Adapting Curriculum Maps & Intro to Module 1
High School
July 2019
ADAPTING CURRICULUM MAPS (HIGH SCHOOL)

Welcome Back!
Thank You for Your Feedback!
ADAPTING CURRICULUM MAPS (HIGH SCHOOL)

Norms That Support Our Learning

• Take responsibility for yourself as a learner.

• Honor timeframes (start, end, and activity).

• Be an active and hands-on learner.

• Use technology to enhance learning.

• Strive for equity of voice.

• Contribute to a learning environment in which it is “safe to not know.”

• Identify and reframe deficit thinking and speaking.
Share Your Learning!

Let your voice be heard.

SHARE YOUR LIGHTBULB MOMENTS AS THEY HAPPEN!

Use #StandardsInstitute on Twitter and Facebook and be sure to follow @UnboundEdu for the latest.
Our learning is grounded in the intersection of the standards, content, aligned curriculum, and the equitable instructional practices that are essential for closing the opportunity gap caused by systemic bias and racism.
Unpacking Equity

Equity exists when the biases derived from dominant cultural norms and values no longer predict or influence how one fares in society.

Equity systematically promotes fair and impartial access to rights and opportunities.

Equity may look like adding supports and scaffolds that result in fair access to opportunities or creating opportunities for all voices to be heard.

*Educational* Equity ensures that all children—regardless of circumstances—are receiving high-quality, grade-level, and standards-aligned instruction with access to high-quality materials and resources.

*We become change agents for educational equity when we acknowledge that we are part of an educational system that holds policies and practices that are inherently racist and that we have participated in this system. We now commit to ensuring that all students, regardless of how we think they come to us, leave us having grown against grade-level standards and confident in their value and abilities.*
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Keynote

• What resonated with you from this morning’s keynote?

• What new information did you learn, or what surprised you?

• How will this keynote affect your practice? What might you do differently in light of this information?
# ADAPTING CURRICULUM MAPS (HIGH SCHOOL)

## This Week

<table>
<thead>
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<th>Ideas</th>
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<td>Monday</td>
<td>Focus and Within Grade Coherence</td>
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<td>Tuesday</td>
<td>Rigor and the Mathematical Practices</td>
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<td>Wednesday</td>
<td>Across Grade Coherence and Instructional Practice</td>
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<td>Friday</td>
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</table>

“Do the math”

Equity for all

Connect to our practice
ADAPTING CURRICULUM MAPS (HIGH SCHOOL)

Sessions Today and Tomorrow

Today

- **Morning:** Adapting High School Curriculum Maps
- **Afternoon:** Intro to Module 1
  - Adaptation and Equitable Instruction
  - Module Assessments
  - Introductions to Functions Studied This Year—Graphing Stories (Algebra I, Topic A), Basic Constructions (Geometry, Topic A), and Polynomials—From Base Ten to Base X (Algebra II, Topic A)

Tomorrow

- **Morning:** Adapting and Teaching Lessons
  - The Structure of Expressions (Algebra I, Topic B), Unknown Angles (Geometry, Topic B), and Factoring—Its Use and Its Obstacles (Algebra II, Topic B)
  - Problems of Practice Q&A
Participants will be able to:

- Analyze a **curriculum map** through the lens of the standards and shifts.
- Describe ways of **adapting** a curriculum map for students below grade level.
ADAPTING CURRICULUM MAPS (HIGH SCHOOL)

Morning Agenda

I. Curriculum Map Scavenger Hunt

II. Adapting a Curriculum Map
I. Curriculum Map Scavenger Hunt!

You’ll look at:

- The curriculum map for the year.
- Titles of each module.
- The standards associated with each module.
- (If time) lessons and assessment items in Module 1.
1. Scope and Sequence (Module Titles and Overview Pages):
   a. How many modules focus on major work?
   b. How many days of instruction is this?
   c. What percent of the instructional year is this?

2. Name all modules that include major and supporting content together.

3. Name all modules that emphasize additional content.
II. Adapting a Curriculum Map

What should our approach be if we have students who are not ready to access grade-level content?
The natural distribution of prior knowledge in classrooms should not prompt abandoning instruction in grade level content, but should prompt explicit attention to connecting grade level content to content from prior learning. To do this, instruction should reflect the progressions on which the CCSSM are built. Much unfinished learning from earlier grades can be managed best inside grade level work when the progressions are used to understand student thinking.”
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What We’re Trying to Avoid: “Blanket Review”

[Diagram of curriculum units and standards]

Last Year’s Content Standards

1 2 3 4 5 6 7
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**ADAPTING CURRICULUM MAPS (HIGH SCHOOL)**

**Adaptation Process: Scope and Sequences**

Use the progressions to **identify prerequisite standards from prior grades for all units**. Strategically integrate instruction on prerequisites as needed.

\[+ \text{X.1, Y.2} + \text{X.1, Z.5} + \text{Z.2} + \text{X.3} + \text{X.1, Z.5} + \text{X.1, Y.5} + \text{X.4, Y.5, Z.6}\]

Consider **expanding focus on major content** where necessary.

