Broadcasting Messages

ACTIVITY **3.3.1**

Unplugged:

Broadcast & Receive

Hand out the coloured cards.

STARTER CARD	When I hear the line	When I hear the line
Teacher reads the following:	*The Grand old Duke of York he had ten thousand men*	*And when they were down*
The Grand old Duke of York he had ten thousand men	**Stand up and say:**	**Stand up and say:**
	He marched them up to the top of the hill	*They were down*

◼ Think of yourselves as **sprites** and the instructions on your cards as your **scripts**.

You should only react when you hear the exact line (message) stated at the top of your card. Follow the instructions on your card:

when you hear the specified line

– stand up

– read aloud your line

– sit down

?

● **How did you know when to say your line (i.e. react to an event)? What was it important for you to do in order to do this?**

● **Who could hear the lines of the poem (i.e. the messages)?**

● **What happened when multiple people had the same card (i.e. same instructions)? What do you think would happen in Scratch if multiple sprites had the same script?**

broadcast message1 ▼

when I receive message1 ▼
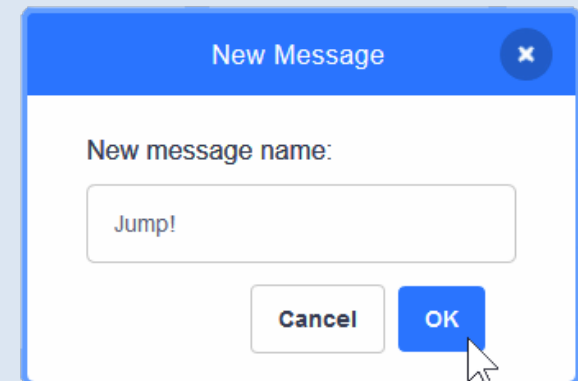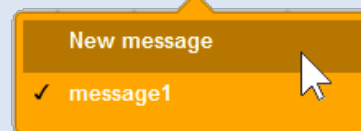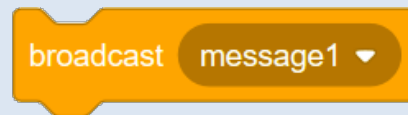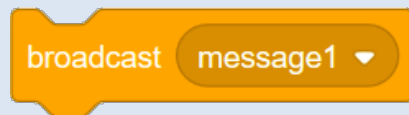
when I receive message1 ▼

ACTIVITY **3.3.2**

Introductions:
One to One

Continue in your **31-Multiple Sprites** project
or start with the **33-Multiple Sprites** project.

◼ Select Nano and build the following behaviour
for him: When Nano is clicked, Tera will react by jumping high and
floating back. (but **keep Nano's teleporting script** for later)

?

● **What would happen if Nano broadcasts a *message* but no sprite has a corresponding when I receive *message* block (i.e. if nobody is listening)?**

■ Extend Nano's behaviour:

When clicked, he will first teleport himself, and then broadcast the message *Jump!* Tera will react by jumping high and floating back.

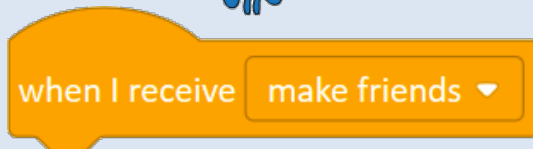■ Select Giga. She wants to make friends with others.

When clicked, she broadcasts a message *make friends*.

■ So far, only Tera will listen to that message and react.

Select Tera and build her simple reaction, using the blocks:

when I receive make friends ▼

say Hello! I am Tera! for 2 seconds
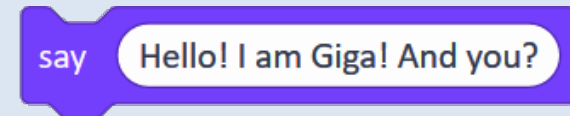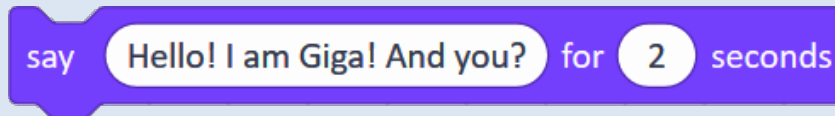
Build a real scenario:

When Giga is clicked, she will walk over to Tera and say
Hello! I am Giga. And you? for 2 seconds, then broadcast her message
make friends.

Tera will react: she will jump high, float back and answer
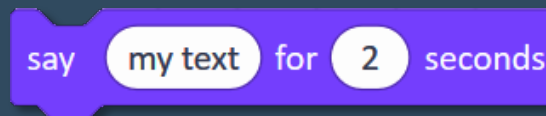*Hello! I am Tera!*

■ Explore the difference between two kinds of the **say** block:
(Click the red Stop sign 🛑 to get rid of the **say** bubble afterwards)

Hello! I am Giga.
And you?

say `Hello! I am Giga! And you?` for `2` seconds

say `Hello! I am Giga! And you?`

● **Envisage and discuss what is the difference between:** **?**

say `my text` for `2` seconds

broadcast `my text ▼`

[Extension] Extend the behaviour of Giga.

When Giga is clicked:

► she will walk over to Tera,

► then **say** *Hello! I am Giga. And you?* **for 2 secs**,

► then broadcast her message.

