



Mass & Weight

What I Will Be Learning In This Mastery Badge:

In this mastery badge we will learn about mass and weight. Including how they are related to each other but that they are not the same things.

What This Packet Includes:

It is important that you complete all aspects of this packet so that you gain the knowledge and skills that we are working on.

- I. **Discovering Lab**
A discovering lab is a fun, introductory lab, where we discover the knowledge on our own.
- II. **Video Instruction**
You will watch a video presented by Mr. Bertoch, and answer questions about it.
- III. **Literacy Practice**
Reading and writing are critical life skills, and also very important to science. You will read the assigned article and complete a writing prompt.
- IV. **Applying Lab**
An applying lab is how you pass off the Mastery Badge. It serves as the quiz. It is a hands on demonstration that you have mastered the skills and content of this badge.

Key Things We Will Learn In This Mastery Badge

Some of the most important things we will learn in this mastery badge:

- What is Matter?
- How we measure matter.
- How gravity affects matter.
- What is mass?
- What is weight?
- Mass and weight are not the same things.

Name: _____

Date: _____



Discovering Lab

Learning Through Hands On Activities



Activity: Discovering Weight

Directions: Follow the steps below to discover how different objects have different weights



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

Goal: To learn as much as you can about weight and mass

Experiment 1: Collect Data About The Weight of different objects

Scientists support their conclusions with data and evidence. As a scientist, it is important that your data be accurate and precise. Take your time and hold yourself to a high standard. You want to be a good scientist!

Supplies You Will Need:

To complete this lab you will need a scale. It would be best to use a precision scientific scale. If you don't have such a scale, you can purchase one for very little money on HandsomeScienceTeacher.com. Alternatively, you can also use a kitchen scale or a bathroom scale. A kitchen scale will be more precise than a bathroom scale.

1. Select five objects to weigh.
2. Record your results below.

Object	How much does it weigh?

Analyze Your Data

After collecting good and precise data, scientists use their data to draw conclusions about how the Universe works. Look over your data and see if you recognize any patterns. Why do you think some objects are heavier than others? Which objects were heavier and how were they different from the objects that are lighter?

Experiment 2: Discovering Mass

1. With an adult's permission, go outside and collect 100 rocks of about the same size.
2. Put your rocks into a bag and weigh them.
3. How much do your rocks weigh?

4. Now remove 50 of the rocks and weigh the bag again.
5. How much do the rocks weigh with half of them removed?

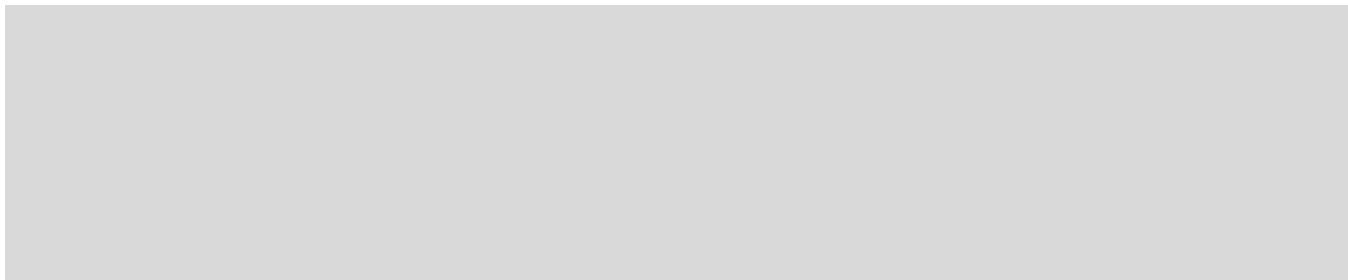
6. Why do you think the bag weighs more when there are more rocks in it? Give a detailed explanation of what is going on.

7. In your experiment you have seen that adding more mass (rocks) to an object increases its weight. You have seen that there is a direct connection between how much mass an object has, and how much it weighs. Now, consider another example. If a car weighs more than a basketball, which object is more massive? In other words, which object has more mass or atoms? Explain why this is the case.

