

INSTRUCTIONAL PRACTICE GUIDE

MATH

SUBJECT

HS

GRADES

Date

Teacher Name

School

Grade / Class Period / Section

Topic / Lesson / Unit

About The Instructional Practice Guide

Content-specific feedback is critical to teacher professional development. The Instructional Practice Guide (IPG) is a K–12 classroom observation rubric that prioritizes what is observable in and expected of classroom instruction when instructional content is aligned to college- and career-ready (CCR) standards, including the Common Core State Standards (CCSS), in Mathematics (corestandards.org/Math). It purposefully focuses on the limited number of classroom practices tied most closely to content of the lesson.¹

Designed as a developmental rather than an evaluation tool, the IPG supports planning, reflection, and collaboration, in addition to coaching. The IPG encompasses the three Shifts by detailing how they appear in instruction:²



Focus strongly where the standards focus.



Coherence: Think across grades and link to major topics within grades.



Rigor: In major topics, pursue conceptual understanding, procedural skill and fluency, and application with equal intensity.

This rubric is divided into the Core Actions teachers should be taking. Each Core Action consists of indicators which further describe teacher and student behaviors that exemplify CCR-aligned instruction.

Using The Instructional Practice Guide

For each observation, you should make note of what you see and hear. It may be helpful to supplement what you've recorded with further evidence from artifacts such as lesson plans, tasks, or student work. Although many indicators will be observable during the course of a lesson, there may be times when a lesson is appropriately focused on a smaller set of objectives or you observe only a portion of a lesson. In those cases you should expect to not observe some of the indicators and to leave some of the tool blank. Whenever possible, share evidence you collected during the observation in a follow-up discussion.

After discussing the observed lesson, use the Beyond the Lesson Discussion Guide to put the content of the lesson in the context of the broader instructional plan. The questions in the Beyond the Lesson Discussion Guide help delineate what practices are in place, what has already occurred, and what opportunities might exist to incorporate the Shifts into the classroom during another lesson, further in the unit, or over the course of the year.

To further support content-specific planning, practice, and observation, explore the collection of free IPG companion tools, resources, and professional development modules at achievethecore.org/instructional-practice.

1. Refer to Aligning Content and Practice (achievethecore.org/IPG-aligning-content-and-practice) for the research underpinning the Core Actions and indicators of the Instructional Practice Guide and to learn more about how the design of the tool supports content-specific observation and feedback.

2. Refer to Common Core Shifts at a Glance (achievethecore.org/shifts-mathematics) and the High School Publishers' Criteria for the Common Core State Standards for Mathematics (achievethecore.org/publisherscriteria-math-hs) for additional information about the Shifts required by the CCSS.



CORE ACTIONS AND INDICATORS

For the complete Instructional Practice Guide, go to achievethecore.org/instructional-practice.

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Core Action 1

Ensure the work of the enacted lesson reflects the Focus, Coherence, and Rigor required by college- and career-ready standards in mathematics.

- A. The enacted lesson focuses on the course-level cluster(s), course-level content standard(s), or part(s) thereof.

Mathematical learning goal: _____

Standard(s) addressed in this lesson: _____

- B. The enacted lesson appropriately relates new content to math content within or across grades.

- C. The enacted lesson intentionally targets the aspect(s) of Rigor (conceptual understanding, procedural skill and fluency, application) called for by the standard(s) being addressed.

Circle the aspect(s) of Rigor targeted in the standard(s) addressed in this lesson: Conceptual understanding / Procedural skill and fluency / Application

Circle the aspect(s) of Rigor targeted in this lesson: Conceptual understanding / Procedural skill and fluency / Application

Core Action 2

Employ instructional practices that allow all students to learn the content of the lesson.

