Secondary IPP: Middle School Math[[1]](#footnote-1)

The *Lesson Level Intellectual Preparation Protocol* ensures teachers have thought through the most critical aspects of planning for instruction, using the Achievement First lesson level resources provided for their relevant subject area. Teachers should intellectually prepare for each lesson they teach, following at a minimum, the steps listed below. This protocol and our network lesson level resources pair together such that a teacher can independently complete the steps below and submit their work to their coach for feedback (see the completed example to see how this looks).

The *Lesson Level Intellectual Preparation Protocol* is just one of a series of tools used at Achievement First to intellectually prepare for instruction. This protocol assumes teachers also engage in robust unit unpacking, lesson execution practice, and looking at student work as part of their regular weekly preparation and development.

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| **Step** | **Action:** |
| 1. Understand the concept and/or big ideas at play in the lesson and be able to articulate them clearly and crisply. | * Read the entire Lesson Plan and identify the key concepts/big ideas students need to understand. Create a **lesson summary** annotation that describes, in your own words, the purpose of the lesson (why), the key concepts students need to understand (big ideas/what), and how they will come to understand these within the lesson. |
| 1. Do the core tasks of the lesson to develop/refine exemplar work and clear CFS for anticipated strategies. | * Print the classwork and complete this step directly in the student packet for the TAI, INM/TTC problem (include exemplar annotations), and all GP/IP problems. |
| 1. Anticipate misconceptions and create questions/supports to address these misconceptions. | * For each core task, annotate to describe expected errors on the tasks and back pocket questions to respond to these errors * Identify the questions in the TAI debrief and INM/TTC that elicit the most important understandings and annotate with the following:   + The exemplar student responses   + 1-2 misconceptions or errors that could surface in response to these questions   + BPQs and/or the instructional strategy to address these misconceptions. |
| 1. Optional/As needed: Adjust the plan for any individualized AOTY or intellectual preparation goals. | * As determined with coach, you might:   + Script MVP directions into lesson plans   + Script in additional planned investment moves   + Create rapid & batched feedback forms to capture data   + Determine additional points for differentiation (especially for very high and very low performance during the lesson) * If you will meet in person to scrimmage this lesson, your coach may also ask you to submit a proposed practice objective and identify the lesson segment to practice. |
| **Submit annotated plans and any additional work as per IPP expectations in soft copy of LPs to your coach weekly (and at least 48 hours in advance of the IPP meeting). Implement any feedback from coach prior to the phase 2 meeting.** | |
| 1. Rehearse and Refine:    1. Meet with coach to further internalize and practice executing the plan.    2. Refine plan as needed based on practice and/or student exit ticket data.    3. If possible, prior to teaching the day of, analyze student work from TAI administered at end of CR block; select S work to show call to drive TAI debrief discussion to land Fence Posts and key point. | |

Supporting Intellectual Preparation in Planning & Execution - Math

In order to be prepared for delivering excellent daily instruction, we at AF believe that our teachers must deeply understand the lesson plan and rehearse key components of the lesson in preparation to execute. We recognize that our teachers enter their roles at AF with varying degrees of content knowledge and levels of planning capabilities. With that, the protocol below is meant to be used in a manner that allows for the coach to meet her/his teachers at their appropriate level to drive their intellectual preparation and execution further faster.

*Guidance for using the Intellection Preparation Protocol in coaching*

During Summer PD, all of our teachers should develop or strengthen intellectual preparation skills. Teachers should be able to complete phase 1 independently and submit for feedback or bring to the phase 2 meeting. However, some teachers-especially those new to the content area- may need to complete phase 1 with the coach. If this is the case, the execution practice time may be adjusted to create more time for supported phase 1 work. Thus, the recommended duration of the protocol is 30-35 minutes with varying amounts of pre-work depending on the teacher’s current skill level.