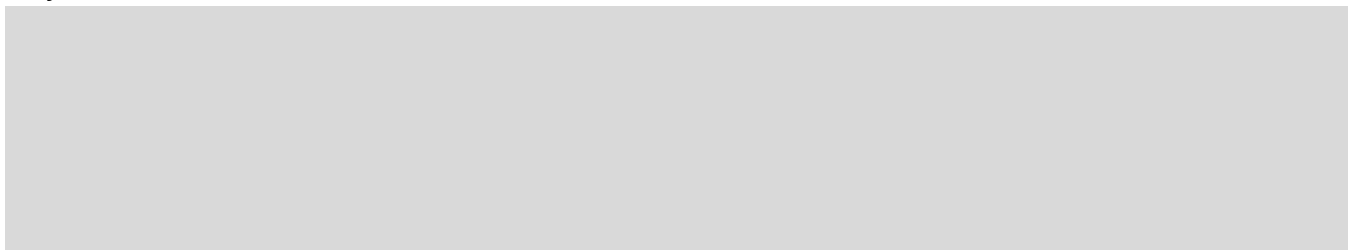
Final Questions:

Remember to answer all your questions using complete sentences.

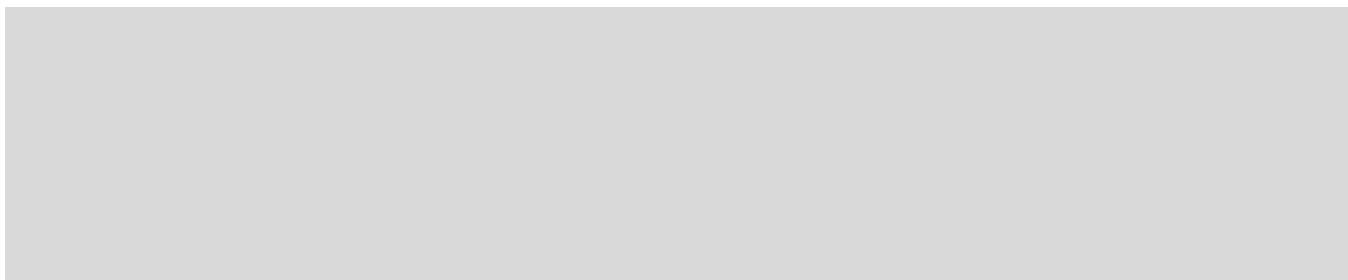
1. What does mass tell us about an object? In other words, what does the word mass mean?



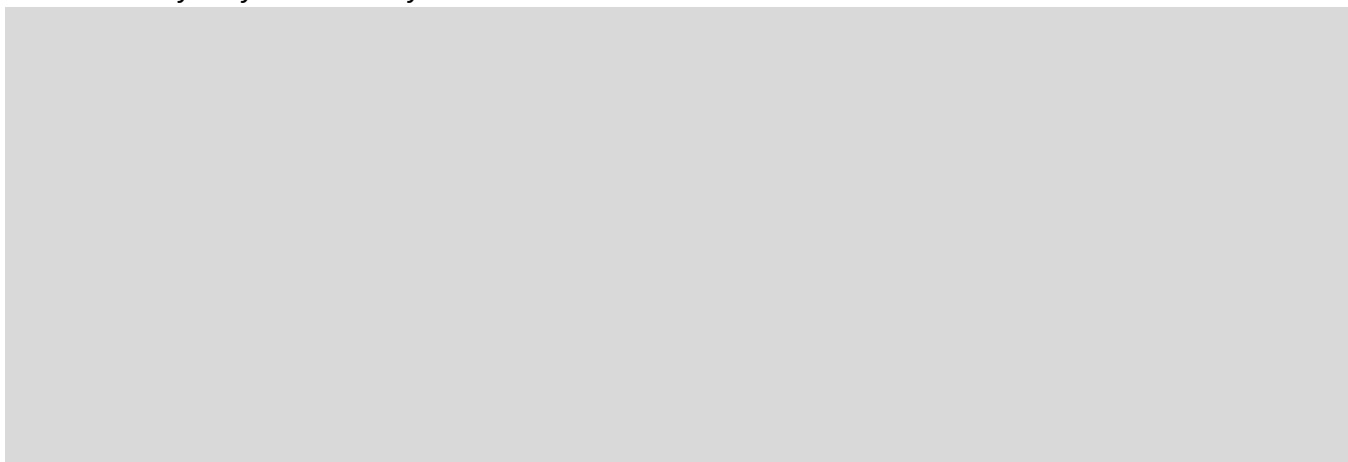
2. Is it possible to count the total number of atoms to figure out how much matter an object has? Why or why not?



3. If we can't count up all the atoms, how else can we describe or measure the mass? Think about the experiments we just did. How did we figure out which ones were more massive and which ones were less massive?

