## Science 9 – Ch10 Current Electricity Note 4: Resistance

- A resistor is part of an electric circuit that _____ the flow of electric **current**.
- We put resistors in a circuit in order to control the _____ going into different parts of a device.
- As current flows through a device/resistor, some of the electrical energy is _____ into another form, such as light or _____ energy.
- Every device we connected to a circuit has some amount of _____, even the WIRE!!

Ohm (Ω)

- The symbol for a resistor is:
- The unit for measuring the resistance value of a device is _____ (Ω).
- When a resistor is connected to an electric cell, the amount of _____ that flows through the circuit depends on **the amount of resistance**

Current Limiting Resistor

Battery
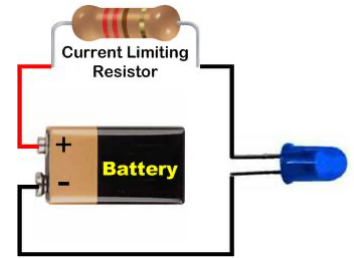
Resistor Colour Code

- Resistance value is usually colour coded.
- For Science 9 we will only focus on the first 3 colour bands. Let say we have a resistor with **Brown**, **Green** and **Red** colour bands

1st Digit   2nd Digit   Multiplier   Tolerance
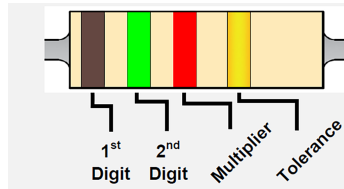
Colour	Numeric Value
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Grey	8
White	9

	1st band colour	2nd band colour	3rd band colour	Resistor Value (Ω)
(a)	blue	green	red	
(b)	violet	black	yellow	
(c)	green	blue	brown	
(d)	brown	red	black	
(e)	grey	violet	orange	
(f)	red	brown	red	

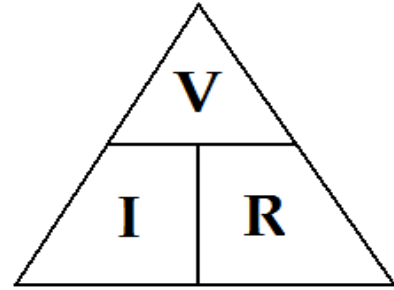| The value of a resistor is 230 Ω. What are the first three bands of colour on this resistor?	The value of this resistor is 6400 Ω. What are the first three bands of colour on this resistor?

- The relationship between **voltage, current and resistance** is known as

$$\boxed{\textbf{Ohm's Law: } V = IR}$$

Voltage (V) = _____ (I)   x   _____ (R)

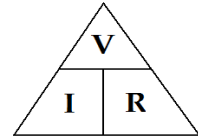   Volts (V)   amps (A)   ohms (Ω)

- The _____ the amount of resistance, the _____ the current

- **Resistance = Voltage ÷ Current** $R = \dfrac{V}{I}$

- **Current = Voltage ÷ Resistance** $I = \dfrac{V}{R}$

Example 1)
A current of 2.5 mA flows through a resistor when connected to a 16 V power supply.
What is the value of this resistor?

Example 2)
What is the current produced by a potential difference of 240 volts through a resistance of 0.2 ohms?