- A. The teacher makes the mathematics of the lesson explicit through the use of explanations, representations, tasks, and/or examples.
- B. The teacher strengthens all students' understanding of the content by strategically sharing students' representations and/or solution methods.
- C. The teacher deliberately checks for understanding throughout the lesson to surface misconceptions and opportunities for growth, and adapts the lesson according to student understanding.
- D. The teacher facilitates the summary of the mathematics with references to student work and discussion in order to reinforce the purpose of the lesson.
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Core Action 3

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

- A. The teacher provides opportunities for all students to work with and practice course-level problems and exercises.
Students work with and practice course-level problems and exercises.
- B. The teacher cultivates reasoning and problem solving by allowing students to productively struggle.
Students persevere in solving problems in the face of difficulty.
- C. The teacher poses questions and problems that prompt students to explain their thinking about the content of the lesson.
Students share their thinking about the content of the lesson beyond just stating answers.
- D. The teacher creates the conditions for student conversations where students are encouraged to talk about each other's thinking.
Students talk 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 and mathematical ideas to precise mathematical language and ideas.
Students use increasingly precise mathematical language and ideas.

If any uncorrected mathematical errors are made during the context of the lesson (instruction, materials, or classroom displays), note them here.



CORE ACTION 1: Ensure the work of the enacted lesson reflects the Focus, Coherence, and Rigor required by college- and career-ready standards in mathematics.

INDICATORS / NOTE EVIDENCE OBSERVED OR GATHERED FOR EACH INDICATOR	RATING
<p>A. The enacted lesson focuses on the course-level cluster(s), course-level content standard(s), or part(s) thereof.</p> <p>Mathematical learning goal:</p> <p>Standard(s) addressed in this lesson:</p>	<p>Yes- The enacted lesson focuses only on mathematics within the course-level standards.</p> <p>No- The enacted lesson focuses on mathematics outside the course-level standards.</p>
<p>B. The enacted lesson appropriately relates new content to math content within or across grades.</p>	<p>Yes- The enacted lesson builds on students' prior skills and understandings.</p> <p>No- The enacted lesson does not connect or has weak connections to students' prior skills and understandings.</p>
<p>C. The enacted lesson intentionally targets the aspect(s) of Rigor (conceptual understanding, procedural skill and fluency, application) called for by the standard(s) being addressed.</p> <p>Circle the aspect(s) of Rigor targeted in the standard(s) addressed in this lesson: Conceptual understanding / Procedural skill and fluency / Application</p> <p>Circle the aspect(s) of Rigor targeted in this lesson: Conceptual understanding / Procedural skill and fluency / Application</p>	<p>Yes- The enacted lesson explicitly targets the aspect(s) of Rigor called for by the standard(s) being addressed.</p> <p>No- The enacted lesson targets aspects of Rigor that are not appropriate for the standard(s) being addressed.</p>



CORE ACTION 2: Employ instructional practices that allow all students to learn the content of the lesson.

INDICATORS ³ / NOTE EVIDENCE OBSERVED OR GATHERED FOR EACH INDICATOR	RATING
<p>A. The teacher makes the mathematics of the lesson explicit through the use of explanations, representations, tasks, and/or examples.</p> <p style="text-align: right;"><input type="checkbox"/> NOT OBSERVED</p>	<p>4- A variety of instructional techniques and examples are used to make the mathematics of the lesson clear.</p> <p>3- Examples are used to make the mathematics of the lesson clear.</p> <p>2- Instruction is limited to showing students how to get the answer.</p> <p>1- Instruction is not focused on the mathematics of the lesson.</p>
<p>B. The teacher strengthens all students' understanding of the content by strategically sharing students' representations and/or solution methods.</p> <p style="text-align: right;"><input type="checkbox"/> NOT OBSERVED</p>	<p>4- Student solution methods are shared, and connections to the mathematics are explicit and purposeful. If applicable, connections between the methods are examined.</p> <p>3- Student solution methods are shared, and some mathematical connections are made between them.</p> <p>2- Student solution methods are shared, but few connections are made to strengthen student understanding.</p> <p>1- Student solution methods are not shared.</p>
<p>C. The teacher deliberately checks for understanding throughout the lesson to surface misconceptions and opportunities for growth, and adapts the lesson according to student understanding.</p> <p style="text-align: right;"><input type="checkbox"/> NOT OBSERVED</p>	<p>4- There are checks for understanding used throughout the lesson to assess progress of all students, and adjustments to instruction are made in response, as needed.</p> <p>3- There are checks for understanding used throughout the lesson to assess progress of some students; minimal adjustments are made to instruction, even when adjustments are appropriate.</p> <p>2- There are few checks for understanding, or the progress of only a few students is assessed. Instruction is not adjusted based on students' needs.</p> <p>1- There are no checks for understanding; therefore, no adjustments are made to instruction.</p>
<p>D. The teacher facilitates the summary of the mathematics with references to student work and discussion in order to reinforce the purpose of the lesson.</p> <p style="text-align: right;"><input type="checkbox"/> NOT OBSERVED</p>	<p>4- The lesson includes a summary with references to student work and discussion that reinforces the mathematics.</p> <p>3- The lesson includes a summary with a focus on the mathematics.</p> <p>2- The lesson includes a summary with limited focus on the mathematics.</p> <p>1- The lesson includes no summary of the mathematics.</p>

