MISSION 13 Remix	Time: 60-120 minutes

Overview:

This remix will allow students to use their creativity to create their own project. They will use concepts from mission 3 through mission 13. They will create a program that incorporates loops, functions, graphics, button presses, if statements, variables, and output such as images, lights or sound.

Cross Curricular:

- **MATH:** Multiplication, or finding area, is similar to nested for loops with addition. Show the math behind multiplication by using nested for loops.
- **SCIENCE:** This mission discusses sounds by using a frequency. Have a lesson about sound and pitch or frequently. Try out the concepts on the CodeX in a program.
- **FINE ARTS:** Have students use a grid to design a user-friendly graphical interface for an app prototype.
- **LANGUAGE ARTS:** Have students write about how a for loop (and nested for loops) work. Or students can write a compare and contrast essay on blocking and non-blocking functions.
- Supports **language arts** through peer review and reflection writing.

Materials Included in the learning portal Teacher Resources:

Mission 13 Remix Slidedeck

The slide deck is for teacher-led instructions that let you guide students through completing a remix using the slides. There are no instructions for a remix in CodeSpace. The slides give instructions, with simplified language that is chunked into small sections at a time. The information is shown on slides with “Step #”. The tasks to complete are on slides with “Do This''.

Mission 13 Remix Workbook

The workbook can be used instead of slides for student-led or independent work. It is an alternative to the slide deck, with simplified language that is chunked into small sections at a time. Each step is on its own page. The tasks to complete are labeled “DO THIS” and have a robot icon next to it.

Mission 13 Remix Log

This remix log is the worksheet for students to complete as they work through the remix. It should be printed and given to each student at the beginning of the lesson. They write on the remix log during the assignment and turn it in at the completion of the remix. It can also be completed as a digital document.

Additional Resources:

- Kahoot Review (Objectives 1-6)
- Kahoot Review (Objectives 7-11)

Formative Assessment Ideas:

- Remix log completion
- Completed program
- Gallery walk
- Kahoot Reviews (see links to the left)
- Student Reflection

Preparing for the lesson:

Students will use the Codex throughout the lesson. Decide if they will work in pairs or individually.

- Look through the slide deck and workbook. Decide what materials you want to use for presenting the lesson.

The slide deck can be projected on a large screen. The workbook (if used) can be printed or remain digital through your LMS or Google.

- Be familiar with the Remix Log (assignment) and the questions they will answer.
- Print a copy of the Remix Log for each student, or prepare for it digitally.

Lesson Tips and Tricks:

💡 **Teaching tip:**

You can use a variety of discussion strategies to get the most engagement from your students. For example, you can have students write their answers before asking anyone for an answer. You can use one of many think-pair-share methods. You can have students write their answer and share with someone, and then have other students share answers they heard from their peers. You can randomly select students to answer.

👫 Pre-Remix Discussion: Slide 2 (slides), Page 1 (workbook)

There is one question. Students can write in their log first and then share, or discuss first and then write in their log. The purpose of the pre-remix question is to get students thinking about remix possibilities.

- Mission 13 introduced non-blocking sound functions and a graphical user interface. Think back to the previous missions. Are there any you would like to make a graphical user interface for, or use non-blocking sound functions?

💻 Remix Project: Slides 3-4, Page 2

These slides and pages discuss the benefits of creating a remix.

💻 Remix Steps:

The remix is organized into 5 steps. Each step has a corresponding section on their log assignment. After every mission, there will be a remix opportunity, and each remix will go through the same five steps. This follows the design process used in many career fields.

- Each student will complete a Remix Log.
- Students can work in pairs through the lesson, or can work individually.
- Students will need the CodeX and USB cable, and optionally, 4 AAA batteries.

💡 **Teaching tip: Step #1 -- Review projects and concepts** (slide 5, page 3)

Students open their program from the last mission and review what the program does and the concepts they learned and used. They fill out the information on their log. Take your time on this part. Let the students discuss or share their answers. OPTION: Review other missions as well; it could help the students with their creativity.

💡 **Teaching tip:Step #2 -- Brainstorm** (slides 6-10, pages 4-5)

Students brainstorm their remix project. Six suggestions for a remix are given: two mild, two medium, and two spicy. They can choose any of these, or come up with their own ideas. They can combine ideas from the suggestions to make their own, as well. They will write about their idea in the log assignment.

💡 **Teaching tip: Step #3 -- Make a plan** (slide 11, page 6)

Students plan the variables they need, graphics and/or sounds, functions, and the buttons they will write code for. Not all of these are required, but space is provided just in case. Students don't always want to plan, or see

the value of planning, but it really will help them code the project. Emphasize this with the students, that this is an important part of the design process.

💡 **Teaching tip: Step #4 -- Code your project** (slides 12-13, page 7)

Students start a new project in CodeSpace. There isn't a mission for the remix, so students will use the sandbox. The icon for the sandbox is in the lower right-hand corner above the toolbox. Students should write just a few lines of code at a time and test frequently. They can use their code from any mission or remix, as well as the instructions from any of the missions or this lesson. They don't have to have anything memorized.

💡 **Teaching tip: Step #5 -- Documentation and feedback** (slides 14-15, page 8)

This step has two parts: documentation and feedback. For documentation, students should make their code readable by adding blank lines and comments. Some students are naturally good at this and may have already done it. Other students may need the reminder. The second part is to get a peer to look over the code and give feedback. The student also reviews his/her project and gives feedback. Students are encouraged to read the feedback and use it to improve their project.

👫 **Post-Remix Reflection:** (slides 16-17, page 9)

The project is complete and students are asked to reflect using two questions. These are thought questions, and you may want students to share their responses. This is an excellent opportunity to have a gallery walk of all the projects, or have presentations.

💻 Mission Complete:

This mission ends with a completed, working program. This is an excellent time to have students present their project, or have students do a gallery walk around the room and play the other students' projects.

You need to decide how you will use the program for assessment. You could:

- Go to each student and check-off their code
- Have the students download their code to a text file and turn it in using your LMS
- Have students print their code (either download and then print the text file, or print a screenshot)
- Have students switch computers and run each other's code. Fill out a simple rubric and turn in to teacher
- Any other way that words for you

End by collecting the Remix Log and any formative assessment you want to include.

Two Kahoot! Reviews are available that review Mission 13.

💻 IMPORTANT Clearing the CodeX:

Students should run their "Clear" program at the end of each day before returning the CodeX.

SUCCESS CRITERIA:

- ❏ Write an original program, run it, and save it to the CodeX
- ❏ Follow the design process and document their work in the log assignment
- ❏ Add readability to your program by adding blank lines and comments
- ❏ Use at least one concept from Mission 13:
  - ❏ non-blocking sound
  - ❏ Rectangles, circles, lines or draw_text
  - ❏ For loop
  - ❏ Nested for loop
- ❏ Debug any errors in the code
- ❏ Clear the CodeX of meaningful code at the end of the remix