---

**Major Content**

\[\text{Unit 1} \quad \text{Unit 2} \quad \text{Unit 3} \quad \text{Unit 4} \quad \text{Unit 5} \quad \text{Unit 6} \quad \text{Unit 7}\]
Adapting Curriculum Maps (High School)

Adaptation Process: Units and Lessons

Consider adding additional lessons that address prerequisite content where necessary and appropriate.

The prerequisite standards we associate with each unit allow us to adapt lessons and add additional lessons.

Adapt lessons to include prerequisite content in the context of grade-level objectives.
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The 3 C’s

Coherent Content in Context
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Coherent Content
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Now You Try: Adaptation

At your tables:

1. Look for **two modules in Algebra I, Geometry, Algebra II** that you might spend more time on. Why these modules?

2. What, in your experience, **will students struggle with** related to that content?

3. What are the **prerequisite standards** you'd use to adapt those modules?
Share Out
Lunch 12:00- 1:00
INTRO TO MODULE 1 (HIGH SCHOOL)

Sessions Today and Tomorrow

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  • Problems of Practice Q&A
INTRO TO MODULE 1 (HIGH SCHOOL)

Afternoon: Intro to Module 1 in High School

Participants will be able to:

• **Analyze curriculum** through the lens of the standards and shifts.

• Use the lens of the Shifts and increased understanding of focus content to **make appropriate curricular adaptations** for students who lack prerequisite skills for grade-level work.

• **Anticipate student misunderstandings** and support them instructionally.

• Support students with differing needs to **ensure equitable instruction for all students**.
I. Adaptation and Equitable Instruction

II. Understanding Language

III. Assessing the Assessments

IV. Exploring Lessons and the Sequence of Content for Topic A

V. Implications for Practice

VI. What Are My Students’ Needs?: Coherent Content in Context, Purposeful Planning, Support for English Learners
INTRO TO MODULE 1 (HIGH SCHOOL)

I. Adaptation and Equitable Instruction

The Progressions Documents

CHAPTER 1, NF 3-5

Grade 3

The meaning of fractions. In Grades 1 and 2, students use fraction language to describe partitions of shapes into equal shares. In Grade 3, they start to develop the idea of a fraction as a number, building on the idea of partitioning a whole into equal parts. The whole can be a shape such as a circle or rectangle, a line segment, or any other finite entity susceptible to subdivision and measurement. In Grade 4, this is intended to include wholes that are collections of objects.

Grade 3 students start with unit fractions (fractions with numerator 1), which are formed by partitioning a whole into equal parts and taking one part, e.g., if a whole is partitioned into 4 equal parts, then each part is 1 of the whole, and 4 copies of that part make the whole. Next, students build fractions from unit fractions, seeing the numerator 2 or 3 as saying that 2 or 3 of the 1 parts together. They read any fraction this way, and in particular there is no need to introduce “proper fractions” and “improper fractions” initially. The quantity you get by putting 3 of the 1 parts together is the quantity you get by combining 3 parts together when the whole is divided into 3 equal parts.

Two important aspects of fractions provide opportunities for the mathematical practice of attending to precision (MP6):

- Specifying the whole.
- Initial phase is just to identify equal parts.

Initially, students can use an intuitive notion of congruence (“same size and shape”) to explain why the parts are equal, e.g., if they divide a square into four equal squares, or four equal rectangles.

Students come to understand a more precise meaning for “equal parts” as “parts with equal measurements.” For example, when a ruler is partitioned into halves or quarters of an inch, they see that each subdivision has the same length. In area models, they reason about the area of a shaded region to decide what fraction of the whole it represents (MP5).

The goal is for students to see unit fractions as the basic building blocks of fractions, in the same sense that the number 1 is the basic building block of the whole numbers; just as every whole number is obtained by combining a sufficient number of 1s, every fraction is obtained by combining a sufficient number of unit fractions.

The number line and number line diagrams. On the number line, the whole is the unit interval, that is, the interval from 0 to 1, measured by length. Reversing this whole for the right marks all the whole numbers, so that the intervals between consecutive whole numbers, from 0 to 1, 1 to 2, 2 to 3, etc., are all of the same length, as shown. Students might think of the number line as an infinite ruler.

To construct a unit fraction on a number line diagram, e.g., 1 students partition the unit interval into 3 intervals of equal length.

Draft: 10 September 2013, comment at corwinmath.wordpress.com

The Instructional Practice Guide

INSTRUCTIONAL PRACTICE GUIDE: COACHING

MATH SUBJECT K–8 GRADE LESSON GUIDELINES

The coaching is for teachers, and those who support teachers, to build understanding and experience with Common Core State Standards, providing a framework for the professional learning of teachers, coaches, and leaders. The core skills in Implementation of Mathematics Standards focus on:

- Focus strongly where the Standards focus.
- Coherence: These areas provide and are organized under major topics within grades.
- Represent: Major topics pursue conceptual understanding, procedural skill and fluency, and application with equal intensity.

