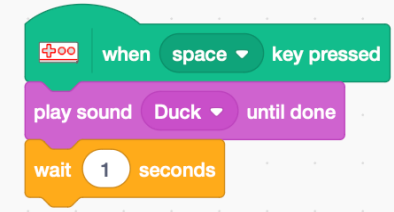
Squishy Logic

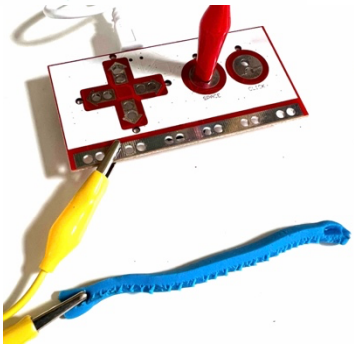
This worksheet is about making logic circuits with Playdoh. "*If it looks like a duck, swims like a duck, and quacks like a duck, then it's a duck.*"

We can make a logical circuit with PlayDoh, as it conducts electricity.



- Add a new '**duck'** sprite.
- Add Scratch code that quacks when you press space.

- Extrude some PlayDoh wires
- Attach a crocdile clip to 'earth' at the bottom of the Makey and squish the other end into a PlayDoh wire.
- Attach another crocodile clip to 'space' on the Makey.



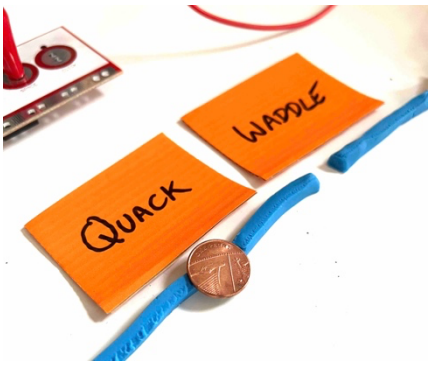
Touch the crocodile clip on the other end of the wire to make it quack.

- Add another wire leaving a small gap between them. Squish the wire into the other end.
- Add a card over it saying "quack".
- Now place a coin across the gap to 'close' the circuit and make it quack.

The coin is an on/off switch that means "it quacks."

There are other animals that quack, like bees! So we need more input to make sure it's a duck.

Logical AND



*"It's a duck if it quacks **and** it waddles"*

Combine two facts that must both be true with logical AND.

- Make a break in the wire with a craft knife.
- Add a "waddle" card.

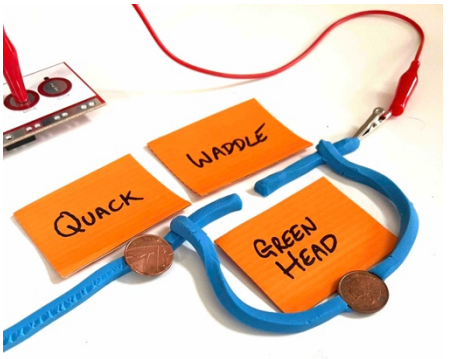
This is the logic for: **quack AND Waddle**

What animals quack but don't waddle, or waddle but don't quack?

Logical OR

Some ducks have a green head (but so do frogs and dragons).

- Add alternatives (logical OR) as alternative pathways in the circuit.



This is the logic for: **quack AND (Waddle OR Green Head)**

If it quacks and has a green head, is it really a duck?

Try Googling "Ducks, geese and swans"…

Materials:

- **Makey Makey**
- **Play-Doh.**
- **Plastic/wooden craft knives.**
- **Play-Doh fun-factory with extruder.**
- **1p coins.**
- **Card (scissors) and a Sharpie.**