# Squishy Circuits

Let's create some basic gadgets for answering questions!

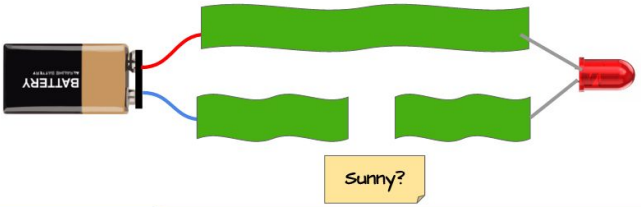
## 1. Making a Basic Circuit


**If it doesn't work try turning your LED around**

## 2. Netball Notifier

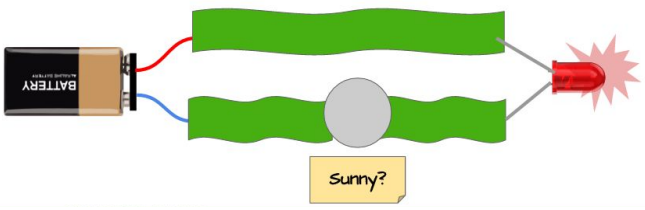
**Maddy only plays netball if it's Sunny! Make a circuit that shows this!**

1. Start with your **basic circuit** and add a cut.




2. **Write** on your laminate sheet a label that says "Sunny?"

3. **Make a switch** out of foil or play dough. Try putting your switch on and off to control the circuit.




**Congratulations** you just made an **"If circuit"**!

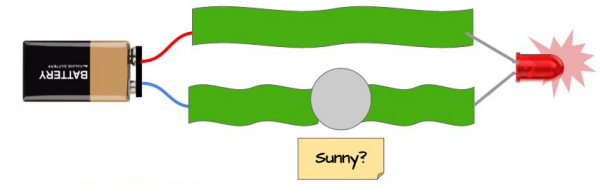
# 3. Netball Negotiator

**Maddy has a new rule:**

- **She needs to do her homework if she wants to play netball!**
- **It still needs to be sunny.**

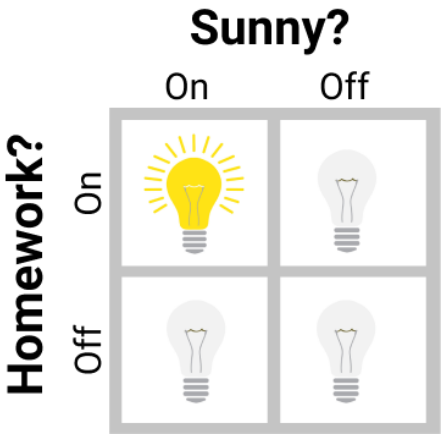
**Make a circuit with two switches. One for sunny, one for homework.**
**The light should only shine when BOTH tokens are on.**

1. Start with your **if circuit**




2. Figure out where to place the second new **switch for "Homework?"**

3. **Test** out your circuit with all the combinations!
   Try 1 switch on, 1 switch off. Both on, both off.




**Does your light shine only when it's sunny & when homework is done?**
**Congratulations** you just made an **"And logic gate"**!

# 4. Netball Court Collection

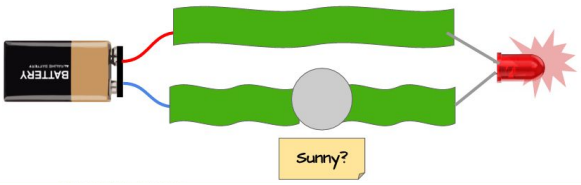
**It's school holidays (so no homework!) and Maddy wants to play netball.**

**Maddy can play either:**

- **If it's sunny**
- **There is a vacant indoor court at the new sports centre**

