21 Things 4 Students
REMC ASSOCIATION OF MICHIGAN

21 Computational Thinking Q2 Decomposition (1 class period)

[21. Computational Thinking]	[21.Q2 Decomposition]

Overview of this Thing: Computational thinking can be used to take a complex problem, understand what the problem is, and develop possible solutions to solve or explain it. In this Thing, students will learn about the stages of computational thinking (decomposition, pattern recognition, abstraction, algorithms, evaluation).

Thing Learning Objectives:

1. Understand computational thinking [Computational Thinker].
2. Be able to solve complex problems using computational thinking [Computational Thinker].
3. Be able to break down a problem into smaller, more manageable parts [Computational Thinker].
4. Know how to look for patterns and sequences [Computational Thinker].
5. Be able to focus on important information only [Computational Thinker].
6. Be able to develop a step-by-step solution to the problem [Computational Thinker].
7. Know how to use coding to automate a task [Computational Thinker].
8. Understand computational design by applying technology to a problem [Innovative Designer].
9. Understand programming as you complete hands-on activities, solving problems encountered [Computational Thinker].
10. Understand the coding your program creates [Empowered Learner].

This Quest: In this Quest, students are going to learn how to break a complex problem into smaller chunks.

Quest Learning Objectives:

I can:

- Take a complex problem and break it into smaller chunks.

Link to Vocabulary Quizlet

Vocabulary:

REMC

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Compare: Compare means to look at two or more things and point out how they are the same and how they are different.

Complex problem: A complex problem is a big or tricky challenge that has many parts and may take several steps or ideas to solve.

Contrast: Contrast means to look at two or more things and point out how they are different from each other.

Decomposition: Decomposition means breaking a big problem or task into smaller, easier parts so it's not overwhelming.

For accommodation ideas, visit the **Accommodations Toolbox page**, then select the "Quest/Area of Need" listed in the menu on the right of the page.

Pre-Planning

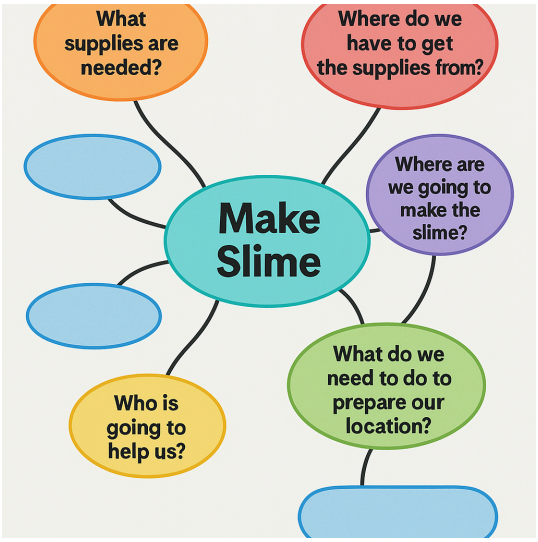
Introduction page:
The video for decomposition is from Tynker (What is Decomposition?) and geared towards a little bit younger student, but the content is good. Hopefully, the students have fun with it and get the point of the content.

Slime & Problem page:
Students are asked to decompose the making of slime with a partner. They need to be reminded that this does not mean they are writing out the instructions (algorithm) for making slime. They are brainstorming all the items and tasks that need to be completed prior to making slime.

This slide deck (21.Q3 Making Slime) is used with instructions and space for recording their work. Microsoft schools will need to download into Excel.
On slide 5, there is a mind map that they may use, or if the students have another way of recording their decomposition, they may do that on slide 6 and skip slide 5.

Below is the start of a mind map that you could use as an example. Or, you may demonstrate how to fill in the boxes within the slide deck using a few of the items in the image below.

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After they have completed the slide deck, this would be a great opportunity to team up with another group and share and compare their decompositions. They do not all need to be the same. You may also do this as a whole class.

Students will then create their own decomposition for the problem they chose in Quest 1. Remind them that this is not the steps to solve the problem, but rather the collection of items they need to do to go about solving the problem.

Videos and resources in this Quest. You must check that students have access to these resources on their devices.

Websites

Videos from Outside Sources

- What is Computational Thinking? YouTube (3:48)

21T4S Documents & Quizzes

- 12.Q2 Making Slime Decomposition Slide Deck
- Vocabulary Quizlet

Student Checklist 21.Q2 Student Checklist

Broken Link or Content Update Report

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Please select this link or the broken link icon to report any broken links, or content no longer applicable so that we can quickly update it. Thank you for your help.

Assessment Options: *Ideas for assessing student work for this Quest? Link to a rubric you create for this Quest, a quiz, and or a worksheet you create. See Rubric by Liz Kolb.*	
Notes:	

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