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| **Phase #** | **Description** | **Agenda** | **Teacher Pre-Work** | **Coach Pre-work** |
| 1  Building a content base and planning for practice  (Pre-work for meeting)  Est time for teacher and coach: 20- 35 min | Steps 1-4 of IPP cover sheet. During this phase, teachers develop an understanding of the math by completing Intellectual Preparation Cover Sheet and any additional preparation recommendations outlined that are specific to the plan or aligned to current coaching goals. | * T submits Phase 1 Intellectual Prep pre-work for **all** of next week’s lessons by Lesson Plan submission deadline. * *Coaches select LP for IPP meeting and provides feedback on additional lessons.* * Coach schedules IPP meeting for selected lesson 48 hours before it is taught. | * Lesson plan with required IPP cover sheet and exemplar work. * (*If applicable*) Review coach’s feedback on pre-work and make necessary revisions. * Bring all IPP deliverables to meeting. | * Complete back pocket intellectual preparation for the lesson. * Review teacher’s deliverables and plan IPP meeting to target high leverage portions of the plan and any gaps in teacher understanding. |
| 2  Lesson Internalization and Practice  30 – 35 min. | Step 5 of IPP cover sheet.  In this phase, the coach facilitates the IPP meeting, which is focused on ensuring he teacher has ample opportunities to internalize his or her intellectual understanding of the plan and practice execution of a high-impact lesson segment. | * (See IPP Meeting Agenda) * LP Internalization. * Practice. Feedback. Redo. * Synthesis and capturing of any notes for lesson plan. | * Teacher comes prepared to meeting with all phase 1 work in hand and any data points needed to ground decisions about modifications to the plan. | Coach comes prepared with the following:   * Plan for meeting that includes back pocket guide for ensuring teacher’s LP internalization is strong. and practice is effective. * Any necessary supporting materials (or a planned model) to ensure strong VoE for practice. |

MS Math IPP Meeting – Goals and Agenda

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| **Objectives and CFS**   * ***The goal of the IPP meeting is for the teacher to deeply understand the content he or she is about to teach, how the lesson results in students understanding that content, and to prepare to teach it through successful practice. Each component of the meeting has its own purpose in driving toward this outcome.*** | | |
| *As a result of lesson internalization, the TWBAT clearly the big ideas of the plan, how they are developed, and how s/he will proactively address and respond to anticipated misconceptions.*  Priority CFS for coach:   * + - Zoom in on high leverage portions of the plan.     - Target teacher gaps in intellectual preparation based on pre-work to maximize time for practice.     - Hold out for “right is right” responses proving high level of clarity and internalization before moving on.     - Keep the heavy lifting on the teacher/intervene when necessary to keep the meeting moving. | | *As a result of practice, the TWBAT execute a high leverage portion of the plan comfortably and with fidelity to the content and intended outcomes of that segment.*  Priority CFS for coach:   * + - Select a high-impact portion of the lesson to practice.     - Select a high leverage, bite-sized action step that is linked to the teacher’s PD goals.     - Define excellence/CFS prior to practice (this might require modeling).     - Align feedback to CFS.     - Affirm and encode success/Lock it in.     - Plan for follow-up. |
| **Agenda for Coach and Teacher IPP Meeting** | | |
| **Part 1. Lesson Internalization (15-25 min, assuming coach has reviewed the Ts IPP pre-work in advance; may be shorter if T pre-work is strong (with more time allotted to practice).** | | |
| **1-2 min** | **Feedback/Frame:** Coach may acknowledge quality of teacher pre-work and/or provide minor feedback in addition to setting the goals and agenda of the meeting. | |
| **4-7 min** | **Outcomes and Big Ideas:** Coach guides teacher to be able to precisely and comfortably articulate the following using pre-planned questions.   1. Big ideas    * + Name and interpret the conjecture, fence-posts, and any other critical understandings in the lesson 2. Rigor bar    * + Define rigorous student outputs for this lesson via the exemplars for high-leverage tasks.      + Identify the richest opportunities for rigor in the lesson (i.e. in practice and/or discussion) | |
| **10-15 min** | **Internalizing the Plan:** Coach guides teacher to internalize the questions and tasks that drive student learning the most and plan for anticipated student responses.  *Note - Based on coach’s review of teacher pre-work, the coach will have pre-identified any misconceptions or incomplete understandings in the teacher’s plan and will target these with probing questions. This section may be shorter/longer (or even non-existent) depending on the strength of the teacher’s pre-work.*   * Identifying key questions leading to the most important student understandings in the plan and adding any necessary additional exemplar responses, BPQs, etc… * Identifying and planning for pre-identified skill/knowledge gaps that will prevent success with high leverage tasks. | |
| **Part 2. Practice (13-18 min)** | | |
| **2 min** | **Frame:** Coach sets the goal for practice, name the portion of the plan to practice and why, and communicate CFS (provide model if needed using See-It/Name-it). | |
| **10-15 min** | **Practice and Feedback**   * T scrimmage segment using pre-planned questions, Coach plays student * Coach provides feedback and focus for redo * T implements feedback * T encodes success | |
| **1-2 min** | **Synthesis:** Coach ensures that teacher can synthesize the key take-away from practice, names any next steps, and makes adjustments to LP as needed. | |