3. These actions may be viewed over the course of 2–3 class periods.

CORE ACTION 3: Provide all students with opportunities to exhibit mathematical practices while engaging with the content of the lesson.⁴

INDICATORS^{5 6} / NOTE EVIDENCE OBSERVED OR GATHERED FOR EACH INDICATOR / RATING

- 4- Teacher provides many opportunities, and most students take them.
- 3- Teacher provides many opportunities, and some students take them; or teacher provides some opportunities and most students take them.
- 2- Teacher provides some opportunities, and some students take them.
- 1- Teacher provides few or no opportunities, or few or very few students take the opportunities provided.

<p>A. The teacher provides opportunities for all students to work with and practice course-level problems and exercises.</p> <p>Students work with and practice course-level problems and exercises.</p>	<p style="text-align: right;">4 3 2 1 <input type="checkbox"/> NOT OBSERVED</p>
<p>B. The teacher cultivates reasoning and problem solving by allowing students to productively struggle.</p> <p>Students persevere in solving problems in the face of difficulty.</p>	<p style="text-align: right;">4 3 2 1 <input type="checkbox"/> NOT OBSERVED</p>
<p>C. The teacher poses questions and problems that prompt students to explain their thinking about the content of the lesson.</p> <p>Students share their thinking about the content of the lesson beyond just stating answers.</p>	<p style="text-align: right;">4 3 2 1 <input type="checkbox"/> NOT OBSERVED</p>
<p>D. The teacher creates the conditions for student conversations where students are encouraged to talk about each other's thinking.</p> <p>Students talk and ask questions about each other's thinking, in order to clarify or improve their own mathematical understanding.</p>	<p style="text-align: right;">4 3 2 1 <input type="checkbox"/> NOT OBSERVED</p>
<p>E. The teacher connects and develops students' informal language and mathematical ideas to precise mathematical language and ideas.</p> <p>Students use increasingly precise mathematical language and ideas.</p>	<p style="text-align: right;">4 3 2 1 <input type="checkbox"/> NOT OBSERVED</p>

If any uncorrected mathematical errors are made during the context of the lesson (instruction, materials, or classroom displays), note them here.

4. There is not a one-to-one correspondence between the indicators for this Core Action and the Standards for Mathematical Practice. These indicators represent the Standards for Mathematical Practice that are most easily observed during instruction.
 5. Some portions adapted from "Looking for Standards in the Mathematics Classroom" 5x8 card published by the Strategic Education Research Partnership (<http://math.serpmedia.org/5x8card/>).
 6. Some or most of the indicators and student behaviors should be observable in every lesson, though not all will be evident in all lessons. For more information on teaching practices, see NCTM's publication Principles to Actions: Ensuring Mathematical Success for All for eight Mathematics Teaching Practices listed under the principle of Teaching and Learning (<http://www.nctm.org/principles-to-actions>).



