

1.0 - Resistors

About resistors

Resistors are one of the most common and useful electronic components. Resistors control current, and their ability to control current allows them to be used to control potential. Despite their primary use of opposing current flow, resistors are an important part of nearly every type of circuit.

Resistor activity

1. What is resistance?
2. What does resistance do in a circuit?
3. What unit is resistance measured in?
4. What do we call materials that have a low resistance? Name some of these:
5. What do we call materials that have a high resistance? What are some of these made of?
6. Explain two precautions you should take when trying to accurately measure resistance:
7. Obtain a multimeter. Record its brand and/or model number.
8. Set the multimeter to its resistance range, hold one probe tip with the fingers of each hand, and measure your resistance. Be sure to include all digits, and any other symbols on the display.
9. Would you be considered a conductor or an insulator?

Teacher Check

10. Determine the colour code of each resistor listed in the chart. Obtain one of each resistor, and carefully measure and record its actual resistance. Are all of your resistors within tolerance?

Value	Colour 1	Colour 2	Multiplier	Tolerance	Measured Ω
100 $\Omega \pm 5\%$					
330 $\Omega \pm 5\%$					
470 $\Omega \pm 5\%$					
1.8 k $\Omega \pm 5\%$					
2.2 k $\Omega \pm 5\%$					
10 k $\Omega \pm 5\%$					

11. Using a **pencil**, darkly colour in this box. Measure and record its resistance.



12. Using a **pencil**, colour in this box, making sure to colour it as darkly and evenly as you coloured the box, above. Measure and record its resistance.



13. Explain the difference in the resistance of the two boxes that you coloured in the steps, above.

14. Use Ohm's Law to calculate how much current would flow through you, based on your resistance on the previous page, as well as through each of the two boxes on this page, if 120 V of potential was applied?

Teacher Check