► Tera will react: she will jump high, float back
then **say** *Hello! I am Tera* **for 2 secs**,

► then Giga will walk over to Nano and introduce herself,

► then Nano will reply, then shyly teleport away.
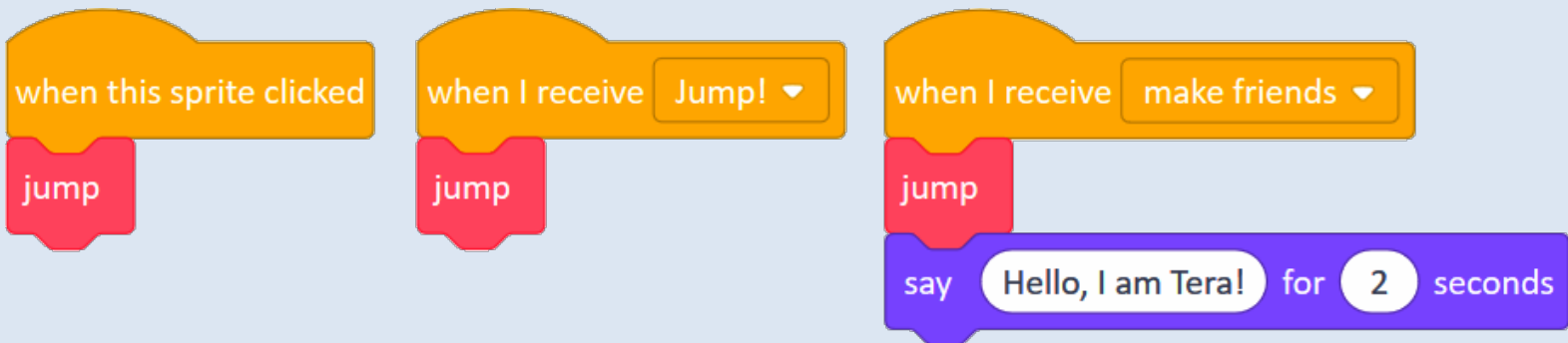
ACTIVITY 3.3.3

Come to Tera:
One to Many

Continue in your **31-Multiple Sprites** project.

Select Tera. As she jumps high and floats back as a reaction to **different events**, turn it into a new block used in several scripts:
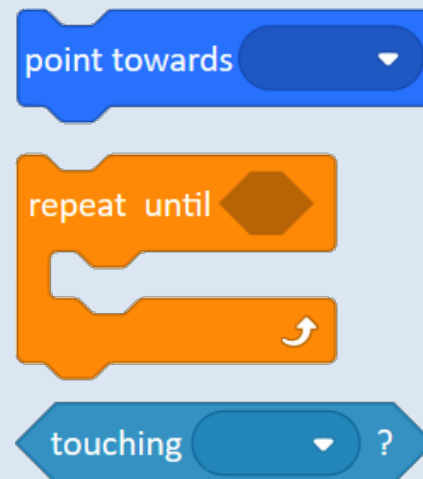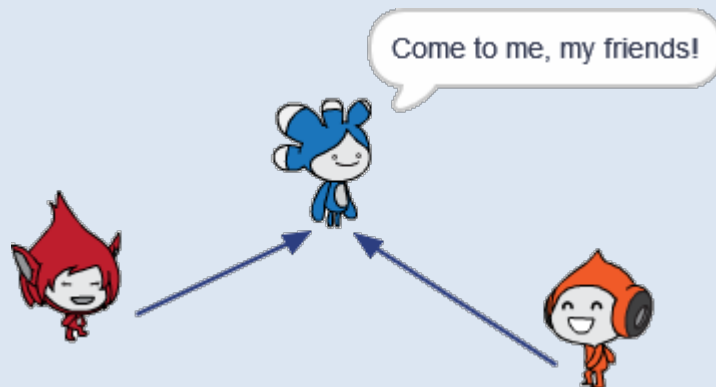
```
when this sprite clicked
jump
```

```
when I receive  Jump! ▼
jump
```

```
when I receive  make friends ▼
jump
say  Hello, I am Tera!  for  2  seconds
```

■ Extend Tera's reaction **when this sprite clicked** so that she will jump high and float back, then **say** *Come to me, my friends!* **for 2 secs**, then broadcast a message *come to Tera*.

■ Both Pico and Giga will react to that message and come over, using the following strategy:

■ **[Extension]** Make Nano to react to *come to Tera* message as well. He will teleport himself to Tera.

■ **[Extension]** Modify Nano's reaction from the previous extension so that he teleports somewhere **close to Tera**, not exactly to her.
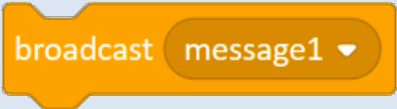
MODULE 3: INVESTIGATION 3

My Investigation 3 check list:

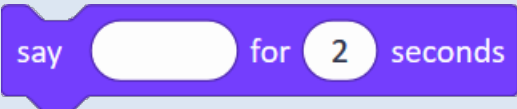☐ I made Nano broadcast a message. I made Tera react to that message by jumping high and floating back.

☐ I made Nano first teleport then broadcast a message.

☐ I made Giga broadcast a message and I made Tera react to that message.

☐ I made a sprite say something e.g. a question, an invitation or a greeting.

☐ I made Tera broadcast a message. I made two sprites, Giga and Pico react to it in parallel by walking to Tera.

☐ I made Nano react to the same message by teleporting to Tera.

broadcasting   is how sprites communicate and collaborate. A sprite broadcasts a *message* and one or several sprites may react by running their scripts

`broadcast message1 ▼`   this block is used to broadcast a *message*, which is text we type in

`when I receive message1 ▼`   this hat block will run the script attached to it whenever that *message* has been broadcast

`say [ ] for 2 seconds`   this block will say the *text* in it in a speech bubble for a specified number of seconds

`say [ ]`   this block will say the *text* in a speech bubble. To remove the speech bubble, click the red Stop sign or run a **say** block with different text

event   is a special situation like **when I receive** *message* or **when green flag clicked** etc. All scripts with that hat block will be run in parallel