## OBJECTIVES / SUMMARY

Today we will become comfortable with creating new sprites, choosing costumes for them, and using 'broadcast' blocks so that they can engage in conversations.

## LINKS

[Lesson Plan](https://docs.google.com/document/d/1M-ScdV3L0XbhBFr0ekBzZKEAhcgNe4oK6dGpjUPUwGg/edit)

## ACTIVITY 1: "HELLO WORLD!"

Now that we have a better understanding of how sprites in scratch can engage one another in basic terms, we can now learn other ways they can interact, like carrying on a conversation. Why don't we start by having a sprite introduce itself to us. Let's have him say "Hello world!"

Now, we can take things a little further. Let's have our sprite appear off in the distance and then walk towards us. Because of the way perspective works, he should start at a small size and then gradually grow larger as he comes closer to us. Once he is front and center on the screen, he will give us his message.

Let's start a new Scratch template. Now, let's move the sprite to the coordinates x = -213 and y = 0. To show that the sprite is coming from a distance, we will make him look small at first. To do this, go to the Looks tab and find the 'set size \_\_\_%' block. Enter the input of '40' into the block and notice how the sprite gets smaller.

For now, lets directly attach the 'go to x:\_\_ y:\_\_' block and the 'set size \_\_\_%' block on the 'When clicked' block. In this way, the size and position of the sprite will always be reset to this initial size and position.

Now, we want the sprite to come front and center on the stage, and while he is coming towards us, we want him to be steadily growing in size so that we get that sense of perspective. To have the sprite reach front and center smoothly, we can use the 'glide \_\_ sec to x:\_\_ y:\_\_' block in the Motion tab to have the sprite move the coordinates x = 0 and y = -100 over a period of 3 seconds.

Since we want our sprite to be simultaneously increasing in size as it is coming to the middle of the stage, we can add another 'When clicked' block. We can then add a 'Change size by \_\_' block which is located in the Looks tab. We can set the change size variable to 1 for a smooth increase. Now, if we want to continually increase the the size of our sprite by 1, we can get a 'Repeat \_\_' block and input the variable 90 so that our sprite gets pretty large. Let's nest the 'Change size' block into the 'Repeat' block and then attach the 'Repeat' block to the 'When clicked block'.

Finally, we want our sprite to introduce itself to us. Let's go get the 'say \_\_' block from the Looks tab and input "Hello World! My name is Chat Cat!" We can now attach the block below the 'Repeat' block so that the sprite will say its message after it is done growing. Now, if we run the program, we can see that the sprite will come to the front of the stage and introduce itself. Now you can go make your own introduction.

Now that we have our Chat Cat introducing himself, why don't we give him a companion that he can tell a joke to? This way, we can demonstrate how two sprites can engage in convrsation.

Let's build off the Chat Cat template we originally made. We'll start off by creating a companion who is sitting at the corner of the screen. We can go to the Sprites tab below the stage and click on the New Sprite button. In this example, we'll click on Calvert in the sitting position. Double click on the sprite to bring it onto the stage.

Now, on the Script for Calvert, we will drag in a 'When clicked' block. Next, lets take a 'go to x:\_\_ y:\_\_' block and set the position of Calvert at x = 180 and y = -120. Now, we'll attempt to make a conversation...

We'll have the Chat Cat tell a joke--a really, really bad joke. Let's first change the Chat Cat's introduction speech to the input "Would you like to hear a joke?" Since this is the first message of the conversation that is sent, we will consider this 'say' block as message 1.

We can then use the 'broadcast message \_\_ and wait' block located in the Events tab. Let's input the variable 1 since this will be the first message sent.

Now, we want Calvert to respond to the message by saying "Sure, why not?"

We can do this by going to the Events tab to use the block marked "When I receive message \_\_' and input the variable 1 since Calvert will be recieving message 1. We now attach a 'say Sure, why not? for 2 sec' block so that Calvert can respond appropriately to the joke.

We will now attach a 'broadcast message \_\_ and wait' block and input the variable 2 so that Calvert can send out his message, the second message of the conversation.

Now, we can go back to the Chat Cat sprite and repeat the previous steps conducted for Calvert. We can get a 'When I receive message \_\_\_' block from the Events tab and input the variable 2, since the cat will be receiving message 2 in the conversation. Now we can attach a 'say \_\_\_\_ for \_\_\_ sec' block and input "What do you get when you cross a computer and a life guard?" and 6 seconds to continue the conversation. We then want to attach a 'broadcast message \_\_ and wait' block so that the Chat Cat can send back his response, which we'll call message 3.

Now we can repeat the method in the previous two steps. We will get a 'When I receive message \_\_\_' block and input the variable 3 since Calvert will be receiving message 3 in the conversation. Now we can attach a 'say \_\_\_\_ for \_\_\_ sec' block and input "I don't know, what?" and 2 seconds to continue the conversation. We then want to attach a 'broadcast message \_\_ and wait' block so that the Calvert can send back his response, which we call message 4.

Finally, we give one more message to the Chat Cat. We get a 'When I recieve message \_\_\_' block and input the variable 4 since the cat will be recieving message 4 in the conversation. Now we can attach a 'say \_\_\_\_ for \_\_\_ sec' block and input "A screensaver!" and 2 seconds to finish up this horrible joke.

Now, we will work on changing the costumes of sprites so that they can come to life as they have their conversation. To test this out, we can use costume changes to make the Chat Cat look as if he is running towards Calvert instead of floating. Because we want the walking to occur as the movement from one point to another is occuring, we will pull up a seperate 'When clicked' block so that the movement and the walking animation can occur simultaneously. We want the walking animation to occur continuosly, so we will attach a repeat block that will repeat 12 times so we can input the variable 12. We can now input the switching of costumes in the repeat function. Since the sprite already starts in its costume1 form, we will want to first switch into its costume2 form. We will first go to the Control tab and insert a 'wait 0.1 seconds' block. Then, we will reach into the Looks tab and insert a 'switch costume to costume2' block where you will need to input the 'costume 2' section. Then, insert another 'wait .1 seconds' and finally revert back to the default costume by inserting a 'sitch costume to costume2' block. Thus, as this function repeats itself 12 times, the Chat Cat will be animated and will appear to be running down towards Calvert.

Calvert seems a bit unaminated so we'll change his costume too. After hearing such a horrible joke, Calvert is upset that his peace and quiet was interrupted by Chat Cat. So, Calvert will leap from his sitting position and attack the Chat Cat. If we click on Calvert and then click onto the costumes tab to the right of the stage, we can see that the secondary costume for Calvert is Calvert jumping. We want to use this costume for the attack on Chat Cat. But first, we need to a have Calvert jump onto the Chat Cat, thus, after Calvert recieves message 4 he will react by jumping onto the cat. Since the joke was so bad, we can have the attack go on forever. Thus we will take a 'When message 5 recieved' block and attach a 'forever' block underneath it. Next, we will attach a go to 3, -100 block inside (or the position of the block. Then we can attach a nested forever loop and insert the costume Calvert jumping and attach a rotate 15 degrees block so that he will be constantly rotating around Chat Cat.