Coaching Resource: Sample Stock Questions / Scripts for Lesson Internalization

Purpose: This sample script can be a helpful tool for coaches looking for an efficient or consistent base of questions to start planning any meeting from. It is not intended to be a script to follow and use verbatim, but rather a sample, as coaches will always plan a meeting that is tailored according to the lesson and the teacher’s submitted pre-work. When planning and deciding what to ask/what to target, the coach must determine which tasks and questions are highest impact for this lesson, where to speed up and slow down with the teachers, etc… and tailor the meeting based on strengths and gaps in the teacher’s pre-submitted IPP for the lesson. It also does not include the most important part of the coach’s planning, which is having the right is right responses to the planned questions back pocket.

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| ***Start w/ the end in mind***   * Start with the purpose and end goal of the lesson (i.e., the big ideas of the lesson, the exit ticket questions, etc). * Identify the rigor bar and internalize/pressure test exemplars | I chose this plan for us today because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (i.e. I think this lesson could be really rich and rigorous, but requires extra preparation to prevent you from taking on a lot of the heavy lifting or teaching in a way that has students completing activities without doing important thinking work. Let’s get started).  Let’s refine your lesson summary. What is the purpose of this lesson? Why does it exist at this point in the unit? What big ideas do students need to understand along the way?  Walk me through your TAI and INM exemplars. What CFS are not met in the work you created? How would you revise the exemplar work or the CFS listed?  What will make this lesson rigorous for students? In other words, what is the critical heavy lifting?  In the IP, identify 1-2 questions that all students should tackle in order to practice at the right bar. |
| ***Internalize the lesson content and plan***   * Develop and refine (a) high-leverage part(s) of the lesson by adding any needed additional key questions/BPQs/exemplar responses * Identifying and planning for misconceptions or pre-identified skill/knowledge gaps | Let’s zoom in on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to ensure we are prepared to maximize the time. (i.e. TAI and debrief discussion).  How does the S work being show called illuminate the fencepost/KP?  What additional misconceptions might appear in student work?  What can you do if students are completely stuck?  Articulate the broad questions in your debrief that lead to the key point one at a time, and the exemplar response for each from memory (push for internalization here).   * What do you anticipate students will actually say here, and why? Let’s note that as another anticipated misconception. * How will you respond/what BPQ could you use? Will that get students all the way to the exemplar?   Let’s zoom in on the INM problem.  How does this problem reinforce the key point/illuminate the math?  Where will you need to provide more support and guidance? Why (based on data)?  Where can you plan to release students to partner or independent work more quickly (based on data)?  Look at this broad question. What misconceptions might come up here? How will you respond? |
| *Practice*   * Plan for and execute a high leverage part of the lesson while strengthening a teacher skill | In execution, you are working on \_\_\_\_\_\_. (i.e. Executing on each of the broad questions planned, while adjusting for student responses.) Today you will apply these skills in the \_\_\_\_\_\_\_\_\_\_ ( i.e. debrief of the opening that we just discussed).  Your objective is to \_\_\_\_\_\_\_\_. (i.e. effectively respond to student responses with back-pocket questions.).  *[Note- Coaches may also refer to See It –Name It-Do It Sample Scripts/CFS in coaching tools for planning effective practice]*  Watch as I do this now and be prepared to name what makes this effective.  So this will look like 1) Starting with the broad questions in the plan as written or with very little modification and 2) Using back pocket questions only when needed and in a way that returns the lift to the students as quickly as possible.  What will you have in hand /in your set up to \_\_\_\_\_\_\_\_\_ (i.e. ensure you nail the broad questions?) (i.e. Ensure T has a method for executing- plan in hand, notecards, etc.)  In the first round, I’ll let you internalize your questions and exemplars once more by providing you exemplar responses. Please execute as if- planting any directions or engagement moves you would use.  *T execute. Provide feedback on alignment to pre-planned broad questions. If T is heavily reliant on script, consider repeating this round.*  In the next round, I’ll be providing some incorrect and incomplete responses. [Chosen from the IPP product]. Your CFS for using BPQ’s are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  *T execute. Provide feedback. Repeat/Encode success.*  What is your take-away from practice?  What is your next step in planning and execution?  When I review your plans and observe next, I will look for \_\_\_\_\_\_\_\_\_\_\_\_\_\_.  What will it look like to be doing that well? |

