A screenshot of a computer

Description automatically generated with low confidenceA picture containing text, graphics, font, logo

Description automatically generated

**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."*

**A screenshot of a computer

Description automatically generated with low confidence**

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

A picture containing toy, plastic, red

Description automatically generated

* 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.

A picture containing tool, cable, red, art

Description automatically generated

*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”.
* *A picture containing toothbrush, brush, tool

  Description automatically generated*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.*

A picture containing handwriting, text

Description automatically generated**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.
* A duck swimming in the water

  Description automatically generated with medium confidenceAdd 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).*

* **A picture containing text, handwriting, lanyard

  Description automatically generated**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.