is followed by an introduction, key concepts, common errors/misconceptions, guided practice examples, a problem-based task with coaching questions and sample responses, a closure activity, and practice. Each lesson ends with a progress assessment to evaluate students’ learning.

All of the components are described below and on the following pages for your reference.

### **Pre-Assessment**

This can be used to gauge students’ prior knowledge and to inform instructional planning.

### **Georgia Standards of Excellence for the Lesson**

All standards that are addressed in the entire lesson are listed.

### **Essential Questions**

These are intended to guide students’ thinking as they proceed through the lesson. By the end of each lesson, students should be able to respond to the questions.

### **Words to Know**

Vocabulary terms and formulas are provided as background information for instruction or to review key concepts that are addressed in the lesson.

### **Recommended Resources**

This is a list of websites that can be used as additional resources. Some websites are games; others provide additional examples and/or explanations. (*Note:* Links will be monitored and repaired or replaced as necessary.) Each site listed in this section is also accessible through the Learning Object Repository as a separate learning object that can be assigned to students.

### **Conceptual Activities**

Conceptual understanding serves as the foundation on which to build deeper understanding of mathematics. In an effort to build conceptual understanding of mathematical ideas and to provide more than procedural fluency and application, links to interactive open education and Desmos resources are included. (*Note:* These website links will be monitored and repaired or replaced as necessary.) These and many other open educational resources (OERs) are also accessible through the Learning Object Repository as separate objects that can be assigned to students.

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#### **Georgia Standards of Excellence for the Sub-Lesson**

When lessons are broken down into sub-lessons, the specific standard or standards that are addressed are presented at the beginning of the instructional portion of the lesson.

#### **Warm-Up**

Each warm-up takes approximately 5 minutes and addresses either prerequisite and critical-thinking skills or previously taught math concepts.

#### **Warm-Up Debrief**

Each debrief provides the answers to the warm-up questions, and offers suggestions for situations in which students might have difficulties. A section titled Connection to the Lesson is also included in the debrief to help answer students' questions about the relevance of the particular warm-up activity to the upcoming instruction. Warm-Ups with debriefs are also provided in PowerPoint presentations.

#### **Identified Prerequisite Skills**

Presented at the beginning of each sub-lesson, this list cites the skills necessary to be successful with the new material.

#### **Introduction**

This brief paragraph gives a description of the concepts about to be presented and often contains some Words to Know.

#### **Key Concepts**

Provided in bulleted form, this instruction highlights the important ideas and/or processes for meeting the standard.

#### **Graphing Calculator Directions**

Step-by-step instructions for using a TI-Nspire and a TI-83/84 are provided whenever graphing calculators are referenced.

#### **Common Errors/Misconceptions**

This is a list of the common errors students make when applying Key Concepts. This list suggests what to watch for when students arrive at an incorrect answer or are struggling with solving the problems.

#### **Scaffolded Practice (Printable Practice)**

This set of 10 printable practice problems provides introductory level skill practice for the lesson. This practice set can be used during instruction time.

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#### **Guided Practice**

This section provides step-by-step examples of applying the Key Concepts. The three to five examples are intended to aid during initial instruction, but are also for individuals needing additional instruction and/or for use during review and test preparation.

#### **Enhanced Instructional PowerPoint (Presentation)**

Each lesson includes an instructional PowerPoint presentation with the following components: Warm-Up, Key Concepts, and Guided Practice. Selected Guided Practice examples include GeoGebra applets. These instructional PowerPoints are downloadable and editable.

#### **Problem-Based Task**

This activity can serve as the centerpiece of a problem-based lesson, or it can be used to walk students through the application of the standard, prior to traditional instruction or at the end of instruction. The task makes use of critical-thinking skills.

#### **Optional Problem-Based Task Coaching Questions with Sample Responses**

These questions scaffold the task and guide students to solving the problem(s) presented in the task. They should be used at the discretion of the teacher for students requiring additional support. The Coaching Questions are followed by answers and suggested appropriate responses to the coaching questions. In some cases answers may vary, but a sample answer is given for each question.

#### **Recommended Closure Activity**

Students are given the opportunity to synthesize and reflect on the lesson through a journal entry or discussion of one or more of the Essential Questions.

#### **Problem-Based Task Implementation Guide**

This instructional overview, found with selected Problem-Based Tasks in each unit, highlights connections between the task and the lesson's key concepts and SMPs. The Implementation Guide also offers suggestions for facilitating and monitoring, and provides alternative solutions.

#### **Printable Practice (Sets A and B) and Interactive Practice (Set A)**

Each lesson includes two sets of practice problems to support students' achievement of the learning objectives. They can be used in any combination of teacher-led instruction, cooperative learning, or independent application of knowledge. Each Practice A is also available as an interactive Learnosity activity with Technology-Enhanced Items.

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#### **Answer Keys**

Answers are provided with all Warm-Ups, practice problems, and assessments.

#### **Progress Assessment**

Each lesson ends with 10 multiple-choice questions, as well as one extended-response question that incorporates critical thinking and writing components. This can be used to document the extent to which students grasp the concepts and skills addressed during instruction.

#### **Unit Assessment**

Each unit ends with 12 multiple-choice questions and three extended-response questions that incorporate critical thinking and writing components. This can be used to document the extent to which students grasped the concepts and skills of each unit.

#### **Station Activities**

Each unit includes a collection of station-based activities to provide students with opportunities to practice, reinforce, and apply mathematical skills and concepts. The debriefing discussions after each set of activities provide an important opportunity to help students reflect on their experiences and synthesize their thinking.