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# Illustrative Mathematics®

## LEARN MATH FOR LIFE

[◀ Back](#)

### IM Curriculum

[About These Materials](#)[Design Principles](#)[A Typical IM Lesson](#)[How to Use the Materials](#)[Information for Families](#)[Key Structures in This Course](#)[Mathematical Language Development and Access for English Learners](#)[Universal Design for Learning and Access for Students with Disabilities](#)[Learning Goals](#)[How to Assess Progress](#)[Pre-Unit Practice Problems](#)[Cool-Downs](#)[Summative Assessments](#)

### A Typical IM Lesson

A typical lesson has four phases:

1. a warm-up
2. one or more instructional activities
3. the lesson synthesis
4. a cool-down

In kindergarten, most lessons do not include cool-downs. During these lessons, checkpoints are used to formatively assess understanding of the lesson. Since activities are shorter, each lesson includes 15–25 minutes of time for centers.

In grade 1, some lessons do not have cool-downs. During these lessons, checkpoints are used to formatively assess understanding of the lesson.

A note about optional activities: A relatively small number of activities throughout the course have been marked "optional." Some common reasons an activity might be optional include:

[Skip to main content](#)

- The activity addresses a concept or skill that goes beyond the requirements of a standard. The activity is nice to do if there is time, but students won't miss anything important if the activity is skipped.
- The activity provides an opportunity for additional practice on a concept or skill that we know many students (but not necessarily all students) need. Teachers should use their judgment about whether class time is needed for such an activity.

#### Warm-up

The first event in every lesson is a warm-up. Every warm-up is an instructional routine. The warm-up invites all students to engage in the mathematics of each lesson. The warm-ups provide opportunities for students to bring their personal experiences as well as their mathematical knowledge to problems and discussions. They place

value on students' voices as they communicate their developing ideas, ask questions, justify their responses, and critique the reasoning of others.

A warm-up either:

- helps students get ready for the day's lesson, or
- gives students an opportunity to strengthen their number sense or procedural fluency

A warm-up that helps students get ready for today's lesson might serve to remind them of a context they have seen before, get them thinking about where the previous lesson left off, or preview a context or idea that will come up in the lesson so that it doesn't get in the way of learning new mathematics.

A warm-up that is meant to strengthen number sense or procedural fluency asks students to do mental arithmetic or reason numerically or algebraically. It gives them a chance to make deeper connections or become more flexible in their thinking.

In addition to the mathematical purposes, these routines serve the additional purpose of strengthening students' skills in listening and speaking about mathematics.

Once students and teachers become used to the routine, warm-ups should take 5–10 minutes. If warm-ups frequently take much longer than that, the teacher should work on concrete moves to more efficiently accomplish the goal of the warm-up.

At the beginning of the year, consider establishing a small, discreet hand signal students can display to indicate they have an answer they can support with reasoning. This signal could be a thumbs up, or students could show the number of fingers that indicates the number of responses they have for the problem. This is a quick way to see if students have had enough time to think about the problem and keep them from being distracted or rushed by classmates' raised hands.

### **Instructional Activities**

After the warm-up, lessons consist of a sequence of one to three instructional activities. The activities are the heart of the mathematical experience and make up the majority of the time spent in class.

An activity can serve one or more of many purposes.

- Provide experience with a new context.
- Introduce a new concept and associated language.
- Introduce a new representation.
- Formalize a definition of a term for an idea previously encountered informally.
- Identify and resolve common mistakes and misconceptions that people make.
- Practice using mathematical language.
- Work toward mastery of a concept or procedure.
- Provide an opportunity to apply mathematics to a modeling or other application problem.

The purpose of each activity is described in its narrative. Read more about how activities serve these different purposes in the section on design principles.

### **Lesson Synthesis**

After the activities for the day are done, students should take time to synthesize what they have learned. This portion of class should take 5–10 minutes before students start working on the cool-down. Each lesson includes a lesson synthesis that assists the teacher with ways to help students incorporate new insights gained during the activities into their big-picture understanding. Teachers can use this time in any number of ways, including posing questions verbally and calling on volunteers to respond, asking students to respond to prompts in a written journal, asking students to add on to a graphic organizer or concept map, or adding a new component to a persistent display like a word wall.

## Cool-down

The cool-down task is to be given to students at the end of the lesson. Students are meant to work on the cool-down for about 5 minutes independently and turn it in. The cool-down serves as a brief formative assessment to determine whether students understood the lesson. Students' responses to the cool-down can be used to make adjustments to further instruction.

The response to student thinking provides guidance on how teachers might make adjustments based on specific student responses to a cool-down. Next day supports, such as providing students access to specific manipulatives or having students discuss their reasoning with a partner, are recommended for cool-down responses that should be addressed while continuing on to the next lesson. Teachers are directed to appropriate prior grade-level support for cool-down responses that may need more attention.

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  - [Grades 6-8](#)
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