The guide provides examples of what implementing CCSS in Mathematics looks like in daily planning and practice. It is organized around three Core Actions for teachers who are implementing the Common Core mathematical practice. Each Core Action consists of individual indicators and is designed to help the teacher understand and use these indicators to work toward the Common Core aligned Instruction.

The Core Actions and indicators should be evident in planning and observation in instruction. For each, lesson evidence might include: teacher, problems and methods, tasks and assignments, teacher instruction, student responses, and student strategies and answers.

Wiring Diagram

6.G.2
6.G.4
4.MD.7
6.RP.2
6.RP.3
6.SP.1
7.RP.1
7.RP.2
We are the gatekeepers of academic language in the classroom. We must provide students with well-structured, intentional opportunities for collaboration that amplifies academic language.

We experience the world through our culture, language, and values. We must be intentionally inclusive of students whose culture, language, and value system may be unfamiliar or different from ours. This includes holding space for academic English, while also making the classroom a safe space for students to use variants of English and languages other than English.

Academic English proficiency is critical for all students. We must model academic language, provide instruction using grade-level complex text and tasks, and ensure opportunities for students to practice academic language in an academic context.

There is no scope-and-sequence for the acquisition of knowledge and language, and all student knowledge and language is an asset. We as educators must leverage student knowledge and language as we scaffold students toward independence with complex texts and tasks.
INTRO TO MODULE 1 (HIGH SCHOOL)

A Shared Understanding:
Task Complexity, Scaffolding, and Amplified Language

*Task complexity:* the demands of the task, with regard to language, vocabulary, structure, and student direction.

*Scaffold:* a temporary instructional practice used to amplify content based on need, as we move students toward independence.

*To amplify* in this context is to provide students with repeated opportunities to encounter and practice (through reading, writing, listening, and speaking) the language and content from multiple perspectives and activities in order to meet the conceptual/analytical grade-level demands.
A Closer Look at Scaffolding

Scaffolding IS:

- **Generative** (useful in a range of lessons or contexts)
- An amplification of accessibility (creating an on-ramp into the work so the student can engage and benefit)
- A means to **develop learner autonomy** (to apprentice the student, over time, to support her/himself)
- Support which allows a student to accomplish **more than they could on their own**

Scaffolding is NOT:

- A rigid structure (inflexible or unresponsive to specific learner needs)
- Simplification of the task (which may lead to a denial of access to rigorous content)
- Any/all help provided to students (which does not develop student potential, nor help the learner grow in agency and autonomy)
- Lowering expectations (which may lead to a denial of access to rigorous content)
II. Understanding Language

UNDERSTANDING LANGUAGE/
STANFORD CENTER FOR ASSESSMENT,
LEARNING, AND EQUITY

Stanford University
Graduate School of Education

Principles for the Design of Mathematics Curricula:
Promoting Language and Content Development

Jeff Zwiers
Jack Dieckmann
Sara Rutherford-Quach
Vinci Daro
Renae Skarin
Steven Weiss
James Malamut
INTRO TO MODULE 1 (HIGH SCHOOL)

Understanding Language

Directions:

1. **Read** *Understanding Language*: Design Principles 1–4 (p. 6–8).
2. **Read** your Mathematical Language Routine (beginning p. 9).
3. **Chart** the purpose and one example of your routine.
4. **Share** with your table: Purpose and one example of your routine.
5. **Think** about the routines that you discussed as a table. Which ones seem best suited for your students. Why?
INTRO TO MODULE 1 (HIGH SCHOOL)

Mathematical Language Routines

MLR 1: Stronger and Clearer Each Time

Task Analysis

Protocol:

1. **Do the math**—one task per grade.

2. **Identify** the standards and why the task aligns.

3. **Stronger and Clearer Each Time:**
   - a. **Write** why this connection is important to discuss with students.
   - b. **Discuss** why this connection is important to show to students with someone who is in a similar role.
   - c. **Revise** your writing on why this connection is important based on your conversation.
MLR 2: Collect and Display, Gather and Show Student Discourse

V. Adapting Lessons for Students Below Grade Level

Protocol:

- **Review** Lesson 1 and **identify** the targeted standard.
- **Identify** the prerequisite standards from prior grades that support the targeted standard.
  - What is the aspect of rigor for each prerequisite?
- **Discuss** with a partner:
  1. How does each prerequisite support the standard?
  2. How could you strategically use these prerequisite standards to support students who are not on grade level?
  - **Annotate** the lesson with specific supports.
- **With your table:**
  - Each pair shares out the specific adaptations you and your partner made. **Explain** why you made these adaptations.
INTRO TO MODULE 1 (HIGH SCHOOL)

Mathematical Language Routines

MLR 3: Critique, Correct, Clarify

Each grid square is 1 square unit. Find the area, in square units, of each shaded region without counting every square. Be prepared to explain your reasoning.

