Activity 1:
Touch & LED Interactivity with the volcano posterboard
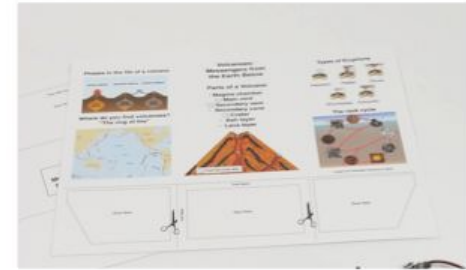
(20 minutes)

Locate the following in the MakerBit kit...

Rainbow cables, one with a grey block connector for touchpoints and the other with a black block connector and 6 red LEDs

Five touchpoints & backs (earring posts & clasps)

flat cardstock for mini volcano project

MakerBit & 9v battery

BBC micro:bit microcontroller & micro-USB cable

Glue stick, blue hole-making tool

Next, install software...

(The Google Slides version of this is at: http://bit.ly/2P685FX)

Preparations:
Install MakerBit Media Linker on your Device
Install MakerBit Program on the MakerBit

The MakerBit Media Linker is a Chrome app that can be used on Chromebooks, as well as Mac and Windows devices. Use this link to find and install the MakerBit Media Linker:
http://bit./MakerBitApp

To install the MakerBit program on to the micro:bit, connect the micro:bit to your computer with a microUSB cable. Open the MakerBit Media Linker app, go to the Programs menu, and choose MakerBit Program.

This will download the makerbit.hex file to your computer. Locate the file in your downloads folder, and drag it on to the micro:bit drive icon on your computer.

That's it! This does not usually need to be repeated in the future, and you're now ready for all the MakerBit activities!

If you do wish to read more about installing the MakerBit program on the BBC micro:bit, use this link:
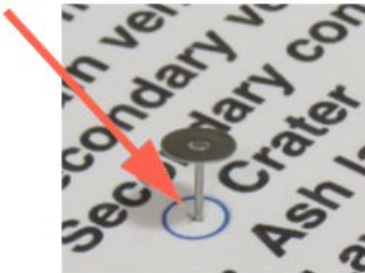
Make a Model

**1** Use scissors to cut along the dotted lines as you see here.

2 Fold into thirds and fold the tabs back.

3 Locate the touchpoints and push them from the FRONT of the board through the marked "+" positions. Use a silicone earring back as a "backstop" to protect your fingers behind the paper. Secure on the back using the earring backs.


4 Use the blue stick to make 3 holes for the LEDs in the orange part of the volcano diagram where you see the small circles. Push from the front and use a doubled-over piece of paper as a backtop to protect your fingers from getting poked when the point goes through the card of the volcano.
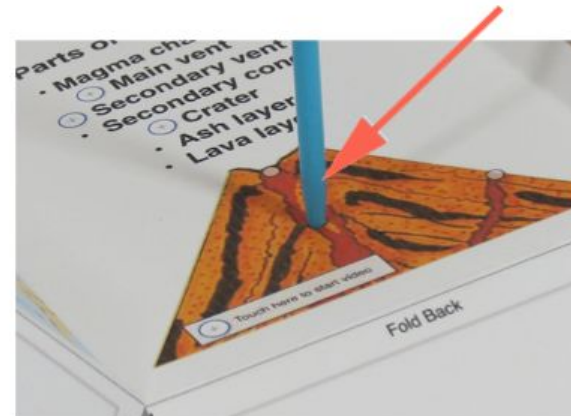
Connect the LEDs and Touchpoints

1 Using the glue stick to apply glue to the 3 areas on the base, and attach the panels so that the base of each panel just covers the black line that indicates where it should be positioned.
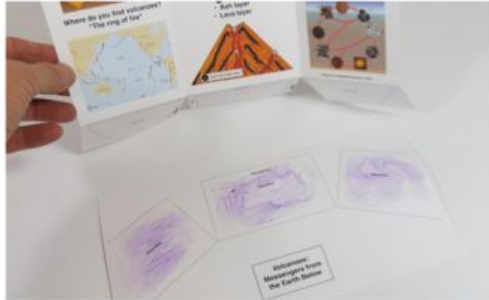
2 Push the LEDs into, but not all the way through, the holes from the BACK of the board. Connect the LED with the red/brown wires to L5

Red wire on the outside = L5

3 Continue with the LEDs for L6 (black/white wires) and L7 (purple/gray). You can pull apart the wires as necessary.

4 For the touch sensors, use the rainbow cable with the gray block connector, and push the sockets onto each of the posts of the 5 touchpoints, starting with the red wire on the outside edge of the cable. The posts only go about half-way into the sockets.

Connect:

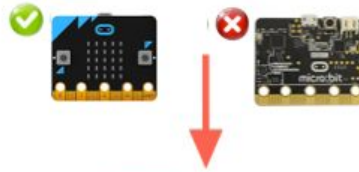the RED wire to T5,
the BROWN wire T6,
the BLACK wire to T7,
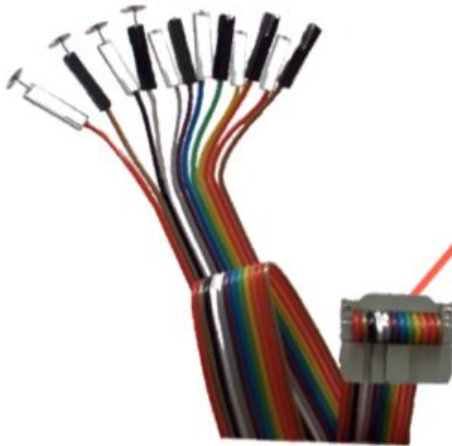the WHITE wire to T8,
the GREY wire to T9.

Connect Cables to the MakerBit

1 If it's not already connected, plug the microbit into the connector at the top of the MakerBit **with the LED matrix facing you**.

