UNIT 4, LESSON 2

DECOMPOSITION

5TH & 6TH GRADE

CS FOR ALL

NSF
Award #1837380

SUMMARY AND STANDARDS

Summary:

In this lesson, students will be guided through Level 5 of Coco and new features and blocks in Scratch.

ELA Standards

The student will write in a variety of forms to include narrative, descriptive, opinion, and expository.
a) Engage in writing as a process.
b) Identify audience and purpose.
c) Use a variety of prewriting strategies.
d) Use organizational strategies to structure writing according to type.
e) Use transition words to vary sentence structure.

CS Standards:

The student will construct sets of step-by-step instructions (algorithms) both independently and collaboratively using sequencing and using loops.
The student will construct programs to accomplish a task as a means of creative expression using a block or text based programming language, both independently and collaboratively using sequencing and using loops.

The student will analyze, correct, and improve (debug) an algorithm that includes sequencing, events, loops and variables.

Today

MATERIALS AND RESOURCES NEEDED FOR THIS LESSON:

- Chromebook/Laptop
- Internet Access
- Teacher Unit 4, Lesson 2 slide deck
- Coco Link
  - Teacher should have assigned story in CoCo, using naming strategy "Unit 4 Summary"
- Scratch link

Reminder:
In this lesson, every student should be **assigned a story in CoCo** using **Level 5.**

The story should be titled "**Unit 4 Summary.**"

Each student should save their work using this naming strategy: "**Student Name + Unit # + Descriptor",** for example, "**Johnny Unit 4 Summary."**

UNIT 4, LESSON 2

DECOMPOSITION

CS FOR ALL

COCO
COMPOSE & CODE

DEPICT-CS

You will need….[read slide]

LESSON OBJECTIVES: I CAN...

❏ Identify and use NEW BLOCKS

❏ Write, review, and edit a summary in Coco Level 5 (Column 1)

❏ Plan and self-monitor in Coco Level 5 (Columns 2, 3, 4)

❏ Share my plan with a partner and modify plan based on feedback

Let's go over today's lesson's objectives: [read slide]

DECOMPOSE: TO BREAK A PROBLEM DOWN INTO SMALLER PIECES

DECOMPOSITION (DEE-COMP-UH-ZI-SHUN): BREAKING A LARGE PROBLEM INTO SMALLER PARTS

Computer scientists have to solve coding problems and need to make think about what steps they need to take and what order to do them in.

Sometimes the problem is so big or complex, it can be hard to know where to start.

Decomposition is when we break a problem down into smaller parts to make it easier to tackle.

It has many advantages. It helps us manage large projects and makes the process of solving a complex problem less scary and much easier to take on.

This Unit, we're going to learn more about decomposition, our final computational thinking concept. Decomposition is going to be key in helping us to animate our new stories in Scratch with more Scratch blocks."

SUMMARY: RESTATES THE MAIN IDEAS OF A STORY IN YOUR OWN WORDS

A summary restates the main ideas of a story in your own words. You have probably done this quite often after you have read or listened to a story. We don't want to retell everything that happens in the story, we just want to share the main idea

SOMEBODY… WANTED…BUT….SO…. THEN

- **Somebody**: Character
- **Wanted**: Goal/motivation
- **But**: Conflict/problem
- **So**: Resolution
- **Then**: How does it end?

There are several ways that we can decompose a story, but Today, we're going to review one great strategy for summarizing. This strategy uses these anchor words to help us create a summary: "Somebody Wanted But So Then" {Read Slide}

Let's see how this strategy can help use decompose the familiar story of Little Red Riding Hood. To do this, we can use Coco, our favorite graphic organizer, to help us. Today, we are briefly going to be introduced to Level 4 of Coco, where we can record our summaries. Let me show you how.

SHARE WITH A PARTNER

Instructions:

1. Identify a story to summarize.
2. Answer the following questions:
   a. What are the main ideas of the story?
   b. What details from the story are important to include in your summary?
   c. What details from the story are not that important to the main idea?