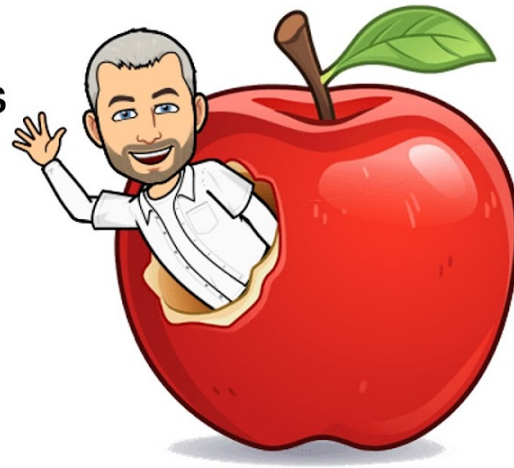


4. Scientists often use weight to determine which objects are more massive and which objects are less massive. Why do you think they do this?



Video Instruction

Reviewing The Teacher's Instruction At My Own Pace



Handsome Science Teacher One Take Videos

Now that you have completed the Discovering Lab let's watch the video that goes with it. In this video Mr. Bertoch will help connect the discoveries that you made during the lab to the broader concepts covered under this badge, and will also introduce the vocabulary that goes with these concept.

Take Your Time, Pause And Rewind As needed

You are not in a hurry! It is more important that you understand the concepts in this video than that you finish it quickly. Take your time. If you don't understand something, pause the video and use the Internet or other resources to look up the concept that has you confused.

When you finish this video, you should have a good understanding of the concepts that have been taught. If you find yourself confused, rewind, and rewatch.

The Video For This Mastery Badge Can Be Opened Using This QR Code

This Mastery Badge includes one video:



Watch The Assigned Science Video

Scan This QR Code To Open And Watch The Assigned Video For This Mastery Badge

Check Point

Let's make sure that you really did take your time and watch the video carefully! Remember that it is important to hold yourself accountable to a high standard and to take pride in your own success as a learner.

I watched the video carefully, and paused to look up anything I didn't understand.

Recording Your Learning

On the next page, you will record your learning and connect it to things you already know.

Ten Things I Learned From This Video

A powerful tool to help you retain what you learn is to take notes. Notes give you something that you can look back at later, to quickly remind your brain reinforcing the memories for the concepts you have learned. Record ten things that you learned or that you perhaps already knew that were discussed in this video.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

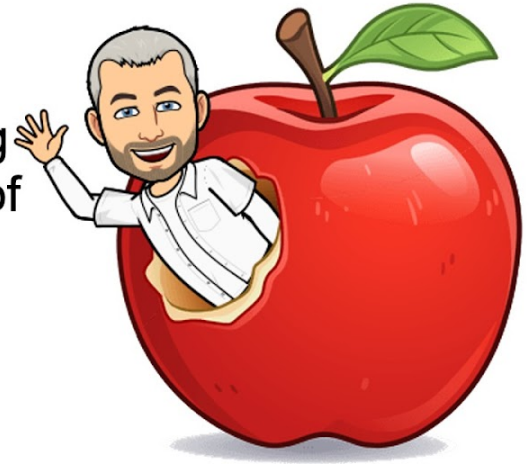
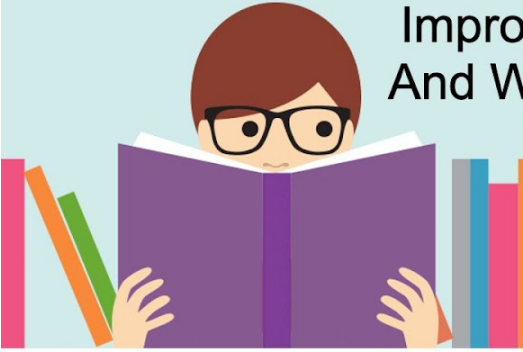
Now, Let's Connect These New Concepts To Things You Already Knew

Another great way to help your brain retain new things is to connect these new concepts to other things that you already know. This gives your mind a place to store the new knowledge. Imagine that you are placing the new knowledge on a shelf in your brain next to facts that are already in there.

Write a paragraph explaining how the concepts taught in this video relate to things you already knew. There are no wrong answers. What are some things that you already knew that this video reminded you of?

Literacy Practice

Improving Our Reading
And Writing In Search of
Knowledge



Activity: Reading And Writing

Directions: Reading and writing are very important life skills. Good scientists must be able to learn through reading and communicate their own discoveries through writing.



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

1. Practice Reading For Understanding

Read the article below **for understanding**. Reading for understanding means that you take your time and monitor your own learning. If you get to the end of a sentence and you do not remember or understand what you read, **re-read it**.