Opening and TTC Sub-skill Feedback Cheat-sheets

Purpose: Based on the segment of the lesson you’ve chosen to focus on in practice, you may be looking to further isolate specific skills in that segment, such as Hunt/Show Call. The feedback cheat-sheets available here are a tool for communicating clear and consistent CFS and an aide in identifying gaps in teacher delivery for high-impact practice.

*Conjecture/Exercise-based Lesson Opening* │ Feedback Cheat Sheet

**Priority Points (focus on the mastery of these points first):**

1. Teachers are effectively landing the Fence Posts & Conjecture/Key Point
2. Teachers are effectively using funneled questioning.

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|  | **Constructive Feedback (“Next time try…”)** |
| **Alignment to Structure** | * Structure of delivery aligns to the FOI/ lesson plan:   + T provides directions for completing the TAI   + T circulates and collects data in tracker to inform debrief   + T show calls S work w/pre-identified strategies and misconceptions   + T asks Ss to analyze, TT and vote on work   + T asks broad and back pocket questions to drive to fencepost(s)   + T asks synthesis question and engages Ss in forming lesson’s conjecture/key point w/TT or EW   + T clearly states and posts the day’s conjecture/key point |
| **Landing the Fence Posts & Conjecture or Key Point** | * Using synthesis questions to prompt students to come up with fence posts and conjecture or key point * Re-voicing fencepost, key point or conjecture to establish importance and clarity   + Pausing and saying, “That brings us to our first key idea…”   + Pausing, saying, “What \_\_\_\_\_\_\_\_\_ just said is extremely important and is our first key idea.” Then, cold call another student to re-voice   + Revealing or writing the fence posts and conjecture, and having students write it in their notes |
| **Funneled Questioning** | Funneled questioning is used to lead the discourse to the desired exemplar responses:   * Starting with broad questions to increase student heavy lifting   + E.g. *Show call student work.* Do you agree with this student work? Why? * Using a probing question when a student gives a partial answer   + E.g. Probing Q: “Can you be more specific about what you meant when you said \_\_\_\_\_\_\_\_\_\_? Why? How do you know?” * Using a Back Pocket Question that is slightly narrower in focus when a student gives an incorrect answer or does not hit upon important part of the anticipated exemplar   + E.g. Broad Q: “What similarities do you notice about the shapes?”   BPQ: “How are the *angles* of the shapes similar?” |
| **Arriving at a testable conjecture** | Conjecture may be correct or incorrect but is testable.[[2]](#footnote-2)   * When conjecture is not testable … * Asking the class to turn and talk to discuss the strength of the conjecture and hunt for a correct conjecture. * When the conjecture is incorrect but testable … * Asking the class to vote on the conjecture. Then, land the conjecture and test and revise it during the Test the Conjecture portion of the lesson. |
| **Pacing and Engagement** | * Allocate more time to discussing key questions and less time to less important questions * Pre-chart student work to engage students in discourse * Pre-chart Fence posts and Conjecture/Key Point to reveal more efficiently * *Hunt, don’t fish* during TTs and EWs to identify students to call on * Use economical, non-leading prompts to reinforce Habits of Discussion, e.g. “Build” * Land the Conjecture or Key Point in 10 minutes or less |