A

B

C

D

Standards INSTITUTE
Here is a problem: A red car and a blue car enter the highway at the same time and travel at a constant speed. How far apart are they after 4 hours?

What information would you need to solve the problem?

Answers vary. Sample responses:

- How fast is each car traveling?
- Are the cars going the same direction?
- Did the cars enter the highway at the same location?
- What is the difference between the speeds of the two cars?
INTRO TO MODULE 1 (HIGH SCHOOL)

Mathematical Language Routines

MLR 5: Co-Craft Questions and Problems

Lin and Diego both ran for 10 seconds, each at their own constant speed. Lin ran 40 meters and Diego ran 55 meters.

1. Who was moving faster? Explain your reasoning.

2. How far did each person move in 1 second? If you get stuck, consider drawing double number line diagrams to represent the situations.

3. Use your data from the previous activity to find how far you could travel in 10 seconds at your quicker speed.

4. Han ran 100 meters in 20 seconds at a constant speed. Is this speed faster, slower, or the same as Lin's? Diego's? Yours?
Consider the problem: A teacher is planning a class trip to the aquarium. The aquarium requires 2 chaperones for every 15 students. The teacher plans accordingly and orders a total of 85 tickets. How many tickets are for chaperones, and how many are for students?

1. Solve this problem in one of three ways:

   a. Use a triple number line.

   b. Use a table. (Fill rows as needed.)

   c. Use a tape diagram.
MLR 7: Compare and Connect

For each parallelogram:

- Identify a base and a corresponding height, and record their lengths in the table that follows.

- Find the area and record it in the right-most column.

In the last row, write an expression using $b$ and $h$ for the area of any parallelogram.

<table>
<thead>
<tr>
<th>parallelogram</th>
<th>base (units)</th>
<th>height (units)</th>
<th>area (sq units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>B</td>
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<td></td>
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<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>any parallelogram</td>
<td>$b$</td>
<td>$h$</td>
<td></td>
</tr>
</tbody>
</table>
Is the area of Figure A greater than, less than, or equal to the area of the shaded region in Figure B? Be prepared to explain your reasoning.
“Students do not need to understand a language completely before they can start making sense of academic content and negotiate meaning in that language. Language learners of all levels can and should engage with grade-level content that is appropriately scaffolded. Students need multiple opportunities to talk about their mathematical thinking, negotiate meaning with others, and collaboratively solve problems with targeted guidance from the teacher. In addition, teachers can foster students’ sense-making by amplifying rather than simplifying, or watering down, their own use of disciplinary language.”

–UL/SCALE
INTRO TO MODULE 1 (HIGH SCHOOL)

III. Assessing the Assessments (High School)

**Assessment Summary**

<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Administered</th>
<th>Format</th>
<th>Standards Addressed</th>
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<tbody>
<tr>
<td>Mid-Module Assessment Task</td>
<td>After Topic B</td>
<td>Constructed response with rubric</td>
<td>N-Q.A.1, N-Q.A.2, N-Q.A.3, A-APR.A.1, A-SSE.A.2</td>
</tr>
<tr>
<td>End-of-Module Assessment Task</td>
<td>After Topic G</td>
<td>Constructed response with rubric</td>
<td>N-Q.A.1, A-SSE.A.1, A-APR.B.2, A-APR.B.3</td>
</tr>
</tbody>
</table>

**Algebra I**

**Geometry**

**Algebra II**

- What aspects of rigor are highlighted in these standards?
- **Bonus:** What kinds of problems and tasks do you expect to see on the assessment?
INTRO TO MODULE 1 (AGEBRA I)

Let’s “Do the Math” for Some Assessment Items

Mid-Module Assessment: #1a–c and #2a–c

End-of-Module Assessment: #1 and #2
INTRO TO MODULE 1 (GEOMETRY)
Let’s “Do the Math” for Some Assessment Items

Mid-Module Assessment:
#2–#4

End-of-Module Assessment:
#1 and #2
INTRO TO MODULE 1 (ALGEBRA II)

Let’s “Do the Math” for Some Assessment Items

Mid-Module Assessment:
#1–#3

End-of-Module Assessment:
#1a–h
At Your Table: Assessing the Assessments

For each assessment item:

1. What standards are evident in this item and how do you know?
2. What aspects of rigor are highlighted in this item and how do you know?

