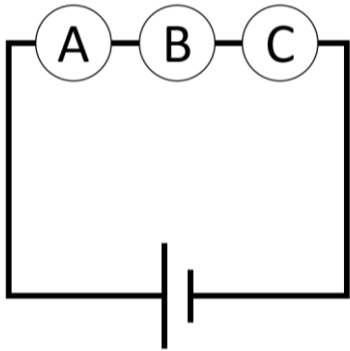


# Part 1: Building Circuits

Build the circuits below and verify that it operates correctly by unscrewing each lightbulb one at a time and comparing the result with the table provided. Once the circuit set up has been confirmed, highlight the bulbs in the diagram to indicate if they are **Bright**, **Medium**, or **Dim**

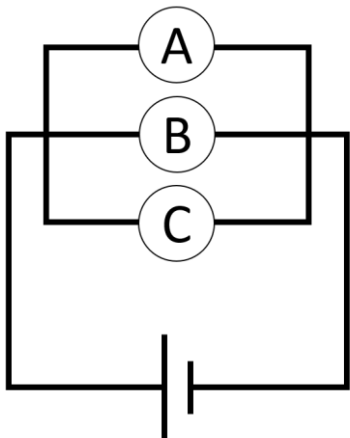
## Circuit 1



Unscrew the lightbulb indicated in the far left column of the table the corresponding bulbs that also turn off are marked with an X

	A	B	C
A out	<b>X</b>	X	X
B out	X	<b>X</b>	X
C out	X	X	<b>X</b>

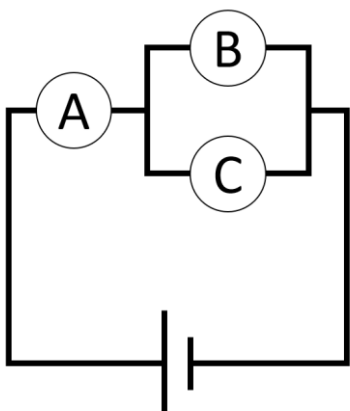
## Circuit 2



Unscrew the lightbulb indicated in the far left column of the table the corresponding bulbs that also turn off are marked with an X

	A	B	C
A out	<b>X</b>		
B out		<b>X</b>	
C out			<b>X</b>

## Circuit 3

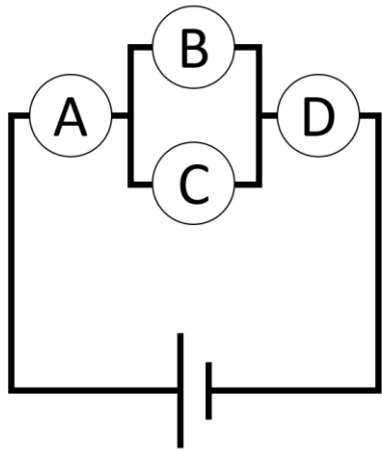


Unscrew the lightbulb indicated in the far left column of the table the corresponding bulbs that also turn off are marked with an X

	A	B	C
A out	<b>X</b>	X	X
B out		<b>X</b>	
C out			<b>X</b>

Build the circuits below and highlight the bulbs to indicate if they are **Bright**, **Medium**, or **Dim**

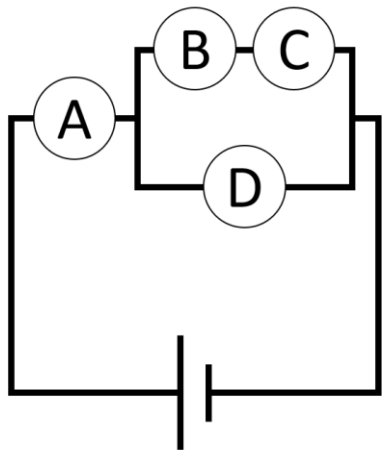
## Circuit 4



Unscrew the lightbulb indicated in the far left column of the table the corresponding bulbs that also turn off are marked with an X

	A	B	C	D
A out	<b>X</b>	X	X	X
B out		<b>X</b>		
C out			<b>X</b>	
D out	X	X	X	<b>X</b>

