

Review

Basic circuits

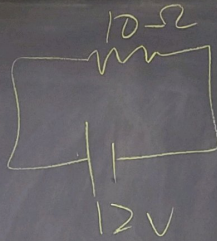
Waves

$$V = IR$$

Ohm's law

Voltage = Current \times Resistance

ex)



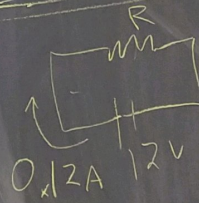
$$V = IR$$

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

$$I = \frac{12V}{10\Omega}$$

$$I = 1.2A$$

ex)



$$I = 0.12A$$

$$V = 12 \text{ Volts}$$

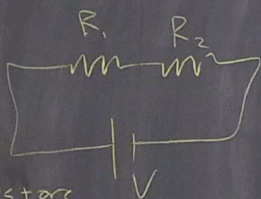
$$V = IR \quad \frac{V}{I} = R$$

$$R = 100\Omega$$

Series & Parallel

Find equivalent resistance (R_{eq})

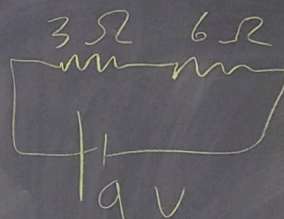
Series



Add the resistors together to find equivalent resistance

$$R_{eq} = R_1 + R_2 + \dots$$

ex)



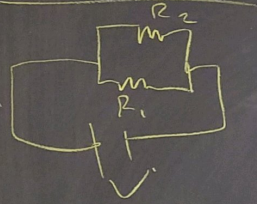
a) Find R_{eq}

b) what is current in the circuit?

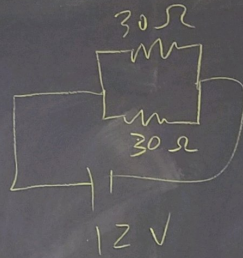
$$a) R_{eq} = 3\Omega + 6\Omega = 9\Omega$$

$$b) V = IR \quad I = \frac{V}{R} = \frac{9V}{9\Omega} = 1 \text{ Amp}$$

Parallel



ex)



a) Find equivalent resistance.

b) what is current going through the circuit?

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{30} + \frac{1}{30} = \frac{2}{30} = \frac{1}{15}$$

$$R_{eq} = 15 \Omega$$

$$b) V = IR \quad I = \frac{V}{R} = \frac{12V}{15\Omega} = 0.8 \text{ Amps}$$

equivalent resistance equals reciprocal of sum of reciprocals of resistors.

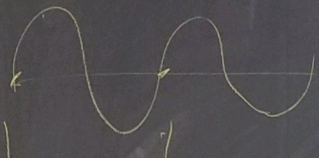
$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} \dots$$

Waves I

Period = Amount of time it takes to complete cycle.

$$\text{frequency} = \frac{1}{\text{period}}$$

Speed of wave = wavelength \times frequency



Wavelength

λ

$$v = \lambda f$$

frequency = $\frac{\text{cycles}}{\text{sec}}$
measured in hertz

Period of pendulum =

$\sqrt{\frac{\text{length}}{\text{gravity}}}$

$$T = 2\pi \sqrt{\frac{L}{g}}$$

ex) 1.5m pendulum on earth.
What is the period?

$$T = 2\pi \sqrt{\frac{L}{g}} = 2\pi \sqrt{\frac{1.5\text{m}}{9.8\text{m/s}^2}} = 2.4 \text{ sec}$$