Also consider:

3. Compare the mid-module assessment to the end-of-module assessment. How does learning progress across the module?
IV. Exploring Lessons and the Sequence of Content for Topic A
INTRO TO MODULE 1 (HIGH SCHOOL)

Topic A Overview

INTRODUCTION TO FUNCTIONS STUDIED THIS YEAR—GRAPHING STORIES

N-Q.A.1, N-Q.A.2, N-Q.A.3, A-CED.A.2

Focus Standard: N-Q.A.1
Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; and choose and interpret the scale and the size of graphs and data displays.

N-Q.A.2
Define appropriate quantities for the purpose of modeling situations.

N-Q.A.3
Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

A-CED.A.2
Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

Instructional Days: 5

Lesson 1: Graphs of Linear Parent Functions

Lesson 2: Graphs of Exponential Functions

Lesson 3: Graphs of Quadratic Functions

Lesson 4: Analyzing Graphs—Revisiting Domain During Typical Day at School

Lesson 5: The Graphing Stories

Students explore the main concepts that they will work with in Figures 1: linear, quadratic, and exponential.

The goal is to introduce students to these graphs by having them make a graph of a situation (usually based on time) in which these functions naturally arise. As they graph, they reason quantitatively and use units to solve problems related to the graphs they create.

For example, in Lesson 3 they watch a video that shows bacteria doubling every 20 minutes. After counting the initial number of bacteria and analyzing the video, students are asked to create a graph to describe the number of bacteria with respect to actual time (not the speed-up rating in the video) and to use the graph to approximate the number of bacteria drawn at the end of the video.

THE FIRST MODULE OF GEOMETRY INTEGRATES AND CONSTRUCTS GEOMETRIC CONCEPTS PRESENTED IN ALL THE DIFFERENT GRADE LEVELS UP TO HIGH SCHOOL. TOPIC A BRINGS THE RELATIVELY UNINTACT CONCEPT OF SIMILITUDE TO LIFE BY BUILDING ON IDEAS STUDENTS ARE FAMILIAR WITH SUCH AS THE CONSTANT LENGTH OF A RADIUS WITHIN A CIRCLE. WHILE THE FIGURES THAT ARE BEING CONSTRUCTED MAY NOT BE NEW, THE PROCESS OF USING TOOLS TO CREATE THE FIGURES IS CERTAINLY NEW. STUDENTS USE CONSTRUCTION TOOLS, SUCH AS A COMPASS, STRING-GEDE, AND PUPPY, TO CREATE CONSTRUCTIONS OF VARYING DIFFICULTY, INCLUDING QUADRILATERALS, PERPENDICULAR BISECTORS, AND ANGLE BISECTORS.

The constructions are embodied in models that require students to trace areas of their peers and to understand how to find an appropriate solution with their tools. Students will also discover the critical need for precise language when they articulate the steps necessary for each construction. The figures covered throughout this module provide a bridge to solving, then proving unknown angle problems.

IN TOPIC A, STUDENTS DRAW ON THEIR FOUNDATION OF THE ANALOGIES BETWEEN POLYNOMIAL ARITHMETIC AND INTEGERS module 1 CORRESPONDING, FOCUSING ON PROPERTIES OF EXPONENTS, PARTICULARLY THE EI KINSHIP PROPERTY. IN LESSON 4, STUDENTS WRITE POLYNOMIAL EXPRESSIONS FOR SEQUENCES BY EXAMINING SUCCESSIVE DIFFERENCES. THEY ARE ENGAGED IN A LEARNING QUEST THAT EMPHASIZES THINKING AND MAKING RELATIONSHIPS ABOUT NUMBERS AND PATTERNS AND EQUATIONS. IN LESSON 5, THEY USE A TABLE OF THE AREA MODEL REFERRED TO AS THE TABULAR METHOD TO REPRESENT POLYNOMIAL MULTIPLICATION AND CONNECT THAT METHOD BACK TO APPLICATION OF THE ALGEBRA PROPERTY.
Sequence of Content

- Do the exit tickets for Topic A.
- Describe the sequence of content to your neighbor. Cite examples of rigor.
- What are the expectations for prior knowledge/skills?
- Where would you add supplementary lessons? On which standards?
INTRO TO MODULE 1 (HIGH SCHOOL)

Digging Deep, Lesson by Lesson

**Lesson 1: Graphs of Piecewise Linear Functions**

**Student Outcomes**
- Students will analyze and interpret graphs of piecewise linear functions.
- Students will solve problems involving piecewise linear functions.

**Classroom**

- Exploration: Graphing Piecewise Functions (30 minutes)
  - Students will graph piecewise linear functions and analyze their properties.

**Lesson Notes**
- Suggested Time: 45 minutes
- Assessment: Group activity with piecewise functions

**Lesson 2: Construct an Equilateral Triangle**

**Student Outcomes**
- Students will construct an equilateral triangle using geometric principles.
- Students will solve problems involving equilateral triangles.

**Classroom**

- Exploration: Constructing an Equilateral Triangle (30 minutes)
  - Students will use geometric tools to construct an equilateral triangle.

