Studying students' thinking that result from engaging with Math Milestones ™ tasks provide rich learning opportunities for educators. It fosters conversations about how students may engage in grade-level mathematics, about how to see the assets in students' thinking, and about how those assets can be lifted to build grade-level understanding in a way that makes learning joyful and affirming.

The instructional routines have shown to be helpful for launching Math Milestones ™ tasks with students. They intend to introduce the task and support students' entry into the task while still positioning students as thinkers and doers of mathematics. Each routine is named below, followed by a description of types of tasks/questions where it is most useful. Clicking the hyperlink name will take you to a more in-depth description of how to facilitate the launch routine to support learning for your students.

Suggested Options for Launch Routines *(resource)*

Below is a suggested list of four launch routines to support teachers in their facilitation of student discourse in math classrooms. We encourage you to explore these options, as well as any others you may choose to incorporate to best plan for Math Milestones™ task implementation.

*Use **MLR2: Collect and Display** for tasks where review of different computation methods may be helpful.*

*Use **MLR5: Co-Craft Questions and Problems** for tasks where unpacking situations and/or context may be helpful.*

*Use **MLR6: Three Reads** for tasks where identifying the context and question of a world problem may be helpful to the whole class.*

*Use **Think - Pair - Share** for tasks where students have access to making sense of the problem without prompting.*

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Collect and display will allow for students to practice oral explanation of mathematical ideas to be displayed by the instructor in a clear and concise manner.

Mathematical Language Routine 2: Collect and Display

(*video*)

Example – Number Talks (Humphreys & Parker, 2015)

1. INDEPENDENT THINK: Present students with a numeracy problem to be solved without paper for 1-2 minutes

2. WHOLE CLASS SHARE-OUT: Have students share the method or strategy they used to arrive at an answer

3. DISPLAY STUDENT IDEAS: As students share their strategies, create a visual display for each of their methods or have students create their own

4. ASK PROBING QUESTIONS: Ask students to compare and contrast the displayed methods, the benefits and drawbacks of displayed methods in different contexts, and/or to apply a certain student's method to a new problem

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Co-Craft Questions will allow for students to think critically about what math questions are appropriate given different pieces of starting information.

Mathematical Language Routine 5: Co-Craft Questions and Problems

(video)

Example – Co-Craft Questions

1. PRESENT SITUATION: Teacher presents a situation – a context or a stem for a problem, with or without values included. (Example: A bird is flying at 30 mph)

2. STUDENTS WRITE: Students write down possible mathematical questions that might be asked about the situation. These should be questions that they think are answerable by doing math. They can also be questions about the situation, information that might be missing, and even about assumptions that they think are important. (1-2 minutes)

3. PAIRS COMPARE: In pairs, students compare their questions. (1-2 minutes)

4. STUDENTS SHARE: Students are invited to share their questions, with some brief discussion. (2-3 minutes)

5. REVEAL QUESTIONS: The actual questions students are expected to work on are revealed, and students are set to work.

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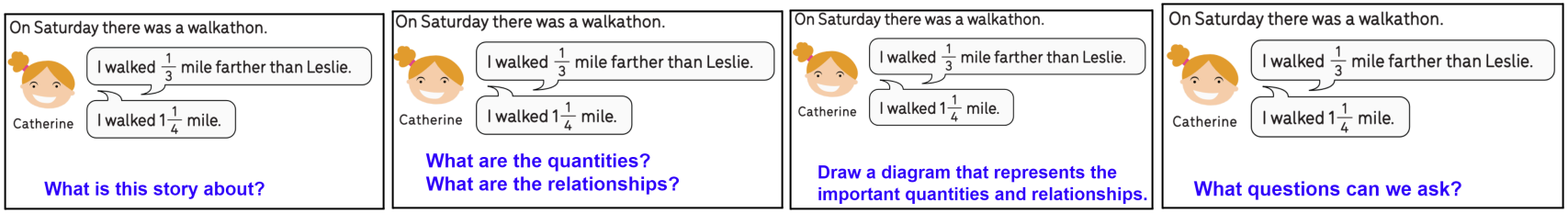
Three Reads will allow students to attend to close reading of a math world problem, identify and explain key pieces of information, and practice oral explanation of mathematical ideas.

Mathematical Language Routine 6: Three Reads

(video 1) (video 2)

Example 1 - Students are supported in reading a situation/problem three times, each time with a particular focus:
1. Students read the situation with the goal of comprehending the text (describe the situation without using numbers),
2. Students read the situation with the goal of analyzing the language used to present the mathematical structure.
3. Students read the situation in order to brainstorm possible mathematical solution methods.

Example 2 - Co-Craft Questions is incorporated into Three Reads



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Think Pair Share will allow students to practice productive struggle collaboratively as they discuss, ask questions about, and make sense of a math idea in a short time span.

Think - Pair - Whole Class Share

(video)

1. *INDIVIDUAL THINK TIME: Teacher gives students the task with explicit written directions to work on it for 5-10 minutes individually. Students should be encouraged to use whatever strategies that come to mind. Teachers can suggest for students to write about what they DO understand and draft clarifying questions for areas where they may feel "stuck."*

2. *PAIR / TABLE TIME: Teacher will prompt students to continue working in pairs for 5-10 minutes to review the work they have so far, discuss any clarifying questions, and work together to complete the remainder of the task. Teachers may support the class with sentence structures on how to discuss work in a group.*
    a. *"This problem reminded me of _____. So I decided to _____."*
    b. *"I wasn't sure about _____. I need help with understanding _____."*
    c. *"For this problem ___ I got _____. I got this answer because I _____."*
    d. *(a sentence stem that flips the task's question so that responses are grounded in the context of the task. For example, such a sentence stem for 8:1 Xavier's Notes might sound like "It will take Xavier___ to finish summarizing ____."*

3. *WHOLE CLASS SHARE: Teacher facilitates class share out of, "What do students know/understand?" "What is the problem asking?" "What do students need to find/solve?" (5-10 minutes)*

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