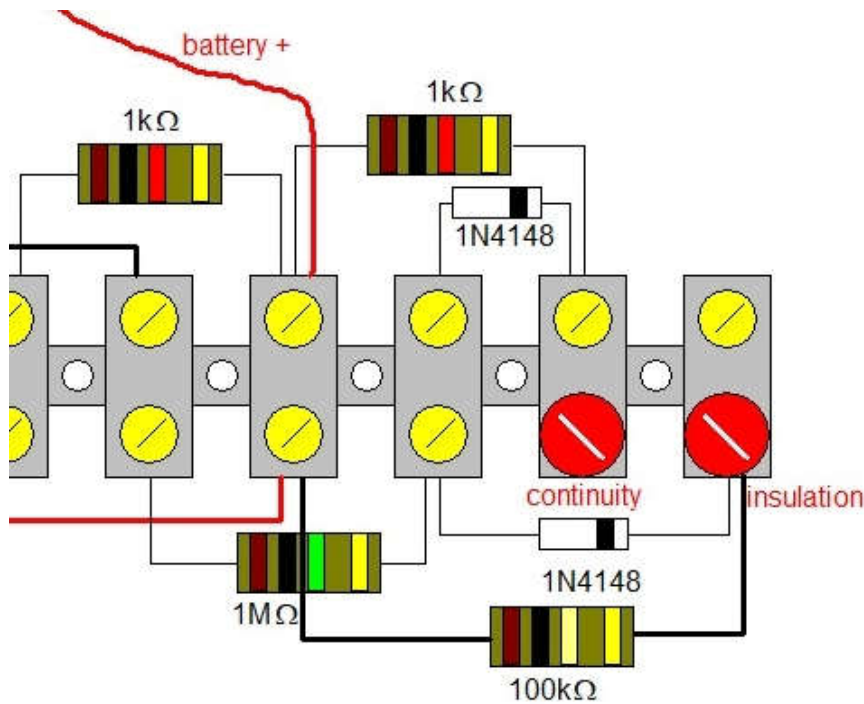


Investigation of resistance in series and parallel.

For this investigation you will need to make a small modification to your Squeekie. Connect a 100kΩ resistor to your Squeekie as shown in the diagram below.



This will make your Squeekie more sensitive to smaller resistances when using the Insulation setting.

Resistance is a measure of how much a material opposes the flow of electricity (an electric current).

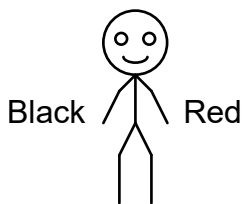
Resistance is measured in Ohms which has the symbol Ω .

A good conductor has a very small resistance of less than a few Ohms.

An insulator has a resistance of many millions of Ohms.

- (a) Connect one end of the black crocodile clip lead to the COMMON terminal of Squeekie, and one end of the red crocodile clip lead to the INSULATION terminal.

Hold the free black crocodile clip with one hand and the red one with the other.



What is the pitch of the tone from Squeekie?

.....

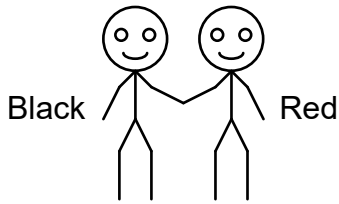
What happens to pitch if you squeeze the crocodile clips tightly?

.....

What does this tell you about your Resistance?

.....

- (b) Link hands with a friend and one of you hold the black crocodile clip and the other the red.



What is the pitch of the tone from Squeekie?

.....

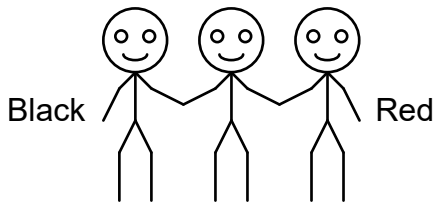
How does this compare with the tone in (a)?

.....

What does this tell you about the combined resistance of you and your friend compared to just you?

.....

- (c) Repeat this experiment with a second friend.



How has the tone from Squeekie changed this time compared to (a) and (b)?

.....

What does this tell you about the combined resistance of you and your friends this time?

.....

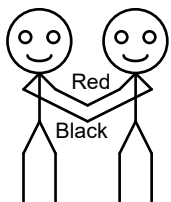
- (d) You have just formed a SERIES circuit with your friends. In a series circuit the electric current first passes through one object, then the next and so on until it arrives back at its source.

Complete the following sentences:

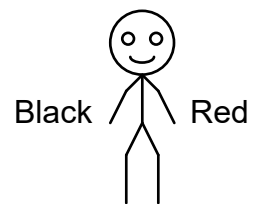
A SERIES circuit the total resistance of the circuit.

The more items in a series circuit the the overall resistance of the circuit.

- (e) Hold the free crocodile clips as you did in experiment (a).



Now get a friend to hold your hands, while you still hold the crocodile clips. What happens to the pitch of the tone from Squeekie?



.....

What has happened to the total resistance this time?

.....

- (f) Try and get a second friend to also hold your hands.
What happens to the pitch of the tone from Squeekie this time?

What has happened to the total resistance this time?

.....

- (g) You have just formed a PARALLEL circuit with your friends.
In a parallel circuit the electric current passes independently through each object.
This allows more electric current to pass and so produces a lower resistance

Complete the following sentences:

A PARALLEL circuit the total resistance of the circuit.

The more items in a parallel circuit the the overall resistance of the circuit.

Further investigations.

- (h) How many people can be connected in series and still make Squeekie produce a tone on the Insulation setting?

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- (j) What factors affect the resistance of a person?

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