BEYOND THE LESSON: DISCUSSION GUIDE

MATHEMATICS

INTRODUCTION

The Beyond the Lesson Discussion Guide is designed for the post-observation conversation using the Instructional Practice Guide (achievethecore.org/instructional-practice) or any other observation rubric. The questions put the content of the lesson in the context of the broader instructional plan for the unit or year. The conversation should first reflect on the evidence collected during the observation to consider what worked, what could improve, and what resources are available to support improvement. If any parts of the Lesson Planning Tool (achievethecore.org/lesson-planning-tool) were used in preparing for the lesson, refer to that information during the discussion. After discussing the observed lesson, use the “Beyond the Lesson” questions to help clearly delineate what practices are in place, what has already occurred, and what opportunities might exist in another lesson, further in the unit, or over the course of the year to incorporate the Shifts into the classroom.

- 1. Is this unit targeting the Major Work of the Grade? Does the prior unit target Major Work? Does the next unit target Major Work? How much time would you estimate will be spent on the Major Work in this class this year? (K–8)** Focus means significantly narrowing the scope of content in each grade so that students achieve at higher levels and experience more deeply that which remains. For more information on Major Work of the Grade, see achievethecore.org/focus.
- 2. Does this unit target the Supporting Work of the Grade? If so, will this unit highlight the connection to the Major Work of the Grade? Explain how. (K–8)** Supporting content enhances Focus and Coherence simultaneously by engaging students in the Major Work of the Grade. For example, materials for K–5 generally treat data displays as an occasion for solving grade-level word problems using the four operations (see 3.MD.3); materials for grade 7 take advantage of opportunities to use probability to support ratios, proportions, and percents.
- 3. Summarize how this lesson fits within the unit. Describe how the other lessons and tasks in this unit are intentionally sequenced to help students develop increasingly sophisticated understanding, skills, and practices.** For more information on coherent connections across and within grades, see <http://ime.math.arizona.edu/progressions/>.
- 4. Which of the three aspects of Rigor (conceptual understanding, procedural skill and fluency, and application) are attended to within this unit? If more than one aspect is attended to, when in the unit are they attended to individually, and when are students using them together?** Rigor is defined as pursuing conceptual understanding, procedural skill and fluency, and application with equal intensity. The standards are written using language that informs the reader as to which aspect of Rigor certain standards address. Some clusters or standards specifically require one aspect of Rigor; some require multiple aspects. All aspects of Rigor need not be addressed in every lesson.
- 5. How will you meet all students’ needs while working on grade/course-level content in this unit? (e.g., How will you provide scaffolding for students below grade/course level so they can reach the grade/course-level expectations? How will you create opportunities for students who are advanced to go deeper into the grade/course-level content?)** For more information, see Adapting the Lesson under Problems & Exercises in the Lesson Planning Tool: achievethecore.org/lesson-planning-tool.
- 6. What off-grade/course-level standards have you taught this year and why?** There may be reasons for addressing topics in a strategic way before or after the grade in which the topic is central in the standards. However, any such purposeful discrepancies should enhance the required learning, not unduly interfere with or displace grade/course-level content, and be clearly aimed at helping students meet the standards as written.
- 7. In what ways do you provide diagnostic feedback to students? Do students have opportunities to revise their thinking? Does student work include revisions of solutions, explanations, and justifications?**
- 8. In what ways have your students made progress towards mastering the grade/course-level content standards? How are you monitoring and tracking their achievement of the standards? What work still needs to be done to ensure all students achieve mastery of each standard by the end of the year? For more information on the Standards for Mathematical Content, see corestandards.org/Math.**
- 9. In what ways have you seen your students increase their independence in applying the Standards for Mathematical Practice in learning content this year? Which practice standards do students still need to develop and how can you support them in doing so?** For more information on the Standards for Mathematical Practice, see corestandards.org/Math/Practice.
- 10. What tools are appropriate for students to independently access when solving mathematical problems in this unit? Do students frequently choose and use appropriate tools strategically in this class?** For more information on SMP5, see corestandards.org/Math/Practice.

