INSTRUCTIONAL PRACTICE GUIDE: COACHING

MATH	HS	LESSON
SUBJECT	GRADES	GUIDE TYPE

Date

Teacher Name

School

Grade / Class Period / Section

Topic / Lesson / Unit

Learning Goal

Standard(s) Addressed in this Lesson

Circle the aspect(s) of rigor targeted in the standard(s) addressed in this lesson[1]:

Conceptual understanding
Procedural skill and fluency
Application

Observer Name

1. Refer to Common Core Shifts at a Glance (achievethecore.org/mathshifts) and the HS 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.

The Coaching Tool helps teachers, and those who support teachers, to build understanding and experience with Common Core State Standards (CCSS)-aligned instruction. Designed as a developmental rather than an evaluation tool, it can be used for planning, reflection, and collaboration, in addition to coaching. For all uses, refer to the CCSS for Mathematics (corestandards.org/math) and the widely applicable pre-requisites (achievethecore.org/prerequisites).

The three Shifts in instruction for Mathematics provide the framing for this tool[1].

Focus: 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 guide is organized around three Core Actions which encompass the Shifts; each Core Action consists of individual indicators which describe teacher and student behaviors that exemplify Common Core-aligned instruction.

The Core Actions and Indicators should be evident in planning and observable in instruction. For each lesson, evidence might include a lesson plan, exercises, tasks and assessments, teacher instruction, student discussion and behavior, and 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 only a portion of a lesson is observed, leaving some indicators unobserved and some portion of this tool blank.

Classroom observations are most effective when followed by a coaching conversation based on evidence collected during the observation. After discussing the observed lesson using this Coaching Tool as a support, use the Beyond the Lesson Discussion Guide to put the content of the lesson in the context of the broader instructional plan for the unit or year. The questions in the Beyond the Lesson Discussion Guide 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.

Companion tools for Instructional Practice include:

- Instructional Practice Guide: Coaching (Digital) - a digital version of this print tool, view at achievethecore.org/coaching-tool.
- Beyond the Lesson Discussion Guide - for post-observation conversations, view at achievethecore.org/beyondthelesson
- Instructional Practice Guide: Lesson Planning- to support teachers in creating lessons aligned to the CCSS, view at achievethecore.org/ lesson-planning-tool.

All tools are available at achievethecore.org/instructional-practice.

STUDENT ACHIEVEMENT PARTNERS

Name: Date: Observer Name:

CORE ACTION 1: Ensure the work of the lesson reflects the Shifts required by the CCSS for Mathematics.

INDICATORS / NOTE EVIDENCE OBSERVED OR GATHERED FOR EACH INDICATOR	RATING
A. The lesson focuses on the depth of course-level cluster(s), course-level content standard(s), or part(s) thereof.	Yes - The lesson focuses only on mathematics within the course-level standards and fully reflects the depth of the course-level cluster(s), course-level content standard(s), or part(s) thereof. No - The lesson focuses on mathematics outside the course-level standards or superficially reflects the course-level cluster(s), course-level content standard(s), or part(s) thereof.
B. The lesson intentionally relates new concepts to students' prior skills and knowledge.	Yes - The lesson explicitly builds on students' prior skills and knowledge and students articulate these connections. No - The lesson contains no meaningful connections to students' prior skills and knowledge.
C. The 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 this lesson: Conceptual understanding Procedural skill and fluency Application Yes - The lesson explicitly targets the aspect(s) of rigor called for by the standard(s) being addressed. No - The lesson targets aspects of rigor that are not appropriate for the standard(s) being addressed.

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

INDICATORS[2] / NOTE EVIDENCE OBSERVED OR GATHERED FOR EACH INDICATOR	RATING
A. The teacher makes the mathematics of the lesson explicit by using explanations, representations, tasks, and/or examples. The mathematics presented is clear and correct. ☐ NOT OBSERVED	4 - A variety of instructional techniques and examples are used to make the mathematics of the lesson clear and the teacher makes no serious mathematical errors. 3 - Examples are used to make the mathematics of the lesson clear. Any mathematical errors made by the teacher are minor and do not detract from the overall mathematical goals of the lesson. 2 - Instruction is limited to showing students how to get the answer or mathematical errors are made by the teacher that affect students' understanding of the lesson. 1 - Instruction is not focused on the mathematics of the lesson or serious mathematical errors are made by the teacher that impede students' understanding of the lesson.

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

Name: Date: Observer Name:

CONTINUED FROM PREVIOUS PAGE

INDICATORS[2] / NOTE EVIDENCE OBSERVED OR GATHERED FOR EACH INDICATOR	RATING
B. The teacher provides opportunities for all students to work with and practice course-level problems and exercises. ☐ NOT OBSERVED	4 - Students are given extensive opportunities to work with course-level problems and exercises. 3 - Students are given opportunities to work with course-level problems and exercises. 2 - Students are given limited opportunities to work with course-level problems and exercises. 1 - Students are not given opportunities to work with course-level problems and exercises.
C. The teacher strengthens all students' understanding of the content by strategically sharing a variety of students' representations and solution methods. ☐ NOT OBSERVED	4 - A variety of student solution methods are shared and examined together to support mathematical understanding for all students. 3 - Student solution methods are shared to support mathematical understanding for some students. 2 - Student solution methods are shared. 1 - Student solution methods are not shared.
D. The teacher deliberately checks for understanding throughout the lesson and adapts the lesson according to student understanding. ☐ NOT OBSERVED	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. 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. 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. 1 - There are no checks for understanding; therefore, no adjustments are made to instruction.
E. The teacher facilitates the summary of the mathematics with references to student work and discussion in order to reinforce the purpose of the lesson. ☐ NOT OBSERVED	4 - The lesson includes a summary with references to student work and discussion that reinforces the mathematics. 3 - The lesson includes a summary with a focus on the mathematics. 2 - The lesson includes a summary with limited focus on the mathematics. 1 - The lesson includes no summary of the mathematics.

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

Name: Date: Observer Name:

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

INDICATORS[4] [5] / 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.

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.	4 3 2 1 ☐ NOT OBSERVED
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.	4 3 2 1 ☐ NOT OBSERVED
C. The **teacher** establishes a classroom culture in which students explain their thinking. **Students** elaborate with a second sentence (spontaneously or prompted by the teacher or another student) to explain their thinking and connect it to their first sentence.	4 3 2 1 ☐ NOT OBSERVED
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.	4 3 2 1 ☐ NOT OBSERVED
E. The **teacher** connects and develops students' informal language to precise mathematical language appropriate to their course. **Students** use precise mathematical language in their explanations and discussions.	4 3 2 1 ☐ NOT OBSERVED
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.	4 3 2 1 ☐ NOT OBSERVED
G. The **teacher** asks students to explain and justify work and provides feedback that helps students revise initial work. **Student** work includes revisions, especially revised explanations and justifications.	4 3 2 1 ☐ NOT OBSERVED

3. 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.
4. Some portions adapted from 'Looking for Standards in the Mathematics Classroom' 5x8 card published by the Strategic Education Research Partnership (math.serpmedia.org/tools_5x8.html)
5. 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/principlestoactions

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 Coaching Tool (achievethecore.org/coaching-tool) 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 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

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

CLASSROOM ENVIRONMENT: CREATING A MATHEMATICALLY RICH ENVIRONMENT

In addition to the discussion between observer and teacher, be aware that the following environmental factors may also provide useful information.

- Are a variety of tools available for students to independently access (graph paper, manipulatives, rules, etc.)?
- Are all displays in the classroom free from mathematical errors (posters and bulletin boards, etc.)?