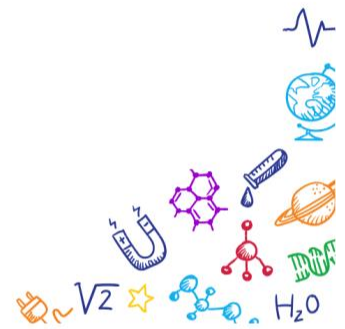




# What is Electronics?



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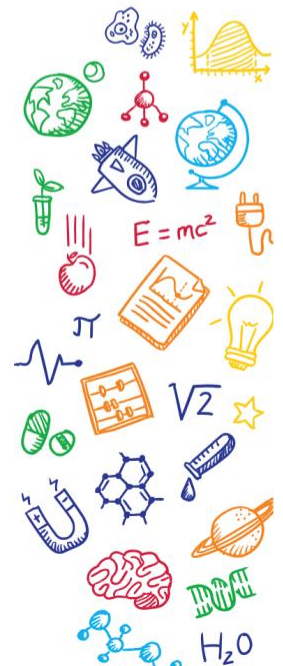


## What is Electronics?

**Electronics** is a field of science in which we study about electric currents generated due to the movement of electric charges that flow in circuits that store and handle information, and how to control these currents.



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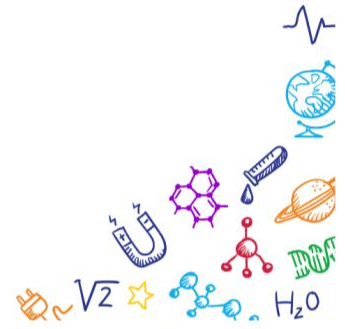




# Name 10 electronic device you know



4

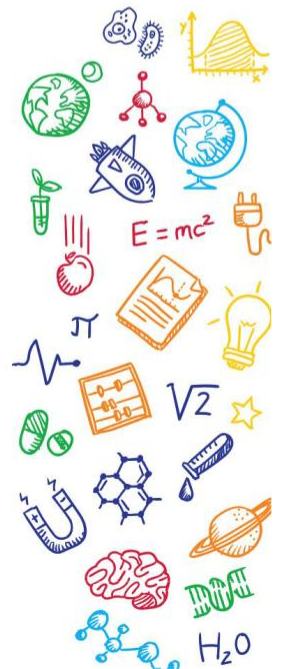


## Electronic Devices

- Smartphone
- Laptop
- Microwave
- Washing Machine
- Camera
- Water pump
- Speaker
- Projector
- AC
- Fridge, etc.

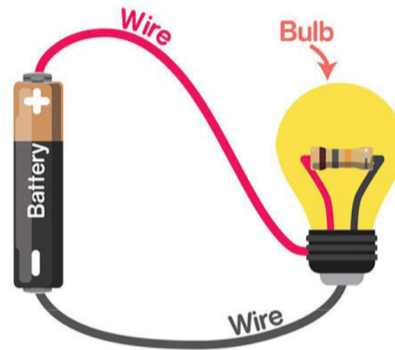


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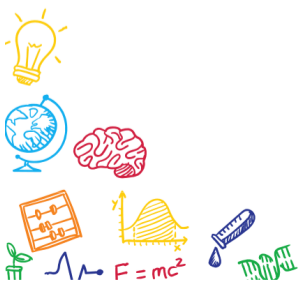
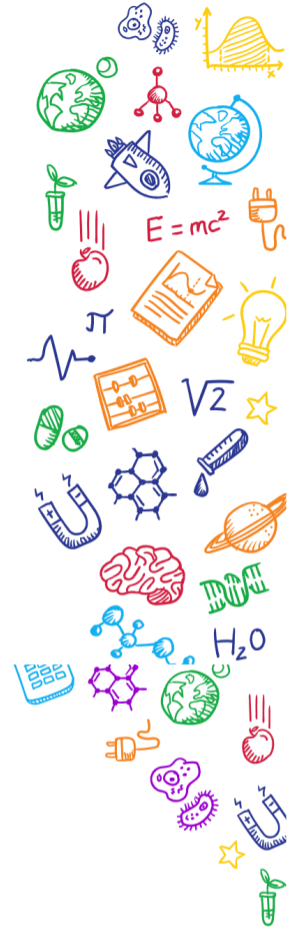
## What is electronic circuit?