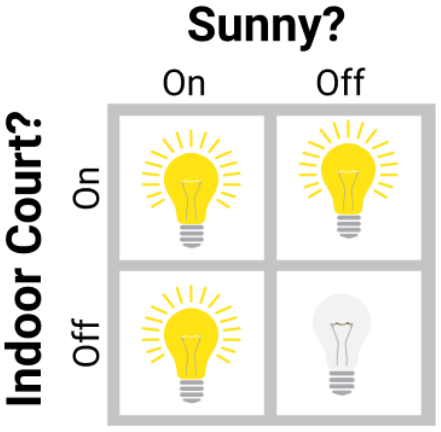
**Make a circuit with two tokens. One for sunny, one for indoor court.**
**The light should only shine when EITHER tokens are on.**

1. Start with your **if circuit**




2. Figure out where to **place the second** new switch for "Indoor Court?"
   ***Need a hint?*** *Look at the final page for some useful circuit shapes to try.*

3. **Test** out your circuit with all the combinations!
   Try 1 switch on, 1 switch off. Both on, both off.




**Does your light shine when it's sunny OR there's an indoor court available?**
**Congratulations** you just made an **"Or logic gate"**!

# 5. Netball Negator

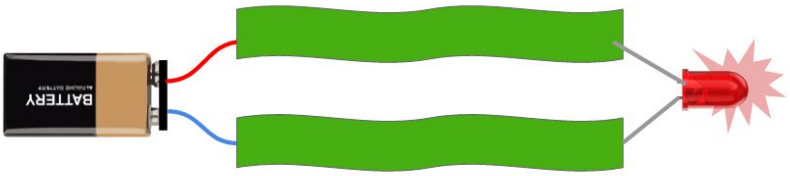
**Maddy's netball team practices every Monday, rain hail or shine.**
***Except if the coach is sick.***

**Create a circuit that always shines a light, UNLESS the coach turns on the "sick?" switch.**

**Sick switch off** → 

**Sick switch on** → 

1. **Take your basic circuit** from Part 1.




2. Add some playdough to **create a short circuit** so the light is off.
   *remember a short circuit gives the electricity a faster way to get back to the battery without going through the light.*

   ***Need a hint?*** *Look at the final page for some useful circuit shapes to try.*

3. **Add a switch** that completes the short circuit when the coach puts on the "sick?" switch.

4. **Test** out your circuit with all the combinations!

**Does your light shine when the coach ISN'T sick?**
**Congratulations** you just made a **"Not logic gate"**!

# 6. Harder Questions

***Can you make circuits that answer the following questions?***

Combine the ideas we learnt in the first 5 parts!

## Question 1

It's school term again. Maddy can play netball if:

- She's done her **homework** AND
- It's **sunny** OR there is an **indoor court available**

**Make a circuit with 3 switches:**

1. Homework?
2. Sunny?
3. Indoor court?

**Get it to tell you when Maddy can play netball for different situations**.

## Question 2

Maddy can play netball if:

- The coach **isn't sick**
- She's done her **homework**
- It's **sunny**

**Make a circuit with 3 switches:**

1. Sick?
2. Homework?
3. Sunny?

**Get it to tell you when Maddy can play netball for different situations.**

## Question 3

Maddy can play netball if:

- The coach **isn't sick**
- She's done her **homework**
- It's **sunny** or there's an **indoor court** available

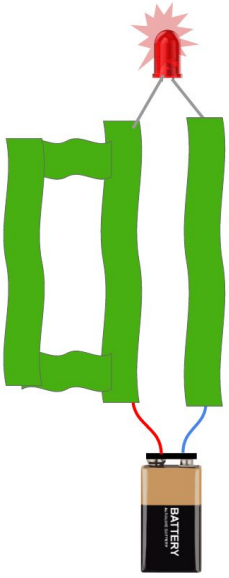
**Make a circuit with 4 switches:**

1. Sick?
2. Homework?
3. Sunny?
4. Indoor court?

**Get it to tell you when Maddy can play netball for different situations.**

# Hints

**One of these shapes might help solve your problem!**
(We've taken out all the switches)




**You can combine these together to make more complex questions for Part 6!**