*Testing the Conjecture* │ Feedback Cheat Sheet

**Priority Points (focus on the mastery of these points first):**

* + - 1. Teachers are effectively aligning questions to universal prompts to test and stamp the conjecture
      2. Teachers are effectively using BPQs to respond to partial and incorrect answers

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|  | **Constructive Feedback (“Next time try…”)** |
| **Alignment to Structure** | * Structure of delivery aligns to the FOI / lesson plan:   + Writes and states conjecture and says that the class will apply it to 1-2 problems   + Uses universal prompts to engage students in problem(s)   + Asks Ss to synthesize whether or not the conjecture holds true   + Exemplar work and CFS are created and visible for Ss. |
| **Funneled Questioning** | Universal Prompts and Funneled questioning is used to lead students through testing and stamping the conjecture.   * Starting with few, broad questions aligned to universal prompts   1. “If our conjecture holds true, what must we be able to do?”   2. “What is the question asking us to do?”   3. “How can we apply our conjecture to solve the problem?”   4. “How can we prove that our conjecture worked?”   5. “So far, does our conjecture hold up?”   6. *As needed* “How should we revise our conjecture to make it true?”   7. “Given the work that we did on our two example problems, does our conjecture hold up so far?” * Use a probing or back-pocket question that is narrower in focus to respond to partial or incorrect responses   1. E.g. Probing Q: “Can you be more specific about what you meant when you said \_\_\_\_\_\_\_\_\_\_? Why? How do you know?”   2. E.g. Broad Q: “How can we apply our conjecture to solve the problem?”   BPQ: “What will be true about the quotient if our conjecture is true?” |
| **Building an Exemplar** | Students and teacher build an exemplar together that reflects high quality work and the CFS for the day’s lesson. Students have this in their handouts when TTC is complete.   * Pre-planning your exemplar work to ensure it meets the CFS for the day’s lesson and models the organization you want from students * Prompting students to make more meaningful annotations by attaching a margin note to what they underlined * Prompting students to label parts/steps in the work to indicate what they represent * Linking each CFS to the work to explicitly communicate to students |
| **Pacing and Engagement** | * 80% of time is student voice and work time * Varying engagement with all hands, T & T, Cold call, polling, Everybody writes * Prompting multiple students of varying levels (H, M, L) * Using economical, non-leading prompts to reinforce Habits of Discussion, e.g. “Build” * Strategically releasing students to bursts of partner or independent work throughout * Show calling S work to engage students any time after releasing students to work * Completing 1-2 example problems and stamp the conjecture in 10 minutes or less |

1. Updated for 17-18 [↑](#footnote-ref-1)
2. Here, an “untestable” conjecture is typically one that is either too different from the target conjecture, has too many parts to be efficiently tested or is not aligned to the problems in the TTC section. [↑](#footnote-ref-2)