# **Remote Learning in Secondary Mathematics**

Using remote learning, additional challenges arise in maintaining student learning in mathematics and supporting opportunities for collaborative mathematical sense-making for students. This document outlines an example of an instructional sequence that may help educators to plan and facilitate coherent learning opportunities that support two-way communication between teacher and student and between students, and can be implemented over a flexible timeline.

We recommended that during remote learning, educators focus on those standards that are the most [critical prerequisites](http://www.doe.mass.edu/covid19/learn-at-home/secondary-prerequisite.docx) for success in the next grade.

# **Remote Learning: Top Tips**

1. **Align** learningto the [MA Curriculum Framework standards](http://www.doe.mass.edu/frameworks/search/). Students should apply the [Standards for Mathematical Practice](http://www.doe.mass.edu/stem/math/?section=resources#resources) (SMPs).
2. **Keep it simple.** Prioritize learning experiences that are simple to explain and to organize, and that students can complete with less adult support.
3. **Make it engaging**. Prioritize topics and tasks that will interest students. Consider how to build upon students’ home languages, experiences, and identities, within learning experiences and over time.
4. **Attend to access and equity.** Provide all academic, language, and social-emotional supports that students normally need or receive to the extent possible. Provide multiple modes of access and response to academic work, including for students who lack access to technology.
5. **Provide pacing and structure.** Each week, provide students a structure for the week and a plan for how much time they should spend on various activities and tasks.

***Planning considerations:***

1. Start by adapting activities in your curricular materials for engaging remote learning. Plan ways for students to apply the [Standards for Mathematical Practice](http://www.doe.mass.edu/stem/math/?section=resources#resources) (SMPs).
2. Consider supplementing with a variety of types of tasks, including critical analysis (such as [*Which one doesn’t belong*](http://wodb.ca/))*,* inquiry based activities (such as [*3-Act Math Task*](https://docs.google.com/spreadsheets/u/0/d/1jXSt_CoDzyDFeJimZxnhgwOVsWkTQEsfqouLWNNC6Z4/pub?output=html))*,* or interactive technology (such as [Desmos activities](https://teacher.desmos.com/)). For example: cooking → proportional reasoning; home improvement → measurement; exercise → data collection/analysis; making a math-based argument/recommendation (e.g. defend a recommendation to increase bus routes, longer hours at the library, or adding solar panels to the school).
3. Prepare scaffolds, accommodations, modifications, and/or language supports for students who typically need these supports in mathematics.
4. Students should have the opportunity to both turn in their work, receive feedback, and debate their thinking with other students. Plan for communication during and after student work.

***Facilitating remote learning:***

1. Assign project/task. Support how students will complete the assignment, share and discuss their thinking, and get feedback and help.
   * Online (independent) approaches: Post a video for students; utilize shared online docs for students to record their thinking or as a space for students to post pictures of their work; students create individual posts and responses.
   * Online (guided) approaches: Host a video chat for small groups of students to work through parts of the task together; provide feedback in real time on shared online documents; utilize email.
   * Offline approaches: Provide a journal/notebook template for long-term compilation and reflection; speak with students on the phone; provide a call-in number for students to leave voicemail questions and feedback.
2. Students turn in their work, receive feedback, and debate their thinking with other students.

* Include student choice among multiple modes of representation and with varying access to technology to increase engagement and accessibility.

1. Debrief assignment and instruction by bringing students back together for feedback and discussion. Based on your assessment of how students engaged with the math project/task, determine how to wrap-up, clarify content, and make a decision on how/when to progress to the next project/task.

* Online approaches: Host a real-time video chat, provide feedback on shared online documents, send follow-up questions/prompts to push student thinking and ask students to respond on a shared doc or in online chat features.
* Offline approaches: Students record in journal/notebook. Provide a call-in number for students to leave voice messages, questions, or feedback.