

What's Gravity Got to do with it?

Gravity is an attractive force. Earth's gravity naturally pulls us toward the center of the planet and this keeps us from drifting off into space. Mass is the amount of matter contained inside of an object. An object with more mass has more gravity.

The Sun has the most gravity in our solar system and it is this gravity that keeps the planets in their orbits. Without the gravity from the Sun pulling on the planets they would all drift off into space. Each planet has its own gravity, too and its density determines the gravity. Many people think it is the size but it really has to do with its density. The denser the planet, the greater the gravity.

Watch the video "What is Gravity?" from www.missdoctorbailer.com. Complete the 3-2-1 Summary below.

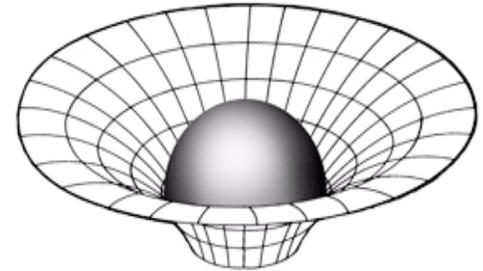
Write three ideas you learned from the video.

Write two ideas you already knew from the video.

Write one question you still have about gravity.



A gravity well is the result of the pull of gravity caused by a body in space such as a planet. Scientists have likened space to a mesh fabric and planets as heavy balls laying on the fabric. The weight of the planet stretches the fabric in such a way that it forms a funnel that is steeper the closer it gets to the planet as shown in the diagram.



Materials: small bowl, Saran wrap, size C or D battery, marble

What To Do:

1. Stretch the Saran wrap over the top of the bowl.
2. Place the battery in the center of the Saran wrap.
3. Place the marble at the edge of the bowl and observe what happens.
4. Place the marble in the center and test if the battery will roll toward it from the edge of the bowl.

Questions:

1. Describe what happened when the battery was placed on the Saran wrap.

2. Describe what happened to the marble.

3. Why did the marble roll toward the battery?

4. Why didn't the battery roll toward the marble?

5. What does this information tell you about planets and their gravity?



How Does Gravity on Earth Compare With Other Planets?

Materials: calculator

What To Do:

1. Use the chart below to determine the weight of a person who weighs 85 pounds on each planet in our solar system.

| Planet | Gravity at Surface | | Weight on Earth | Weight on Planet |
|---------|--------------------|---|-----------------|------------------|
| Mercury | .38g | X | 85 | |
| Venus | .91g | X | 85 | |
| Earth | 1.0g | X | 85 | |
| Mars | .39g | X | 85 | |
| Jupiter | 2.53g | X | 85 | |
| Saturn | 1.07g | X | 85 | |
| Uranus | .91g | X | 85 | |
| Neptune | 1.16g | X | 85 | |

Questions:

1. On which planet would you weigh the most? _____
2. Why do you think this is true? _____
3. On which planet(s) would you weigh the least? _____
4. Why do you think this is true? _____

How far could you jump?

Materials: meter stick, calculator, volunteer

What To Do:

1. Place the meter stick on the floor near a clear area.
2. Have a volunteer from your group place the toes of their shoes at the 0 end of the meter stick.
3. The volunteer should jump one time as far as they can.
4. Mark the place on the meter stick where the toes of their shoes ended up.
5. Count the number of centimeters and write the number in the Length of Jump boxes in the chart below.
6. Use your calculator to determine how far the jump would be on the other planets in the solar system.

| Planet | Length of Jump in cm | | Gravity at Surface | Length of jump on Planet |
|---------|----------------------|---|--------------------|--------------------------|
| Mercury | | ÷ | .38g | |
| Venus | | ÷ | .91g | |
| Earth | | ÷ | 1.0g | |
| Mars | | ÷ | .39g | |
| Jupiter | | ÷ | 2.53g | |
| Saturn | | ÷ | 1.07g | |
| Uranus | | ÷ | .91g | |
| Neptune | | ÷ | 1.16g | |

Questions:

1. On which planet could you jump the farthest? _____
2. Why do you think this is so? _____



Name _____ period _____

EXIT TICKET

What's Gravity Got To Do With It?

1. Gravity is considered a _____.

- A. Myth
- B. Theory
- C. Force
- D. Problem

2. The denser an object is the _____ gravity it has.

- A. More
- B. Less

3. Mass is the amount of _____ contained in an object.

- A. Liquid
- B. Solid
- C. Gas
- D. Matter

Conclusion: (densest, Jupiter, Sun, gravity, density, Saturn,)

The _____ is the largest body in our Solar System.

_____ is the largest planet in our Solar System. The

amount of _____ a planet has is determined by its

_____.

Things will weigh the most on Jupiter because it is the _____ planet.



Name _____ period _____

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