**PHYSICS 2021 - 22 February 10, 2022**

**Today’s Agenda (Day 106)**

1. HOUSEKEEPING ITEMS

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1. HOMEWORK CHECK:

 🡪 Ch 22 & 23 Vocabulary

1. CLASS ACTIVITY

🡪ACTIVITY : Building Circuits

HOMEWORK:

* READ: Chapter 23 – Series and Parallel Circuits
* STUDY: Chapter 23 Test

<http://glencoe.mheducation.com/sites/0078807220/student_view0/self-check_quizzes.html>

Chapter 22 – Current Electricity

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| --- | --- | --- | --- |
| Electric current | Electric circuit | Resistor | Superconductor |
| Conventional current | Ampere | Parallel connection | Kilowatt-hour |
| Battery | Resistance | Series connection |  |

Chapter 23 – Series and Parallel Circuits

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| --- | --- | --- | --- | --- |
| Series circuit | Voltage divider | Short circuit | Circuit breaker |  |
| Equivalent resistance | Parallel circuit | Fuse | Ground-fault interrupter | Combination series-parallel circuit |

REMINDERS:

* **QUIZ: Ch 22 & 23 Vocabulary – Feb. 22**
* **QUIZ: Chapter 22 Calculations – February 24**
* TEST: Chapter 23 🡪 March 1

**PHYSICS 2021 - 22 PROJECT**

**Operation Beagle**

<http://www.hightechhigh.org/archived/dps/asolis/DP_Projects_OPBeagle.html>

 **Duration: 2 week**s

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| **The “Operation Beagle” Project**The goal of Operation Beagle is to help students explore Darwin’s Voyage of the Beagle (or any other Science Explorer’s Journey), while learning about electricity. The original game of Operation inspired the connection between Humanities and Math & Science.**Scope of Work**Every team of four (4) students is responsible for creating an electronic board game. The goal or “How to Win” the game, along with the rules, will be determined by each team. The following materials & tools (or something similar) will be required:-- Gift Box (11"x17"x2.5")-- 11"x17" Paper-- 18 Gauge Stranded Wire and Wire Cutters-- 30-Watt Soldering Gun with Flux-- Electrical TapeThe following suggested materials could be found at any electronic store:-- Conductive Material (Aluminum Foil, Screws, etc.)-- LED with Resistor-- Battery Casing-- 1.5V Motor-- Buzzers |  |

**Deliverables**

Circuit Challenge

Master Action Plan
Game Concept
Game Board
Detailed Schematic
Hardware

Digital Portfolio

**Requirements**

The Master Action Plan **must**:
-- Have ALL detailed items for the successful completion of the project
-- Reflect benchmarks via the dates
-- Have team member assignments
-- Be kept up-to-date

Game Concept **must** include a brief overview of the idea and how it integrates with electronics.

The Game Board **must** include:
-- A detailed World Map
-- Minimum of Forty (40) questions/factoids (evenly divided between Darwin’s journey/findings and Electricity/Magnetism)
-- Rules & Instructions on how to play
-- Necessary game cards and/or pieces

The Detailed Schematic **must** include:
-- A digital drawing representing the circuit
-- Proper labeling with actual values of electronic components (Final Drawing)

The Hardware **must** include:
-- A simple/complex circuit in series (minimum), parallel, and/or both
-- Two (2) electronic actions upon completing the circuit with a switch

-- Electronics that is integral to the game

The Digital Portfolio **must** include:
-- A brief overview of the Game Concept
-- Pictures of the exterior and interior of the game
-- An image file of the schematic

-- Have a reflection discussing technical issues occurring during the project and how they were overcome.

**Grading Criteria**

The students will be working in teams of four (4), but they will each receive an individual grade. The varying weights for the following criteria will determine their overall score.
-- Attractiveness
-- Creativity & Playability
-- Rules
-- Accuracy of Content
-- Schematic
-- Hardware (and its functionality)

**Safety**

By participating in Operation Beagle, the students are agreeing to all the safety issues discussed in class, when authorized tools are in use and they will employ all safety precautions to ensure each member (and future players) well-being.