- The arrangement of components in the form of a closed path for the charge to flow is known as a **circuit**.
- A circuit made of electronic components and wires is known as an **electronic circuit**.
- The simplest circuit can consist of just a power source and one component.

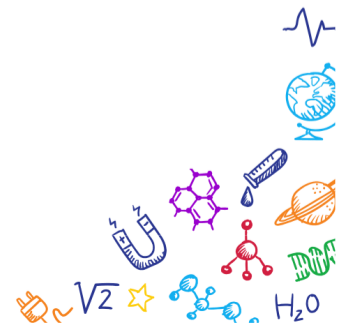


# Basics of Electronics

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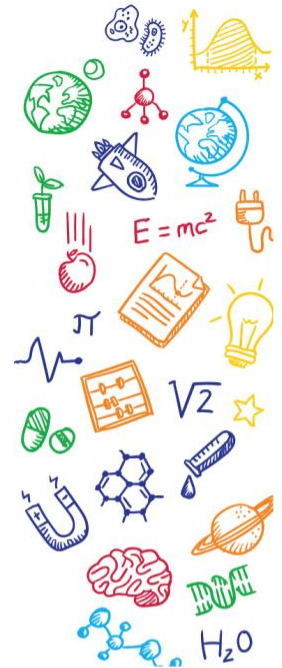
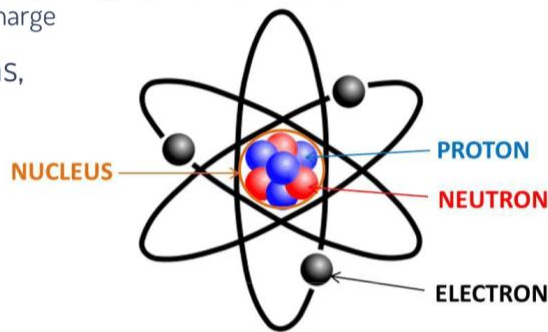


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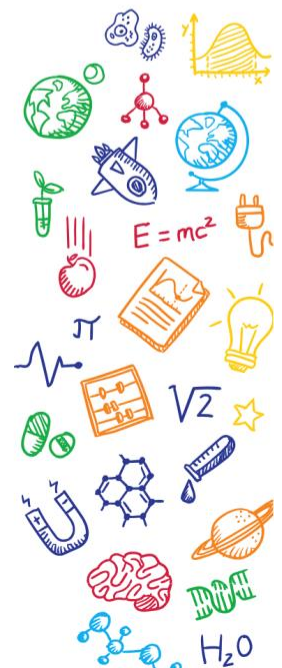
## Atom

- An atom is the smallest constituent unit of ordinary matter.
- It has
  - Protons – positively charged particle
  - Electron – negatively charged particle which is free
  - Neutrons – no charge
- Movement of electrons, or the charge, create electricity.



## Basic Terms

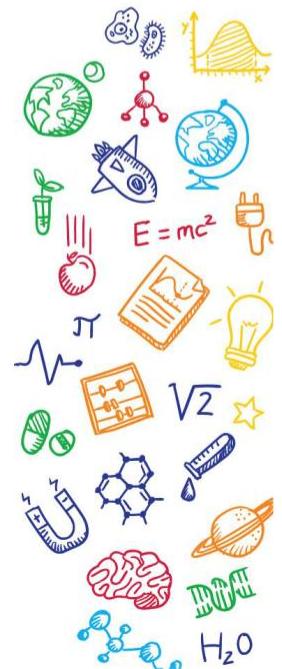
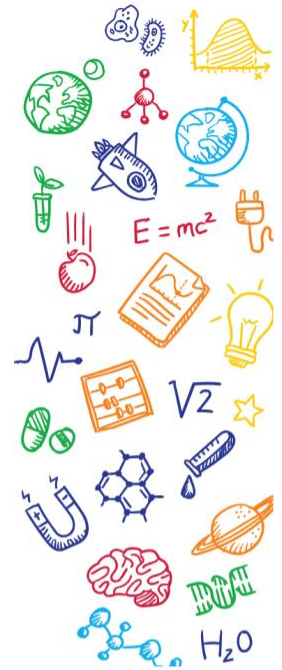
- **VOLTAGE (V)** – The reason for the charge to flow, defined as 'potential difference' between two points in a circuit.
- **CURRENT (I)** – The rate of at which the charge flows. More the amount of charge passing through a given point in a circuit, more the current.
- **RESISTANCE (R)** – The one standing against the flow, defined as a material's tendency to resist the flow of charge. It is basically a measure of the difficulty to pass an electric current through something, say a wire.