**Lesson Notes**
- Suggested Time: 45 minutes
- Assessment: Individual activity with equilateral triangles

**Lesson 3: Successive Differences in Polynomials**

**Student Outcomes**
- Students will identify patterns in polynomial sequences.
- Students will solve problems involving polynomial sequences.

**Classroom**

- Exploration: Successive Differences (30 minutes)
  - Students will explore patterns in polynomial sequences.

**Lesson Notes**
- Suggested Time: 45 minutes
- Assessment: Group activity with polynomial sequences

**Content and connections**

**Implications for practice**

**Key moments**

**Other parts**
INTRO TO MODULE 1 (HIGH SCHOOL)

Content in the Key Moment: Lesson 1

- What key concept(s) are being developed?
- How does the opening example and discussion lead students to those concepts?
- What about the task makes it rigorous?
- What are the language demands of the task in relation to your students’ English language proficiency?
- What Mathematical Language Routines could you incorporate?
INTRO TO MODULE 1 (HIGH SCHOOL)

Implications for Practice: Lesson 1

• What are students doing? Are they engaging in mathematical practices?
• What is the teacher doing to facilitate and engage them with the content?
• How would you adapt this lesson to meet student needs?
INTRO TO MODULE 1 (HIGH SCHOOL)

Other Parts: Lesson 1

- What **additional ideas or skills** do further examples elicit from students?
- Which problems link most directly to those on the **mid-module assessment**?
- How would you **adapt** these problems to meet **student needs**?
- What are the language demands of the task in relation to your students’ English language proficiency?
- What **Mathematical Language Routines** could you incorporate?

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**Problem Set**

1. Watch the video, “Ellen’s Braiding” at [http://www.mrmeyer.com](http://www.mrmeyer.com). It shows a man climbing a floor, and at time 6, he is halfway up. Write a clear set of steps for the construction of an equilateral triangle. Use Euclid’s Proposition 1 as a guide.

2. Suppose two circles are constructed using the following instructions:
   - Draw circle: Center A, radius 4 units.
   - Draw circle: Center C, radius 2 units.

   Under what conditions (in terms of A and C) will the two circles
   a. Have one point in common?
   b. Have no points in common?
   c. Have two points in common?
   d. Have more than two points in common?

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**Problem Set**

1. Create a table to find the second differences for the polynomial $36 - 16t^2$ for integer values of $t$ from 0 to 5.

2. Create a table to find the third differences for the polynomial $s^3 - s^2 + s$ for integer values of $s$ from -3 to 3.

3. Create a table of values for the polynomial $x^2$, using $n$, $n+1$, $n+2$, $n+3$, $n+4$ as values of $x$. Show that the second differences are all equal to 2.
INTRO TO MODULE 1 (HIGH SCHOOL)

At Your Table: Throughout Topic A

Content in the Key Moments:
- What **key concept(s)** are being developed?
- How does the **opening example** and **discussion** lead students to those concepts?
- What about the task makes it **rigorous**?

Implications for Practice:
- What are **students** doing? Are they engaging in **mathematical practices**?
- What is the **teacher** doing to facilitate and engage them with the content?
- How would you **adapt** this lesson to meet **student needs**?
- What **Mathematical Language Routines** could you incorporate for students with limited English language proficiency?

Other Parts:
- What **additional ideas or skills** do further examples elicit from students?
- Which problems link most directly to those on the **mid-module assessment**?
- How would you **adapt** or **supplement** these problems to meet **student needs**?
V. Implications for Practice
V. Implications for Practice

• Reflect on Topic A. What is the focus content, and how does instruction support student understanding of that content?

• What are the essential student learning experiences that support the focus content?
VI. What Are My Students’ Needs?:

Coherent Content in Context, Purposeful Planning, Support for English Learners
INTRO TO MODULE 1 (HIGH SCHOOL)
What Are My Students’ Needs?: Coherent Content in Context, Purposeful Planning, Support for English Learners

• Would you add supplementary lessons? Where and on which standards?

• How could you adapt the classwork examples and exploratory challenges to help students access grade-level content?

• How could you adapt the problem set and closing to help students access grade-level content?

• How could you incorporate Mathematical Language Routines into the lesson components?
1. Click on the grey ‘Daily Survey’ link
2. Choose the appropriate link for today’s survey, i.e. Day 4, and continue to new window
3. Click to take the Knowledge Survey Post Test
THE END
Welcome Back!
Thank You for Your Feedback!
Norms That Support Our Learning

• Take responsibility for yourself as a learner.

• Honor timeframes (start, end, and activity).

• Be an active and hands-on learner.

• Use technology to enhance learning.

• Strive for equity of voice.

• Contribute to a learning environment in which it is “safe to not know.”

• Identify and reframe deficit thinking and speaking.
SHARE YOUR LIGHTBULB MOMENTS AS THEY HAPPEN!

