NON-CONTACT FORCES WEBQUEST

Directions: read through each section and record your answers on notebook paper.

GRAVITY

- **Click here.** Or go to: exploratorium.edu/ronh/weight/
- **Enter your weight (or 100 if you do not know your weight) into the white box.**
- **Click "calculate."**
- **Scroll down and see what your weight would be on different planets.**
- **Use the images and the text below to answer the questions below onto your paper.**

1. On which planet would your weight be the greatest?
2. On which planet would your weight be the lightest?
3. Why does weight change if you are on a different planet?
4. The _____ of a body is a measure of how much matter it contains.
5. The gravitational attraction between objects depends on what 2 things?
6. What do scales measure?
7. If your mass is doubled, what happens to your gravitational pull?
8. The _____ you are from the center of the planet, the _____the pull between the planet and your body. The force gets weaker quite _____.
9. Read the poem near the bottom of the page by Francis Thompson. What does he say in the poem that you cannot do without also troubling a star?
10. Click the first link at the bottom that says, "Your Age in Other Worlds." Click it then calculate what your age would be on the planet Mars. Explain why age depends on what planet you are on.

ELECTROSTATIC FORCES

CLICK HERE or go to: tinyurl.com/phetforces2

1. Look at the balloon. What can you say about its charge? (Hint: count both types of charges)
2. Click and drag the balloon and rub it against the sweater. What happens to the balloon?
3. How did the balloon get charged, with what type of charge?
4. Where did that charge come from?
5. What happened to the sweater? How did it get charged?
6. Bring the balloon in the middle, between the sweater and the wall. What happens to the balloon when you let it go? Explain.
7. What is the overall charge of the wall?

8. Bring the balloon in contact with the wall. What happens to the charges in the wall?
9. Let go of the balloon. What happens?
10. Click the "Reset All" button. Select "show all charges", and "Two balloons". What can you tell about the overall charge of all the objects in your simulation window?
11. Select "Show charge differences". Rub each balloon against the sweater. What happens to each one of them?
12. Why are the two balloons stuck on the sweater? Positives attract negative.
13. Try to get one balloon off the sweater by using the other balloon. Can you do it? If yes, explain why this is possible.

MAGNETISM

Or go to: tinyurl.com/magpoles1

Click here- read the steps followed for the experiment and analyze the photos.

1. Contrast how the iron fillings look between N-N poles and N-S poles.
2. Describe how magnets, paper, and iron fillings were used to model magnetic fields.
3. Sketch the magnetic field of a bar magnet showing attraction.
4. Sketch the magnetic field of a bar magnet showing repulsion.
5. Click here and analyze the photo of Earth's magnetic field. How does it compare to the magnetic field of a bar magnet?

link not working? go here: tinyurl.com/magearth

GRAVITY PART 2

CLICK HERE or go to: tinyurl.com/gravitydrop1

1. If the boy drops an apple and a hammer at the same time on Earth, which do you predict will hit the ground first?
2. Add an apple to one hand of the Earth boy and a hammer in the other and click "drop." Which hit the ground first?
3. Now try the same with a 1kg weight and a 5kg weight. Which hit the ground first?
4. Take a minute to explore dropping different mass objects on Earth.
5. Next, explore different objects dropping on the moon, where there is no wind or atmosphere.
6. Compare dropping a 5kg weight and a paper wad on the earth and dropping the same objects on the moon. What's the difference?
7. Why do you think a feather or a sheet of paper take longer to reach the ground on Earth than some other objects?

*ONCE ALL QUESTIONS ARE ANSWERED, TURN IN YOUR PAPER.