

**MISSION 4 Remix**
**Time: 90 minutes**
**Overview:**

This remix will allow students to use their creativity to create their own project. They will use concepts from mission 2 through mission 4. They will create a new display game with added features.

**Cross Curricular:**

- **COMPUTATIONAL THINKING:** The lesson requires students to program multiple steps and coordinate pixels with images. They must think algorithmically and step-by-step to plan their project. They will follow the design process.
- Supports **language arts** through peer review and reflection writing.

**Materials Included in the learning portal [Teacher Resources](#):**
**Mission 4 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 4 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 4 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.

**Mission 4 Remix Lesson Plan**

A lesson plan is available for the remix from the original teacher's manual, but it doesn't give a lot of information. It has a rubric, but the rubric includes topics not yet covered, like flowcharts. You can use the information, tips and hints below instead.

**Remix 4 Solutions**

Three suggestions are given for remix projects. Solutions are given for each suggestion (mild, medium, spicy)

**[Remix Resources](#):**

- **Remix Videos:**
  - [Mild](#), [Medium](#), [Spicy](#)
- **Possible Remix solutions:**
  - Mild, Medium, Spicy
- Mission 4 Review [Kahoot](#)

**Formative Assessment Ideas:**

- Exit ticket
- Remix log completion
- Completed program
- Gallery walk
- Kahoot Review

**Vocabulary:**

No new vocabulary for this remix.

### 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.
- Be familiar with the Remix Log (assignment) and the questions they will answer.
- Print the Remix Log for each student.

### 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 are two questions. Students can write in their log first and then share, or discuss first and then write in their log.

- What was something cool about Mission 4?
- What was something challenging about Mission 4?

You may want to review Mission 2 and/or Mission 3 as well. It isn't specifically part of the assignment, but it could help the students with their creativity.

#### 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.

#### 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 Mission 2 and/or Mission 3 as well.




 **Teaching tip: Step #2 -- Brainstorm** (slides 6-9, pages 4-6)

Students brainstorm their remix project. Three suggestions for a remix are given: one mild, one medium and one spicy. Students can look at a video of a finished remix. They can choose one of those, or come up with their own idea. They will write about their idea in the log assignment.

 **Teaching tip: Step #3 -- Make a plan** (slide 10, page 7)

Students plan the variables they need, the colors they will use and the images they will display. 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 11-12, page 8)

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. The earlier objectives may use the simulator, and the code will not run in the simulator. 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 13-14, pages 9-10)

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 15-16, page 11)

The project is complete and students are asked to reflect using two questions. One question is about working with a partner, so if students worked individually you will want to change the question. This is an excellent opportunity to have a gallery walk of all the projects, or have presentations.

Solution code is given in the folder for the three remix suggestions.

 **Mission Complete:**

This mission ends with a completed, working program. 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 works for you

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

A Kahoot! that reviews Mission 4 is available.

 **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
- Use conditions for at least four button presses
- Debug any errors in the code
- Complete a review of their original program
- Clear the CodeX of meaningful code

**? Kahoot! Review**

<p>1 - Quiz What is the result of the code:</p>	<pre>number = 5 * 3</pre> <p>20 sec</p>
<p>2 - Quiz What is the best data type for this value: "hello"</p>	<p>20 sec</p>
<p>3 - Quiz What is the best data type for this value: pics.PLANE</p>	<p>20 sec</p>
<p>4 - Quiz What is the best data type for this value: 42</p>	<p>20 sec</p>
<p>5 - Quiz What is the best data type for this value: True</p>	<p>20 sec</p>
<p>6 - Quiz Which function will change an integer to a string?</p>	<p>20 sec</p>
<p>7 - Quiz What is "branching"?</p>	<p>20 sec</p>
<p>8 - Quiz What is the result if the user pushes button A?</p>	<pre>pressed = buttons_was_pressed(BTN_A) if pressed:     pixels.set(0, GREEN) else:     pixels.set(0, RED)</pre> <p>20 sec</p>
<p>9 - Quiz What is the result if the user pushes button A?</p>	<pre>pressed = buttons_was_pressed(BTN_A) if pressed:     pixels.set(0, GREEN)     pixels.set(1, GREEN) else:     pixels.set(0, RED)     pixels.set(1, RED)</pre> <p>20 sec</p>
<p>10 - Quiz What is the result if the user pushes button A?</p>	<pre>pressed = buttons_was_pressed(BTN_B) if pressed:     display.fill(MUTE)</pre> <p>20 sec</p>