



PROBLEM INTRODUCTION PROTOCOL

Purpose: Create access for every student to make sense of a written word problem and increase engagement in problem solving.

- **Read the problem two times. First the teacher reads the problem, and then the students and teacher read chorally.**

All students and the teacher read the problem together. Reading the problem together supports all learners, especially those who have difficulty reading the problem or those students whose first language is not English. This step can be repeated to ensure that all students have heard the problem.

- **Say, “Name a word that might be tricky for someone.”**

This allows students to build a shared understanding around the context of the problem. This is a chance to clarify any misconceptions around language or unfamiliar contexts so that all learners have a common understanding of the terminology.

- **Ask, “What are we trying to figure out?”**

Following a class discussion where students make sense of the problem, teachers record the answer to the question, “What are we trying to figure out?”. Students can write or copy the statement on their papers.

The goal of this step is that every student can say, “I am trying to figure out ____.”

- **Ask, “What would an answer to that look like?”**

The teacher listens for the correct unit and reasonable answers. If those are not given then the teacher will ask direct questions “What is the unit (label) for your answer?” “What would a reasonable answer be?” “What would be an unreasonable answer?” Additional prompts can include: “Could it be ____?” “Is it more/less than ____?”

- **Brainstorm strategies**

“How could you solve this problem?” “What strategy could you use?” The teacher is listening for strategies and models and asks direct questions if needed. Students share strategies that can be used to solve the problem. These strategies are all recorded and not evaluated. The teacher restates each strategy while writing them on the board. This list can be referenced if any student is having difficulty getting started. Reminder: Do not narrow the list of strategies before students go off to work! This step may identify students you’d like to check in with during work time to ask questions.



ADDITIONAL STRATEGIES FOR INTRODUCING MATH PROBLEMS

We strongly recommend that you frequently incorporate one or more of the instructional strategies listed below with the Problem Introduction Protocol.

Encourage students to close their eyes and “imagine the story”

Similar to retelling, this helps students visualize the context.

Encourage students to act out or retell the story

You can do this in partner pairs, small groups, or in the whole group.

Ask students to draw a picture of the problem context

This helps students make an abstract context more visual or concrete.

Start with Notice/Wonder

Show the students the problem (could be a written problem or visual image) and ask students, “*What do you notice? What do you wonder?*” This helps prime students for making sense of the problem context.

Leave off the question

Share a problem context (story, facts, image) with the question removed or covered up. Ask students, “*What questions could we ask based on this story?*” Collect (or chart) student responses to support engagement and sense making. Teachers will then find there are many questions for later differentiation/extensions.

Leave out the numbers

Put blanks or boxes where the numbers would be. After students have made sense of the context of the problem, reveal the numbers. This allows students to make sense of the context of the problem context without the distraction of the numbers.