GRAVITY BUCKET LAB

Stage 1

Partner up with another group to complete this stage.

1. Gather one gravity bucket, one marble, and one set of balls.
2. Place your bucket on a flat, non-skid surface.
3. Place the cue ball in the center of the fabric.
4. In the space below, draw a model of the system you created. Label what you think each part represents.

1. Begin **Trial 1**. Compare the cue ball and marble by placing each on the bucket and observing the fabric dip. Measure the mass of each ball and record it in the data table. Record which ball has the greater volume, and which one caused the fabric to dip further.

2. Begin **Trial 2**. Replace the cue ball with a wood ball. Repeat the procedures from the previous step.

Trial	Balls	Mass	Volume	Dip
1	Cue ball			
	Marble			
2	Marble			

3. Begin **Trial 3**. Choose any two balls and hypothesize which ball will create the bigger dip. Repeat the procedures from the previous steps.

Trial	Balls	Mass	Volume	Dip
3				

1. How did your group decide which ball would create the biggest dip? Explain your reasoning.

2. Was your hypothesis correct? Why or why not?

3. On your model, identify and label where the fabric is the flattest and where it is the most curved toward the ground.

4. Why do you think the fabric curves the way it does? How does that influence the model you drew?

Stage 2

1. Begin **Trial 1**. Select two balls of your choice and place them on different sides of the gravity bucket. Write down what you observe.
2. Begin **Trial 2**. Replace one of the balls with a steel ball. Write down your observations.

Trial	Balls	Observations
1		
2		
	Steel Ball	

3. Begin **Trial 3**. Remove the two balls from the bucket and place a baseball in the center to represent the sun. Select a marble to represent Earth. Determine how to make the marble (Earth) orbit the sun. Write down how you achieved the orbit.
4. Begin **Trial 4**. Remove the baseball. Place the steel ball in the center of the bucket to represent a black hole. Determine how to make the Earth marble orbit the black hole. Write down how you achieved the orbit.

Trial	Balls	Observations
3	Baseball	
	Marble	
4	Steel ball	
	Marble	

Post-Lab Questions

1. How was gravity represented in this lab?

2. What factors influence the amount of gravity? How?

3. Why did we use the gravity bucket to model the solar system instead of observing the solar system itself?

4. How did this lab change the way you think about the solar system?