

Squishy Circuits

Let's create some basic gadgets for answering questions!

1. Making a Basic Circuit

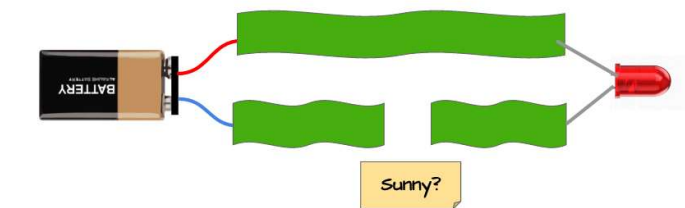


If it doesn't work, try turning your LED around

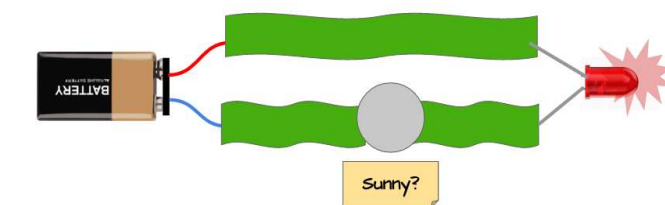
2. Netball Notifier

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"**!

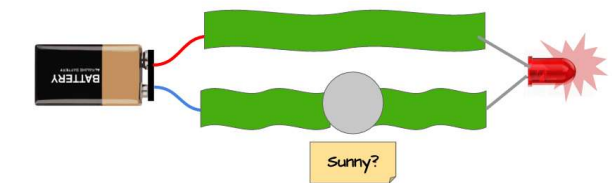
3. Netball Negotiator

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.

		Sunny?	
		On	Off
Homework?	On		
	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

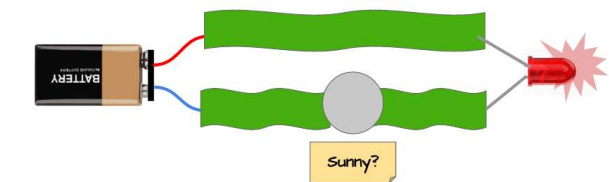
It's school holidays (so no homework!) and Maddy wants to play netball.

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** token is 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.

		Sunny?	
		On	Off
Indoor Court?	On		
	Off		

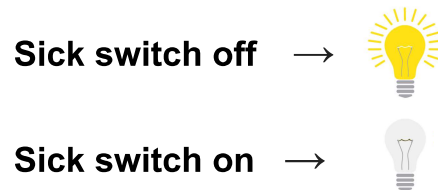
Does your light shine when it's sunny **OR** there's an indoor court available?

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.



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

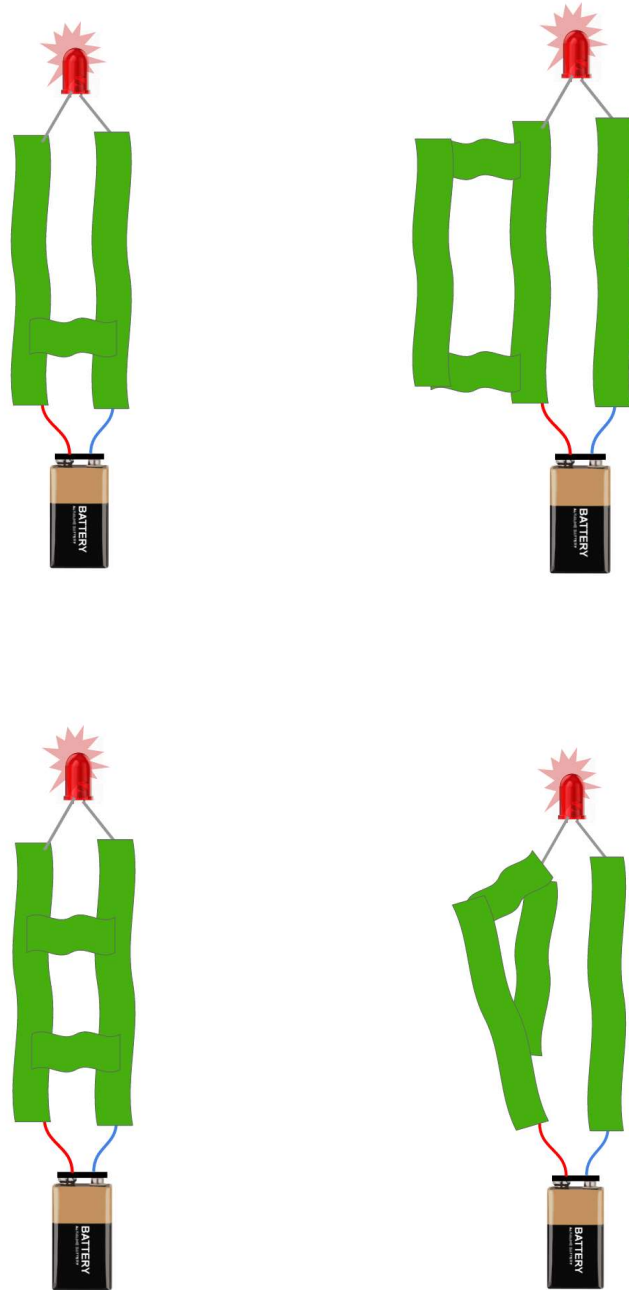
Make a circuit with 4 switches:

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!