Tesla v. Edison

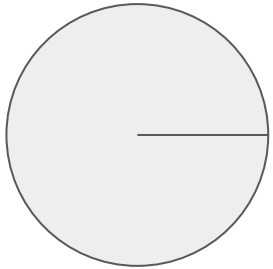
Escape if you can.

Agenda

1. Facilitator Introduction (10:25 - 10:27)
2. Spinner to randomly assign Edison/Tesla to groups (10:28 - 10:30)
3. Students sent to groups and select a group leader and introduce themselves (10:31 - 10:34)
4. In the main room, students will independently watch the Tesla / Edison tutorial videos (10:35 - 10:45)
5. Students are sent back to groups and begin the Escape Room challenge. Students solve the challenge problems on the google slide (10:46-11:04)
6. Winning group notifies Mr. Bari and Mr. Bari will immediately dismiss the breakout rooms and announce the winner is the Tesla or Edison of 2021.
7. Winning group presents their slides (11:05 - 11:10)

Group 2 Leader: lafayette (Javi)

Tesla



45m

Key for Door 1:

P = w/t

P = kE/t

P = (mv^2)/2t

A = πr^2

A = π(45)^2

A = 6358.5 m^3

P = (Apv^3)/2

P = [(6358.5 m^3)(1.25)(12)^3]/2

P = 6867180 watts ≈ 7000000 wats

Group 2 Leader: lafayette

Key for Door 2:

P=IV

200 = I(240)

I = 200/240=0.8333

I ≈ 0.83 A

Group 3 Leader: Sally Williams Edison

Key for Door 1:

V = 12.0 V

R = 3.0 Ω

P = V^2/R

I = V/R = 12 V/ 3.0 Ω = 4.0 amp

P = 4.0 amps * 12.0 V = 48 W

Group 4 Leader: Jing

Key for Door 1: 7000000

P=w/t

P=mv^2/2t

m=AlP

P=AlPV^2/2t V=l/t

P=APV^3/2

A=pi r^2

Tesla

P= 1.25
v= 12 m/s
D= 90

A= 45^2 x pi
A= 6362

P= (6362)(1.25)(12)^3 / 2

P= 6870960

Group 4 Leader:

Key for Door 2: 400

P= I_RMS x V_RMS

200= I_RMS x 240

I_RMS= .833

Ip=I_RMS x Root 2

I_p= 1.17803989

V_RMS = 240

Vp= 240 x Root 2

Pp= Vp x Ip

Pp= 1.18 x 338

Pp= 400

Group 4 Leader:

Key for Door 3: 14

DC doesn't fluctuate => DC Voltage = V_{RMS}

AC fluctuates => AC Voltage = V_{Peak}

$V_{Peak} = V_{RMS} * rad(2)$

$V_{Peak} = (10V) * rad(2)$

$V_{Peak} = 14V$

Group 5 Leader: Kevin 🎉

Edison

Key for Door 1: the tutorials are on the website, here

Power = Voltage (Current)

Power = 4 V * (3/6 Amps) = 2 Watts

Bulb 1 = ohms (Resistance)

Ohm's Law

Voltage = Current (Resistance)

Current = Voltage/Resistance

Resistance = Voltage/ Current

Group 5 Leader: Kevin

Key for Door 2:

	Bulb 1	Bulb 2	Bulb 3
Voltage	4V	4V	4V
Current	1.33A	0.67 A	2A
Resistance	3 ohms	6 ohms	2 ohms
Power			
Total			