

# Electricity \ Electronics Basic Concept Review

- Ohms Law
- Voltage
- Current
- Resistance
- Using a Multi-meter



# Ohm's Law

Ohm's Law describes the direct relationship between the Voltage (V), Current (I), and Resistance (R) of a circuit.

The three different forms of Ohm's Law are as follows:

$$V = I \cdot R \quad I = \frac{V}{R} \quad R = \frac{V}{I}$$



$$V = I R$$

# Electrical Properties

## Voltage V

- Defined as the amount of potential energy in a circuit.
- Units: Volts (V)

## Current I

- The rate of charge flow in a circuit.
- Units: Amperes (A)

## Resistance R

- Opposition to charge flow.
- Units: Ohms ( $\Omega$ )

$$[V = I \cdot R]$$



$$V = I R$$

# Current Flow Analogy



High Current

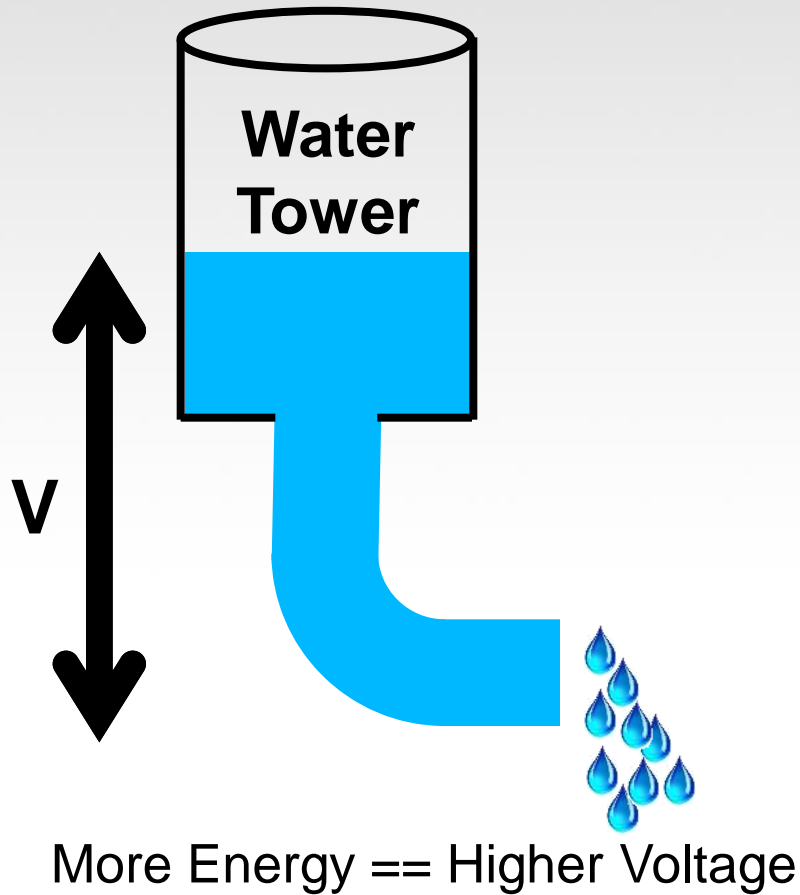


Low Current

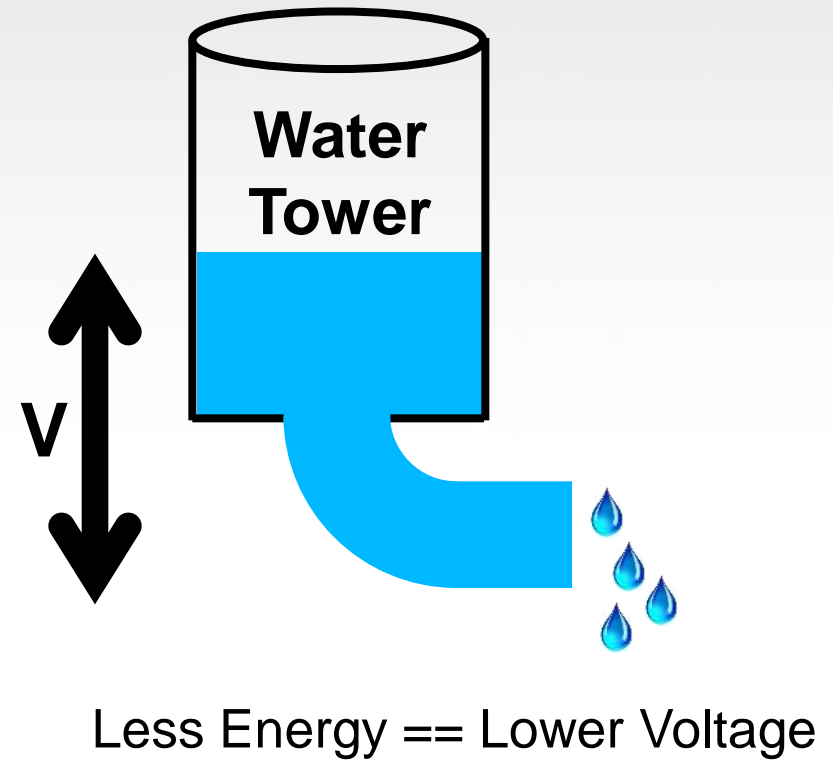


$$V = I R$$

# Voltage Analogy



$$V = I R$$

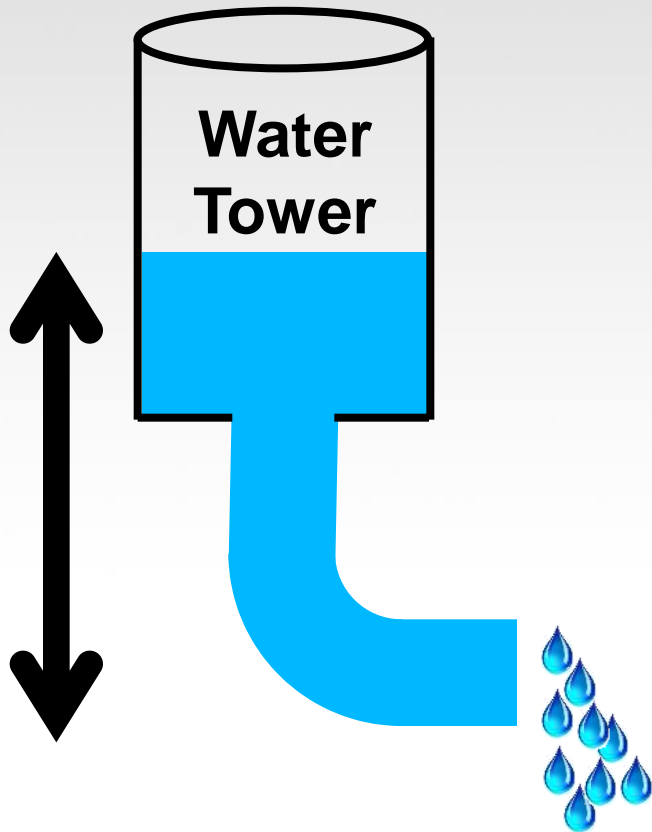


$$V = I R$$



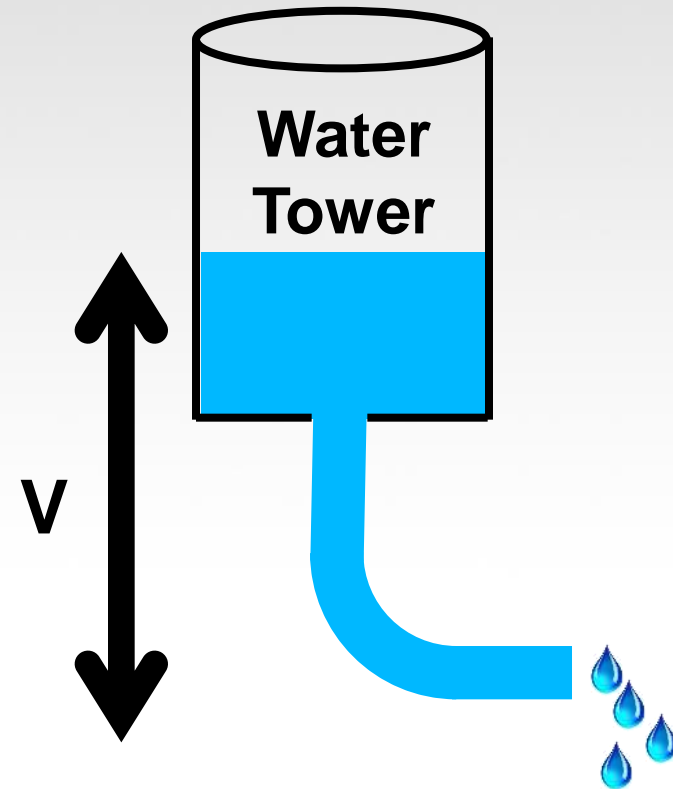
$$V = I R$$

## Resistance Analogy



Big Pipe == Lower Resistance

$$V = I R$$



Small Pipe == Higher Resistance

$$V = I R$$

