

PRE-LAB WORKSHEET



1. How does gravity affect objects? Circle the correct answer(s). Be prepared to explain your responses.

- Gravity is not a force because it can't move objects.
- Gravity is a force because a force is a push or a pull.
- The moon has less gravity than the Earth because it has less mass than the Earth.
- The moon has less gravity than the Earth because it has no atmosphere.

2. Before we start.

What variables (physical properties) do you think will affect gravity?

3. Open the simulation in your browser

https://phet.colorado.edu/sims/html/gravity-force-lab/latest/gravity-force-lab_en.html

Force on m2 by m1 = 0.000 000 001 643 N

Force on m1 by m2 = 0.000 000 001 643 N

0 meters 1 2 3 4 5 6 7 8 9 10

Mass 1: 50 kg

Mass 2: 50 kg

Show Values

Constant Radius

Gravity Force Lab

PhET

What variables are on the simulation? Circle them from the list.

distance between figures

mass of the spheres

force

size of the figures

strength of the figures

size of the meter stick

4. What do you think the size of the arrows on top of each sphere represent?

5. How do you think the following variables affect gravity?

Distance:

Mass:

Size:

6. How does the changing the separation of the objects affect the force between them?

7. What happens to the force between the objects when mass 1 increases?

8. What happens to the force between the objects if mass 2 decreases?

9. What direction are the gravitational forces acting on the objects?

10. Talk to your partners. Discuss how to design an experiment to prove the relationship between the variables on #5 and gravity. Share your ideas with the class.

11. Write down your final design. Make it clear. Indicate the number of experiments needed, the number of data you are going to collect and the variables in each experiment. Distinguish between dependent, independent and constant variables.