SUMMARIZE IN COCO LEVEL 5: COLUMN 1, OUR WRITING

Story: Tutorial

My topic: type here

My Ideas:	What I Want to Do:		Blocks & Icons I will need:	Self-monitoring:
	Do I need to add a start block?	No ○ Yes ○		
	Do I need to add a sprite or object?	No ○ Yes ○		
	Do I need to add or change a background?	No ○ Yes ○		
	Do I need to make my sprite talk?	No ○ Yes ○		
	Do I need to add or change a background?	No ○ Yes ○		
	Do I need to make my sprite talk?	No ○ Yes ○		
	Do I need to make my sprite think something?	No ○ Yes ○		
	Do I need to create a costume?	No ○ Yes ○		
	Do I need to add or change a background?	No ○ Yes ○		
	Do I need to make my sprite talk?	No ○ Yes ○		
	Do I need to make my sprite think something?	No ○ Yes ○		
	Do I need to create a costume?	No ○ Yes ○		
	Do I need to add or change a background?	No ○ Yes ○		
	Do I need to make my sprite talk?	No ○ Yes ○		
	Do I need to make my sprite think something?	No ○ Yes ○		

Remember, there are four columns in CoCo to complete. For now, we are going to add our writing into Column 1. Under, "My Ideas"

ADDING MORE ROWS TO COCO LEVEL 5

Step 3: Composing & Coding - Use the Graphic Organizer

Story: Level 5

My topic: type here

My Ideas:	What I Want to Do:		Blocks & Icons I will need
	Do I need to add a start block?	No Yes	
	Do I need to add a sprite or object?	No Yes	
	Do I need to add or change a background?	No Yes	
	Do I need to make my sprite talk?	No Yes	
	Do I need to add or change a background?	No Yes	
	Do I need to make my sprite talk?	No Yes	
	Do I need to make my sprite think something?	No Yes	
	Do I need to create a costume?	No Yes	
	Do I need to stop all sounds?	No Yes	
	Do I need to repeat a process for a number of times?	No Yes	
	Do I want to make my sprite or object move up or down?	No Yes	
	Do I want to make my sprite glide across the screen?	No Yes	
	Do I want to make my sprite point in a different direction?	No Yes	
	Do I need to add or change a background?	No Yes	
	Do I need to make my sprite talk?	No Yes	
	Do I need to make my sprite think something?	No Yes	
	Do I need to create a costume?	No Yes	
	Do I need to make my sprite talk?	No Yes	
	Do I need to make my sprite think something?	No Yes	
	Do I need to...	No Yes	
		No Yes	

Add bottom row

No ⬤ Yes

Add bottom row, OK?

OK   Cancel

No ⬤ Yes

One change in level 5 is that you can add more rows to CoCo. Click on the green button that says "Add Bottom Row" and then click "OK" and a new row will appear.

Pause here and students should fill in CoCo with their writing in CoCo Column 1 from their paper graphic organizer from last time

PLAN YOUR ANIMATION GRAPHIC ORGANIZER

Now, plan how you will animate each part of your summary in Scratch using the graphic organizer your teacher provides.

- Note, you do not need to write your summary again, but make sure your planning matches what you wrote in CoCo.

Summary of _____

You have already filled in the left Column in CoCo. Using that summary, start planning your animation. On the right, plan how you will animate in Scratch.

Somebody	How will you animate?

Wanted	How will you animate?

Next, students should use the paper graphic organizer to plan and select blocks for Scratch in CoCo columns 2 & 3, based on their planned animation
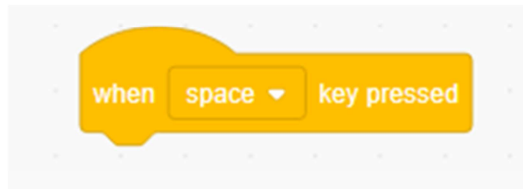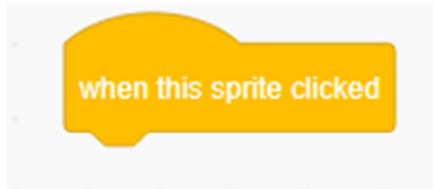
Pause here and students should fill in CoCo with their writing in CoCo Columns 2 & 3from their paper graphic organizer from last time