## Voltage

- **Pump** pulls water from one of its sides and pushes it from the other, resulting in circulation or flow of water in the pipe.
- **Voltage** is nothing but a type of pressure difference that a power source creates at its two ends. This difference makes the charge flow around the circuit.
- In electronics,
  - **water** would be analogous to **charge**,
  - the **pipe** would be analogous to a **wire**,
  - the **pump** to a **battery**,
  - the **pressure difference** to **voltage**
  - the complete **pump-pipe system** to an **electronic circuit**.



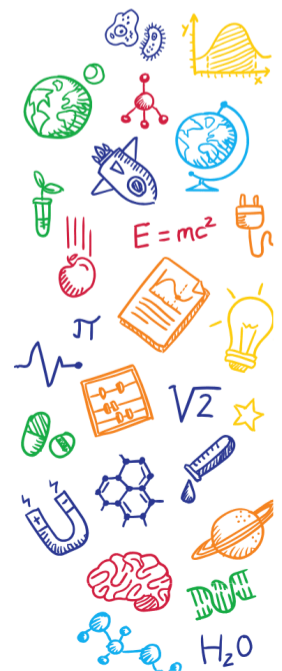
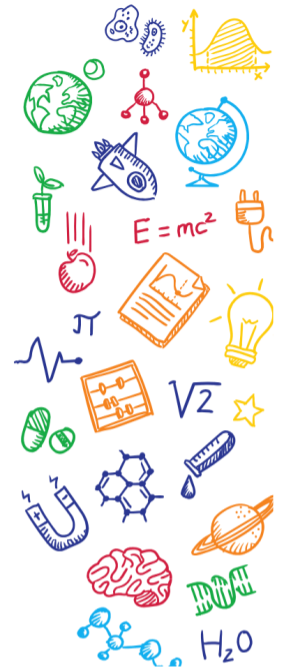
## Battery

- **Battery** is the power source of the circuit which provide voltage.



## Polarity

- **Polarity** is the property of having two poles that have opposite physical properties:
  - Positive
  - Negative
- Polarity is important because it decides the direction in which the charge in the circuit will flow.
- If the polarity is reversed the direction of flow of charges is also reversed.
- The positive pole or the positive terminal is said to have a higher voltage as compared to the negative terminal in a battery.



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## Measuring Voltage

- In a circuit, we measure the voltage using a device known as a **voltmeter**.
- A voltmeter is always connected across the component whose voltage we are measuring.



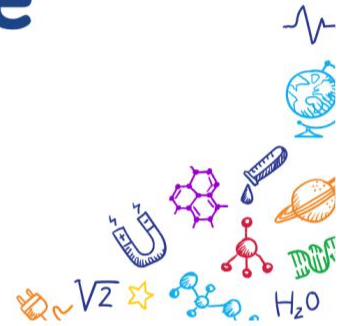
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# Activity Measuring Voltage



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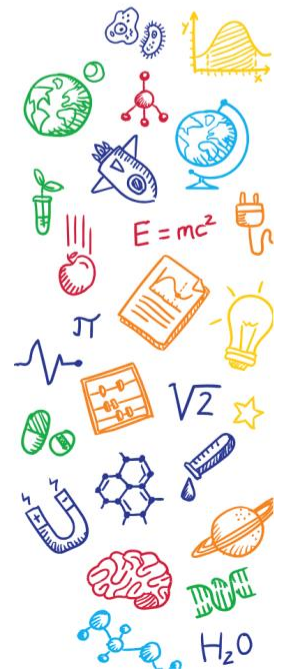


## Activity – Measuring Voltage

- We will use evive to measure the voltage.