2 Plug the black block of the LED cable into the TOP black box on MakerBit board.
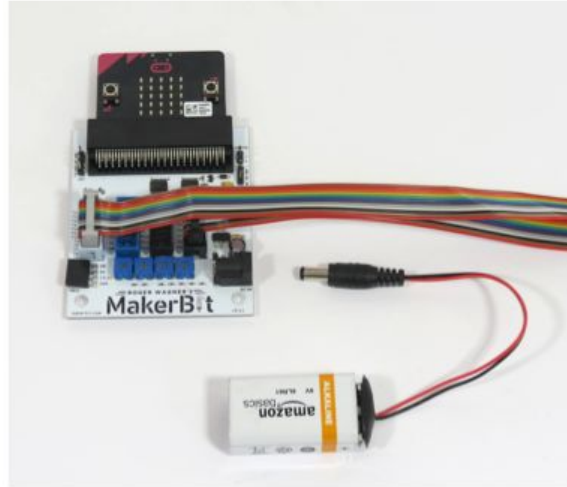
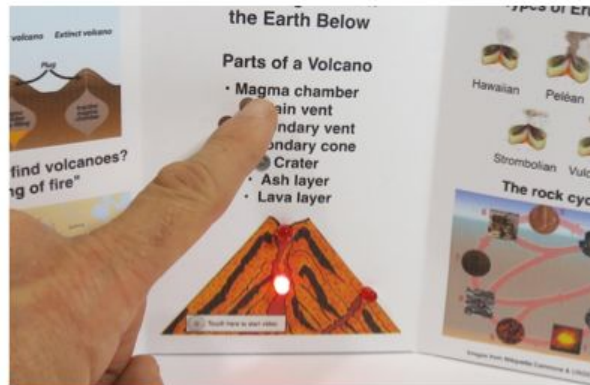**3** Plug grey block into white box on MakerBit board

Try It Out!

1 Connect the 9v battery. The 3 LEDs on your model will blink for a few seconds while the MakerBit starts up. **Wait for the blinking to stop (about 5 seconds)**


Now, when you touch the "Main vent", "Secondary vent" and "Crater" sensors, the LEDs will light up.

How Did All That Work?

The micro:bit is like a small computer, and the MakerBit program that you installed on it just continuously watches the touchpoints. Each touchpoint has a number (5-16), and each LED has the same range of numbers (5-16).

When a touchpoint is touched, the MakerBit program lights up the same number LED as the touchpoint that is being touched.
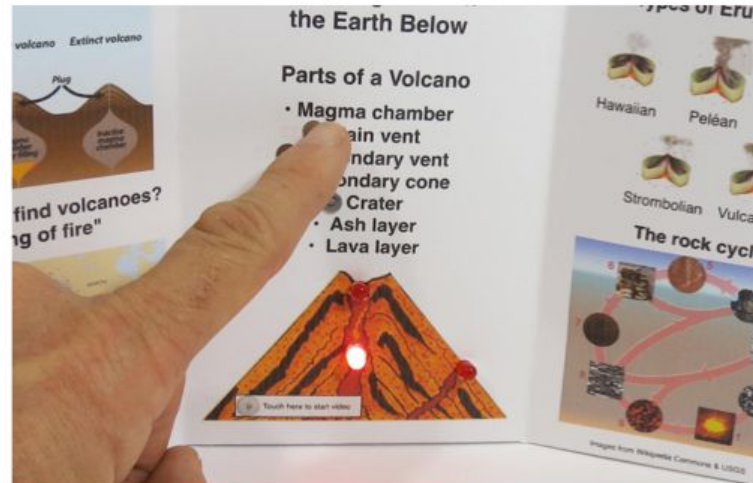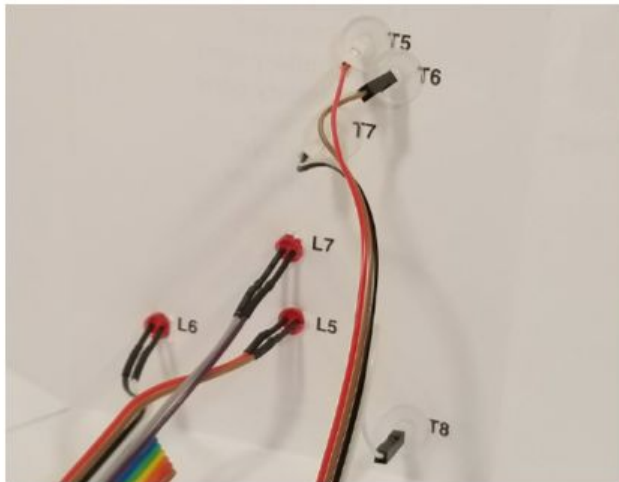
The 4th touch sensor, "Touch here to start video" is used to initiate a YouTube or Google drive video. To see how that works, continue to Part 2 of this tutorial! (The 5th sensor, T9, will be used for a Google Earth view of Mount Vesuvius.)

MakerBit Cable Colors & Numbers

underlined = outside edge of cable
(note that odd/even touch sockets are black/white)

Touch

16 - 5

Touch #5 <u>red</u>

Touch #6 brown

Touch #7 black

Touch #8 white

Touch #9 grey

Touch #10 violet

Touch #11 blue

Touch #12 green

Touch #13 yellow

Touch #14 orange

Touch #15 red

Touch #16 <u>brown</u>

LEDs 16-11   **MakerBit**   **LEDs 10-5**

LED #5 or #11: <u>red</u>/brown

LED #6 or #12: black/white

LED #7 or #13: grey/violet

LED #8 or #14: blue/green

LED #9 or #15: yellow/orange

LED #10 or #16: red/<u>brown</u>