Lab Pretest Blue: Friday…….Yellow Monday

ST Labs Covered: Parallel versus Series circuits; Gears (ratios) Transformation Systems Plastics lab

STE mystery box solenoid calorimetry

1. **Parallel versus Series Circuits.**

a) When you build a simple circuit, which one's wired assembly resembles an 8?_____

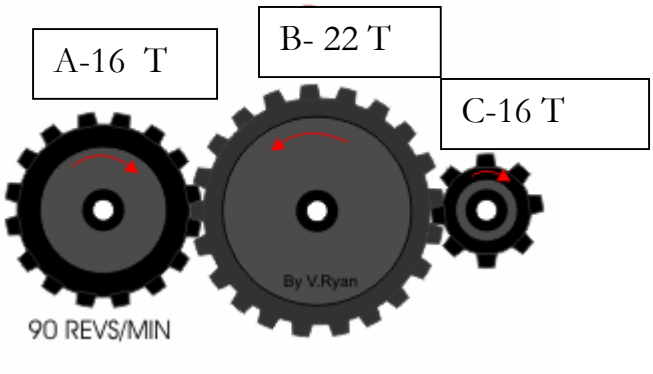
b) Draw how you would connect an ammeter to a parallel circuit in order to measure total current.

c) How many decimal places would the following measurement have if the needle was exactly on the 200?

d) What if it was halfway between the 0 and 100 mA?

2. Draw a gear train with the least number of gears possible. You want the input and output to move in the same direction.

3. How many turns will the output gear make if the A- gear makes 90 turns in one minute? Show work.



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b) Why did you have to place a black mark on each of the gears when doing this lab?

Transformation Systems

4. The part that's attached to the drill bit turns at 90° to the direction of the input gear. Which part of the drill is also responsible for this rotation in a different plane?

5. What transformation is involved in the hand drill?

6. What is the advantage of a longer handle from the point of view of work and force?

7. a) Would a pointy drill bit without threads work better than the one shown?

b) Why?

8. What parts in the design of the eggbeater make the blades turn faster than the handle?

Plastics

9. a)What physical property was being used to identify plastics when we were checking if they floated in a liquid?

b) Why were different liquids used?

c) Not all plastics break in the same fashion. Why not?

d) Why do you think PVC is the only plastic to produce a green flame in the Beilstein test?

e) The floatability test works best if the plastic are inserted ____at a time and about _____under the surface.

STE Mystery Box

10. You have four identical resistors. Here are the voltages measured;

V_T = 12.0 V

V_1= 2.9 V

V_2 = 3.0 V

V_3 = 3.0 V

V_4 = 9.0 V

Draw the circuit. Show where R_1, R_2, R_3 and R_4 are.

STE Calorimetry

11. To get the specific heat of a metal , what basic procedure was used?

12. What calculations were used?

13. What was the main error source in the design of the experiment?

STE Solenoid Lab

13. What was used to get the direction of the magnetic field?

14. What could have been done to make the compass flip direction?

15. Why didn't the compass respond to the earth's magnetic field while the electromagnet was turned on?