Use #StandardsInstitute on Twitter and Facebook and be sure to follow @UnboundEdu for the latest.
Keynote

• What resonated with you from this morning’s keynote?

• What new information did you learn, or what surprised you?

• How will this keynote affect your practice? What might you do differently in light of this information?
## ADAPTING AND TEACHING LESSONS IN MODULE 1 (HIGH SCHOOL)

### This Week

<table>
<thead>
<tr>
<th>Day</th>
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<td>Focus and Within Grade Coherence</td>
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<td>Tuesday</td>
<td>Rigor and the Mathematical Practices</td>
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<td>Wednesday</td>
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<td>Adaptation and Practice</td>
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“Do the math”

Equity for all

Connect to our practice
ADAPTING AND TEACHING LESSONS IN MODULE 1 (HIGH SCHOOL)

Sessions Yesterday and Today

Yesterday

• **Morning:** Adapting High School Curriculum Maps
• **Afternoon:** Intro to Module 1
  • Adaptation and Equitable Instruction
  • Module Assessments
  • Introductions to Functions Studied This Year—Graphing Stories (Algebra I, Topic A), Basic Constructions (Geometry, Topic A), and Polynomials—From Base Ten to Base X (Algebra II, Topic A)

Today

• **Morning:** Adapting and Teaching Lessons
  • The Structure of Expressions (Algebra I, Topic B), Unknown Angles (Geometry, Topic B), and Factoring—Its Use and Its Obstacles (Algebra II, Topic B)
  • Problems of Practice Q&A
ADAPTING AND TEACHING LESSONS IN MODULE 1 (HIGH SCHOOL)

Objectives

Participants will be able to:

• **Analyze curriculum** through the lens of the standards and shifts.

• Use the lens of the shifts and increased understanding of focus content to make **appropriate curricular adaptations** for students who lack prerequisite skills for grade-level work.

• **Prepare and deliver lessons** using the core actions in the IPG.

• Support students with differing needs to **ensure equitable instruction for all students**.
I. Highlights from Topic B

II. Exploring Lessons and the Sequence of Content for Topic B

III. Buddy Teaching with the IPG

IV. Implications for Practice

V. What Are My Students’ Needs?: Coherent Content in Context, Purposeful Planning, Support for English Learners

VI. Problems of Practice Q&A
I. Highlights from Topic B
ADAPTING AND TEACHING LESSONS IN MODULE 1 (HIGH SCHOOL)

Topic B Overview

New York State Common Core Mathematics Curriculum

**Topic B:** The Structure of Expressions

**Focus Standards:**
- A-SSE.A.1
- A-SSE.A.2

**Instructional Days:** 4
- Lesson 6: Algebraic Expressions—The Distributive Property
- Lesson 7: Algebraic Expressions—The Commutative and Associative Properties
- Lesson 8: Adding and Subtracting Polynomials
- Lesson 9: Multiplying Polynomials

In Lessons 6 and 7 of this topic, students develop a precise understanding of what it means for expressions to be algebraically equivalent. By exploring geometric representations of the distributive, associative, and

New York State Common Core Mathematics Curriculum

**Topic B:** Factoring—Its Use and Its Obstacles

**Focus Standards:**
- N-Q.A.2
- A-APR.B.2
- A-APR.B.3
- A-APR.B.6
- F-BF.C.7

**Instructional Days:** 10
- Lesson 10: Overcoming obstacles in multiplying (b)
- Lesson 11: Mastering factoring
- Lesson 12: Graphing Rectangular Functions
- Lesson 13: Developing a Model for Parabolas
- Lesson 14: Modeling with Polynomial Functions
- Lesson 15: Overcoming a Second Obstacle in Factoring—What if There is a Remainder?

New York State Common Core Mathematics Curriculum

**Topic B:** Unknown Angles

**Focus Standard:**
- G-CO.C.9

**Instructional Days:**
- Lesson 12: Solve for Unknown Angle—Angles and Lines at a Point
- Lesson 13: Solve for Unknown Angle—Parallel Lines
- Lesson 14: Solve for Unknown Angle—Angles in a Triangle
- Lesson 15: Unknown Angle Proofs—Using Proofs
- Lesson 16: Unknown Angle Proofs—Problems with Constructions
- Lesson 17: Unknown Angle Proofs—Proofs with Trigonometry
- Lesson 18: Unknown Angle Proofs—Proofs with Vectors

By the time students embark on Topic B, they have seen several of the geometric figures that they studied prior to Grade 6. Topic B encompasses many of these previously learned figures, such as the special angles created by parallel lines cut by a transversal. As part of the journey to solving proof problems, students begin by solving unknown angle problems in Lessons 6–8. Students will also develop mastery over problems involving angles at a point, angles in diagrams with parallel lines cut by a transversal, and all of the above within any given diagram. A new knowledge of how to solve for an...
II. Exploring Lessons and the Sequence of Content for Topic B

