

# PHET ONLINE FARADAY & GENERATOR LAB

name \_\_\_\_\_ hr \_\_\_\_\_

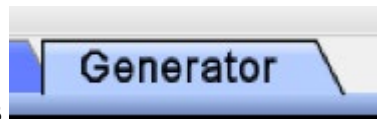
## **PART 1 FARADAY'S LAW SIMULATOR:** (search PHET Faraday's law on google)

[https://phet.colorado.edu/sims/html/faradays-law/latest/faradays-law\\_en.html](https://phet.colorado.edu/sims/html/faradays-law/latest/faradays-law_en.html)

1. Move the magnet inside the coil of wire and leave it there. What happens?  
\_\_\_\_\_
2. Now move the magnet back out. What happens?  
\_\_\_\_\_
3. Attach a voltmeter by clicking the box. Experiment with the speed that you move the magnet. What claim can you make about the magnet speed as it enters the coil?  
\_\_\_\_\_
4. Now click the double coil icon. Try to move the magnet at the same speed through each coil. What is the voltage like in the double loop coil? What is the voltage like in the quadruple loop coil?  
\_\_\_\_\_
5. To confirm your answer above, do the following: Put the magnet in the middle of the double coil, then flip the magnet field while watching the voltage. Do the same for the quadruple loop. Which coil generates the most voltage?  
\_\_\_\_\_
6. Click on the field lines box. Move the magnet such that there are only a couple of field lines passing through the coil. Now move the magnet so that there is a great density of field lines passing through the coil. Make a claim about field lines and voltage.  
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## **PART 2 FARADAY'S ELECTROMAGNETIC LAB:** (Search PHET Faraday electromagnetic lab on google)

<https://phet.colorado.edu/sims/cheerpi/faraday/latest/faraday.html?simulation=generator>



MAKE SURE YOU ARE ON THE GENERATOR TAB

7. Turn on the faucet to the left and observe what happens. Record below.  
\_\_\_\_\_
8. Set the water flow so that the RPM (revolutions per minute) is 20. Then set the RPM to 100. What is different with the lightbulb?  
\_\_\_\_\_

9. Notice the compass just to the right of the faucet. What is it doing?

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10. What does the red color on the compass mean?

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11. What color does red want to match with?

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12. If you put a north pole next to a north pole what will happen? (repel or attract?)

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13. Turn off the flow. What is the brown thing coiled under the light bulb?

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14. What are the blue dots in the brown coil?

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15. What are they doing at 0 RPM?

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16. What are the blue dots doing at 50 RPM?

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17. Complete the statement: When electricity flows through a wire, the electrons in the wire \_\_\_\_\_.

- a. Move from the beginning of the wire until they hit the end
- b. Move continuously until they hit the light bulb then stop
- c. Move back and forth, but never really go to a new location

18. More **magnet movement** leads to more \_\_\_\_\_ in the wire.

19. Now replace the lightbulb with the voltage meter (click on it). Change the loops down to one and observe the meter. Now change the loops to 3. How was it different?

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20. More loops lead to more \_\_\_\_\_.

21. When the water is off, (but high up in the pipe just waiting to move), this is called \_\_\_\_\_ energy.

22. The spinning of the wheel is called \_\_\_\_\_ energy.

23. The movement of electrons in the wire is called \_\_\_\_\_ energy.

24. The light bulb flashing is called \_\_\_\_\_ energy.