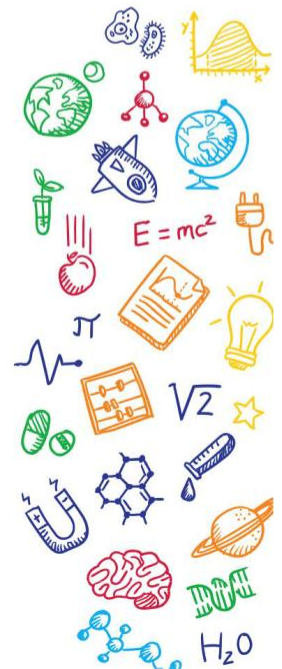
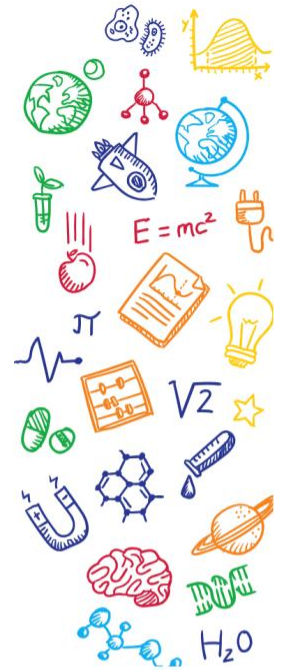
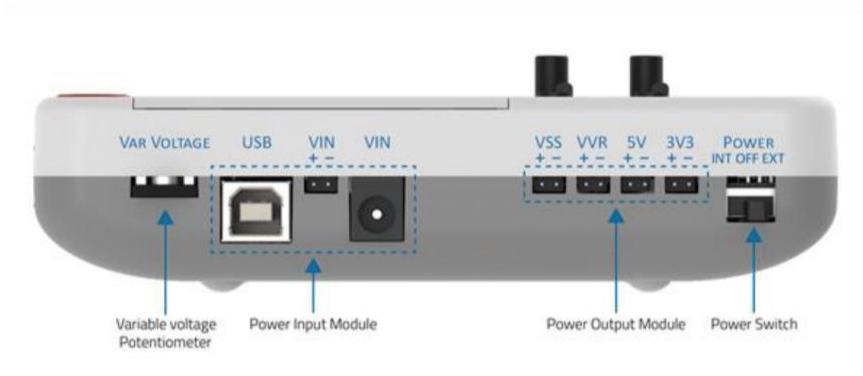


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## Powering evive

- There is a switch labeled POWER.
- It will be in the center, under OFF. Flip it to its left, i.e. to INT; this will power up the evive with its internal battery.



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## evive Menu

- There is a menu on the TFT screen. If not, center press on navigation key.



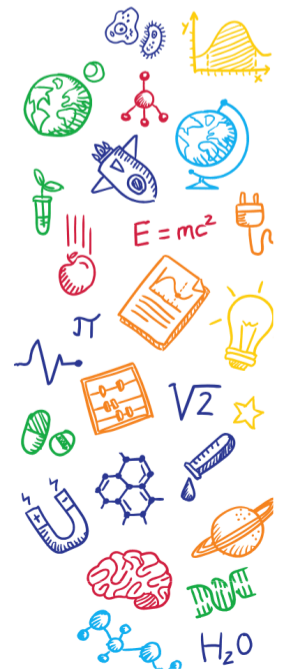
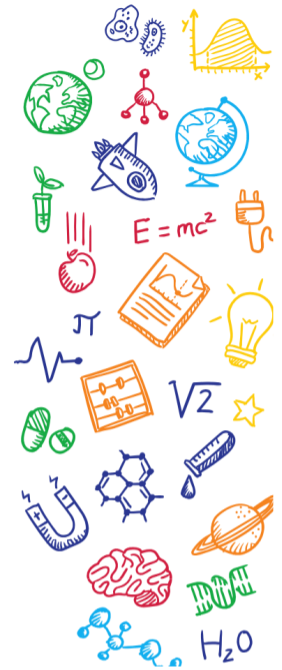
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# Units and Symbols