EDIT & REVISE WITH A FRIEND

.Have students share their plan with a partner and offer suggestions for enhancing or modifying their plan and/or writing.
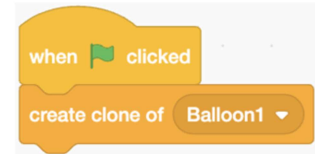
EVENT BLOCKS

when 🚩 clicked

when this sprite clicked

when space ▾ key pressed

Review

Today, we will learn about the "create clone" block
- Cloning is a feature that allows a sprite to create a copy of itself while the project is running. Each clone has the same costumes, sounds, scripts, and variables as the original but is otherwise independent.
- Cloning is commonly used when a project has many similar sprites doing similar things. Because clones are created by the project rather than the user, cloning prevents the user from needing to make the same changes to each of many sprites.
- Today we will use the "Create a Clone" block, which clones the sprite selected

CREATE CLONE BLOCK (VIDEO)

when 🏳 clicked
set sprites to find ▾ to 10
repeat sprites to find
    create clone of Sprite1 ▾

when 🏳 clicked
create clone of Balloon1 ▾

create clone of myself ▾

when 🏳 clicked
repeat until key space ▾ pressed?
    create clone of Crystal ▾
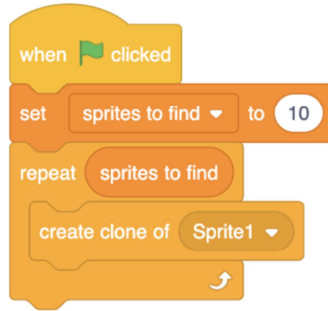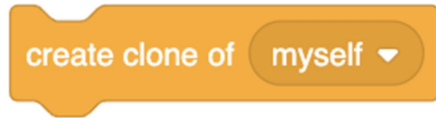
Cloning is often used when a sprite must make copies of itself. Here are some examples.

Using the following blocks, create an artistic animation of your name:

when this sprite clicked

turn ↻ ◯ degrees

create clone of myself ▼

repeat 10
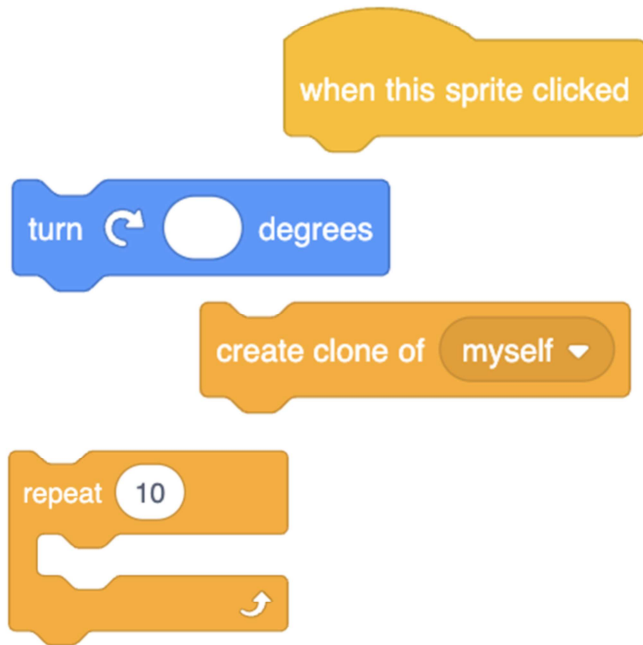
YOUR TURN: PAUSE HERE AND TRY OUT "CREATE CLONE" BLOCK

___

Using the "Create a Clone" block, create an animation where you create a clone of

WRAP UP: WHICH BLOCK ARE YOU MOST EXCITED TO USE FOR ANIMATING YOUR SUMMARY? WHY?

"Next time, we will be animating our summaries in Scratch. Turn and talk to a partner about which blocks you may want to try to use in Scratch and why."