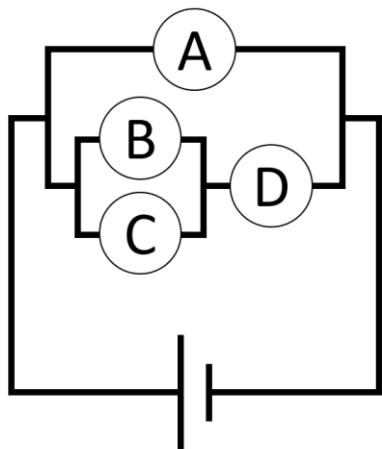
## Circuit 5



Unscrew the lightbulb indicated in the far left column of the table the corresponding bulbs that also turn off are marked with an X

	A	B	C	D
A out	<b>X</b>	X	X	X
B out		<b>X</b>	X	
C out		X	<b>X</b>	
D out				<b>X</b>

## Circuit 6



Unscrew the lightbulb indicated in the far left column of the table the corresponding bulbs that also turn off are marked with an X

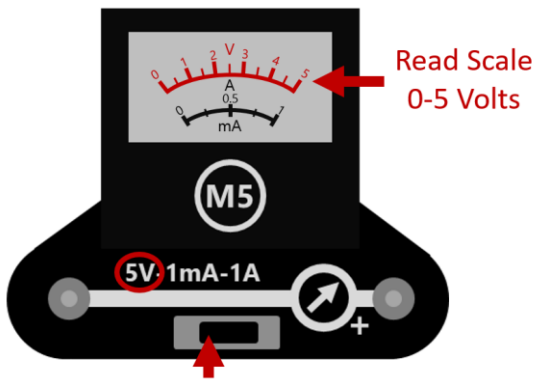
	A	B	C	D
A out	<b>X</b>			
B out		<b>X</b>		
C out			<b>X</b>	
D out		X	X	<b>X</b>

# Part 2: Measuring Circuits

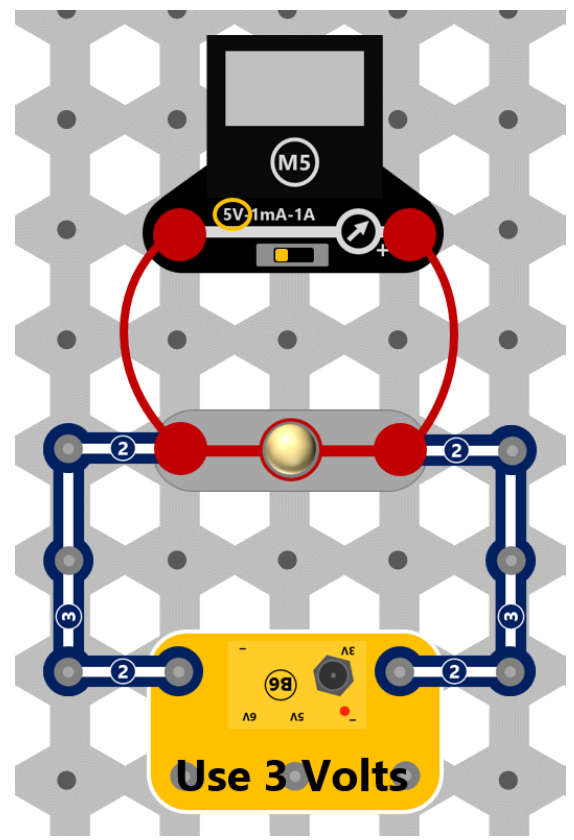
Build the following two circuits to learn how to use the voltmeter and ammeter

## Voltmeter

- Set the meter to the "5V" setting
- Connect contacts "across" the component that you wish to measure the voltage for
- This voltmeter only measures in the positive direction so if the needle doesn't move, try flipping the meter or the power supply