- Do the exit tickets for Topic B.
- Describe the sequence of content to your neighbor. Cite examples of rigor.
- What are the expectations for prior knowledge/skills?
- Where would you add supplementary lessons? On which standards?
- Do you see a potential need for a Mathematical Language Routine? What evidence do you have to support this idea?
As you prepare, think about:

- Framing your objective in the context of Topic B. What content came before?
- What are students doing during the lesson?
- As the teacher, what will you be doing?
# ADAPTING AND TEACHING LESSONS IN MODULE 1 (HIGH SCHOOL)

## Summary of Core Actions

### Core Action 1
Ensure the work of the lesson reflects the shifts required by the CCSS for Mathematics.

**Indicators**

- A. The lesson focuses on the depth of grade-level standards, grade-level content standards or part(s) thereof.
- B. The lesson intentionally relates new concepts to students’ prior skills and knowledge.
- C. The lesson intentionally targets the aspects of rigor (conceptual understanding, procedural skill and fluency, application) called for by the standards being addressed.

### Core Action 2
Employ instructional practices that allow all students to learn the content of the lesson.

**Indicators**

- A. The teacher makes the mathematics of the lesson explicit by using explanations, representations, and/or examples.
- B. The teacher provides opportunities for students to work with and practice grade-level problems and exercises.
- C. The teacher strengthens all students’ understanding of the content by sharing a variety of students’ representations and solution methods.
- D. The teacher regularly checks for understanding throughout the lesson and adapts the lesson according to student understanding.
- E. The teacher summarizes the mathematics with references to student work and discussion in order to reinforce the focus of the lesson.

### Core Action 3
Provide all students with opportunities to exhibit mathematical practices while engaging with the content of the lesson.

**Indicators**

- A. The teacher poses high-quality questions and problems that prompt students to share their developing thinking about the content of the lesson.
- Students share their developing thinking about the content of the lesson.
- B. The teacher encourages reasoning and problem solving by posing challenging problems that offer opportunities for productive struggle.
- Students persevere in solving problems in the face of initial difficulty.
- C. The teacher establishes a classroom culture in which students explain their thinking.
- Students elaborate on their second sentence spontaneously or prompted by the teacher or another student to explain their thinking and connect it to their first sentence.
- D. The teacher creates the conditions for student conversations where students are encouraged to talk about each other’s thinking.
- Students talk about and ask questions about each other’s thinking, in order to clarify or improve their own mathematical understanding.
- E. The teacher connects and develops students’ informal language to precise mathematical language appropriate to their grade.
- Students use precise mathematical language in their explanations and discussions.
- F. The teacher establishes a classroom culture in which students choose and use appropriate tools when solving a problem.
- Students use appropriate tools strategically when solving a problem.
ADAPTING AND TEACHING LESSONS IN MODULE 1 (HIGH SCHOOL)

Table Teaching Ground Rules

• Teachers go “all in” for their roles. Stay in character through any trouble spots.

• Students are “middle of the class.” Follow directions, practice, don’t “know it all.”

• Teach the lesson through to the end of the discussion portion.

• Stick to the time limits so everyone has a chance to teach.
ADAPTING AND TEACHING LESSONS IN MODULE 1 (HIGH SCHOOL)

After Teaching

• The team to the left of the teachers gives one “glow” (something successful) and one “grow” (a question or comment) for the lesson.

• Teachers briefly describe their planning processes for the lesson:
  • How did the problem and discussion advance the key concept of the lesson?
  • How would you adapt these problems to meet student needs?
IV. Implications for Practice

• Reflect on Topic B. What is the **focus content**, and how does instruction support student understanding of that content?

• What are the **essential student learning experiences** that support the focus content?
V. What Are My Students’ Needs?: Coherent Content in Context, Purposeful Planning, Support for English Learners
ADAPTING AND TEACHING LESSONS IN MODULE 1 (HIGH SCHOOL)

What Are My Students’ Needs?: Coherent Content in Context, Purposeful Planning, Support for English Learners

• Would you add supplementary lessons? Where and on which standards?

• How could you adapt the classwork examples and exploratory challenges to help students access grade-level content?

• How could you adapt the problem set and closing to help students access grade-level content?

• How could you incorporate Mathematical Language Routines into the lesson components?
VI. Problems of Practice Q&A

Protocol:
1. Prepare a question related to content learned throughout the week.
   a. Take 10 min to prepare a problem of practice that affects you in your role. **Be specific!**
   b. Do you have evidence that provides context to your problem?
   c. Identify how this problem connects to content learned throughout the week.

2. Each participant will receive a 15 minute Q&A session.

3. I will rotate to you to begin your round of Problems of Practice Q&A.
1. Click on the grey ‘Daily Survey’ link
2. Choose the appropriate link for today’s survey, i.e. Day 5, and continue to new window

Please fill out the survey located here: standardsinstitutes.org/institute/summer-2019
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