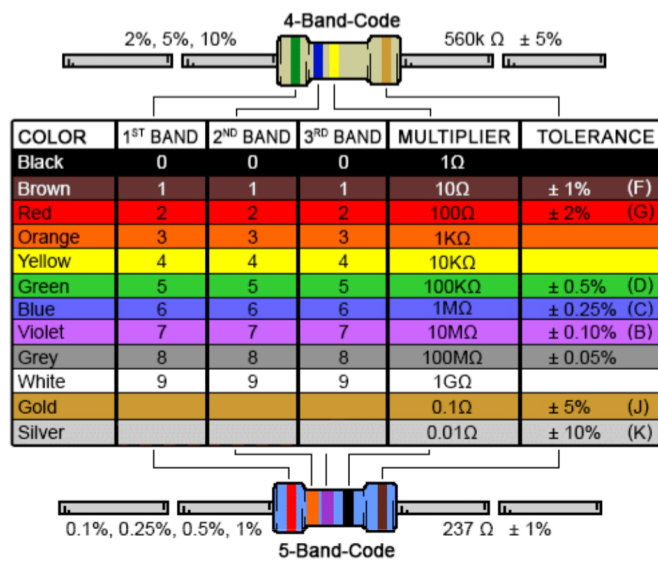
Property	Symbol	Unit	Symbol
Voltage	V	Volts	V
Current	I	Ampere	A
Resistance	R	Ohm	$\Omega$



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# Resistor

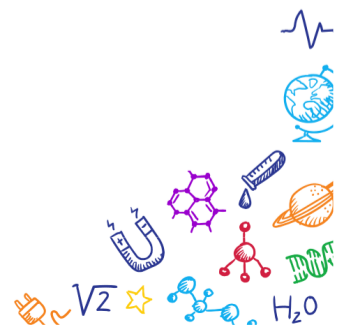
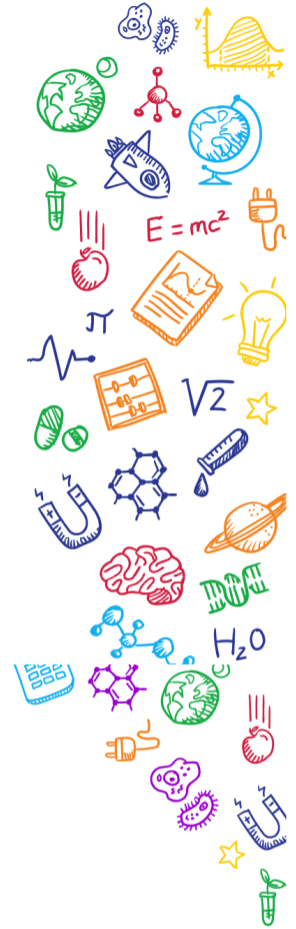
- A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element.



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## Measuring Resistor – 220 Ohm

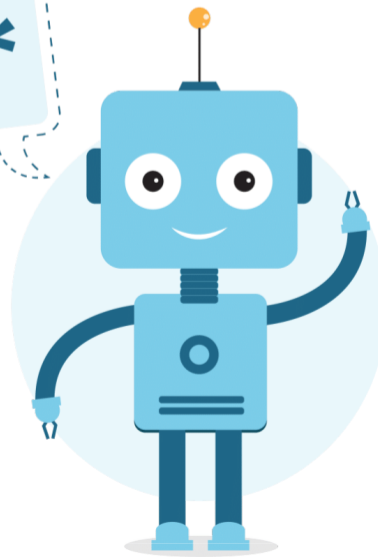
- First Band – Red, that means 2
- Second Band – Red, that means 2
- Multiplier – Brown, that means 10
- Hence by calculation it is  $22 \times 10 = 220 \text{ Ohm}$
- Tolerance Band – Gold, that means  $\pm 5\%$  variation in the value.
- Do it for all other resistors in the kit.



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THANK  
YOU



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