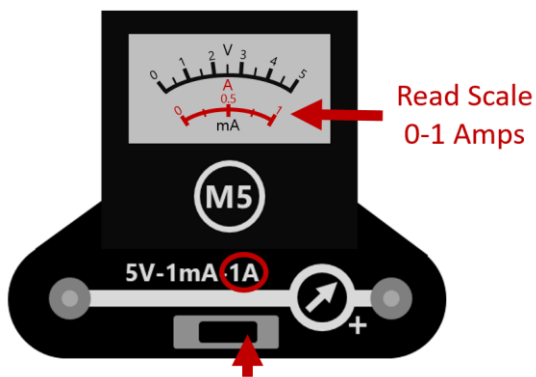


Measured Voltage

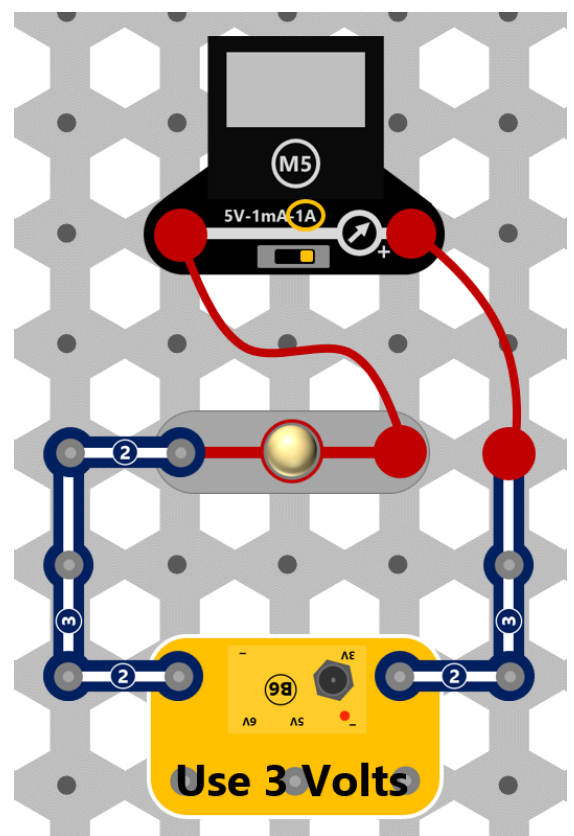


## Ammeter

- Set the meter to the "1A" setting
- Connect contacts "in line" with the component that you wish to measure the current for
- This ammeter only measures in the positive direction so if the needle doesn't move, try flipping the meter or the power supply

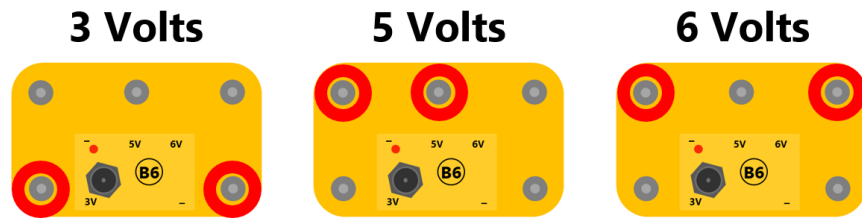


Measured Current



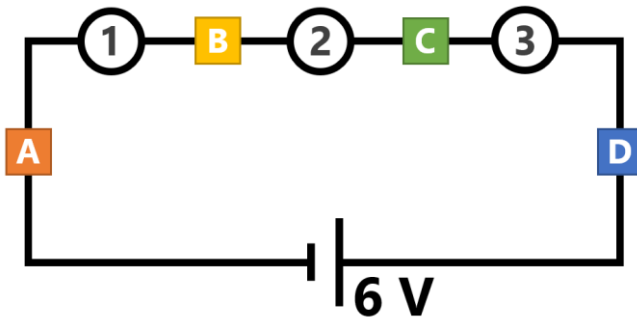
# Setting up the Voltage

The power supply has three different settings to produce voltage. See the diagram below for the contacts to use to produce 3, 5, and 6 volts.



## Circuit 1

Build the circuit below and take the following measurements



Measure the voltage using the Voltmeter

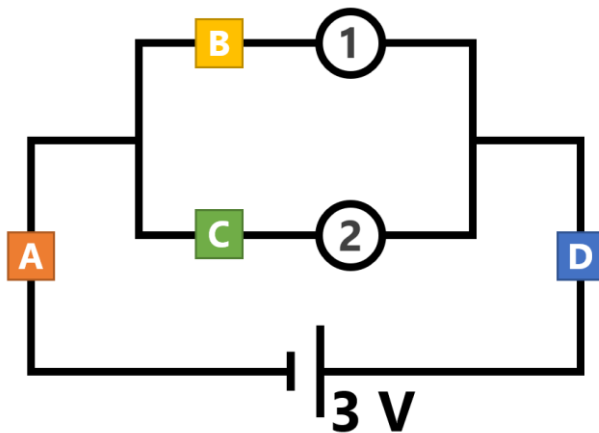
Voltage across 1	
Voltage across 2	
Voltage across 3	

Measure the current using the Ammeter

Current at point A	
Current at point B	
Current at point C	
Current at point D	

## Circuit 2

Build the circuit below and take the following measurements



Measure the voltage using the Voltmeter

Voltage across R <sub>1</sub>	
Voltage across R <sub>2</sub>	

Measure the current using the Ammeter

Current at point A	
Current at point B	
Current at point C	
Current at point D	