2. Practice Writing To Communicate

Complete the writing prompt below. Do your very best to write clearly so that others will understand what you are saying. This means using correct spelling, grammar, and writing, taking your time to think about the best ways to clearly communicate to others the main ideas that you are trying to get across to them.

Article:



Read The Assigned Article Carefully For Understanding.

<https://handsomescienceteacher.com/Online-science-classes-kids/mass-versus-weight/>

Scan This QR Code To Open And Read The Article That Goes With This Mastery Badge

Check Point

Let's make sure that you really did read for understanding! Remember that it is important to hold yourself accountable to a high standard and to take pride in your own success as a learner.

I Read For Understanding. I did not skim the articleI understood the material that the article discussed.

Quiz Time

Complete the quiz at the end of the article and post your score in the box below. Your goal is to get at least 75% on the quiz. Did you accomplish this goal?

%

Now Let's Write To Communicate

Remember that when you write to communicate you are taking your time, and explaining the topic in a detailed and concise way. Don't rush! You are not in a hurry. Think about what you are going to say, and plan how you will say it. So that someone else who reads your paragraphs will understand them easily.

Writing Prompt: Write two paragraphs in your own words describing the difference between mass and weight.

Blank area for writing the response to the writing prompt.

Name: _____

Date: _____



Applying Lab

Proving That We Can Do It Ourselves



Activity: Are Double-Stuffed Oreos Really Double-Stuffed?

Directions: Follow the instructions below to determine whether or not double-stuffed Oreos are really double-stuffed.



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

Supplies You Will Need:

To complete this lab you will need a scale. It would be best to use a precision scientific scale. If you don't have such a scale, you can purchase one for very little money on HandsomeScienceTeacher.com. Alternatively, you can also use a kitchen scale or a bathroom scale. A kitchen scale will be more precise than a bathroom scale.

You will also need a package of regular Oreos, a package of double-stuffed Oreos, and a butterknife.

Problem:

A horde of angry naked mole rat zombies have awakened from a slumber placed on them long ago. Unlike human zombies, naked mole rat zombies do not eat brains. They eat the frosting from Oreo cookies. These hordes have begun to cover the Earth and if their insatiable hunger for Oreo cookie frosting isn't satisfied soon, they will destroy all of civilization.

You have been assigned by the President to lead the team responsible for feeding the naked mole rat zombies. Being the efficient and smart scientist that you are, you have decided to use double-stuffed Oreos instead of regular Oreos. This is because Oreo claims their double-stuffed cookies have twice as much frosting as their regular cookies.

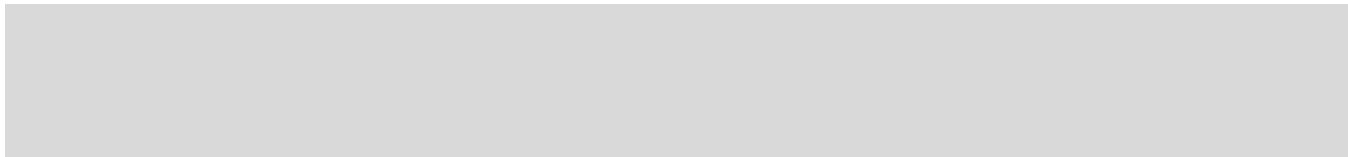
Before your team begins though you need to know if these claims are true. Your job is to find out whether or not Oreo is telling the truth. To do this, you will need to calculate the mass of the frosting found in each type of cookie (single-stuffed and double-stuffed).

Plan And Carry Out An Investigation

Scientists must plan and then carry out investigations. To do this, they first think about a problem that they are trying to solve and then come up with a detailed step-by-step plan.

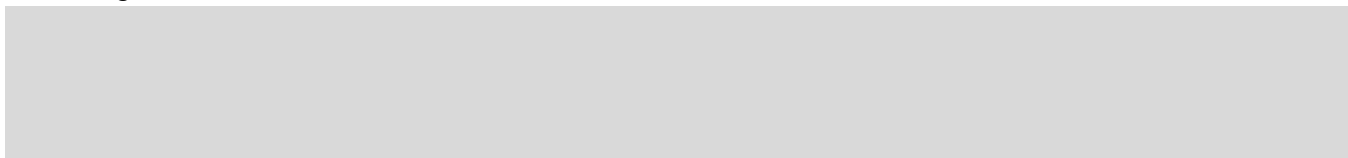
The Problem:

Restate in your own words the problem that you are trying to solve.



Brainstorm:

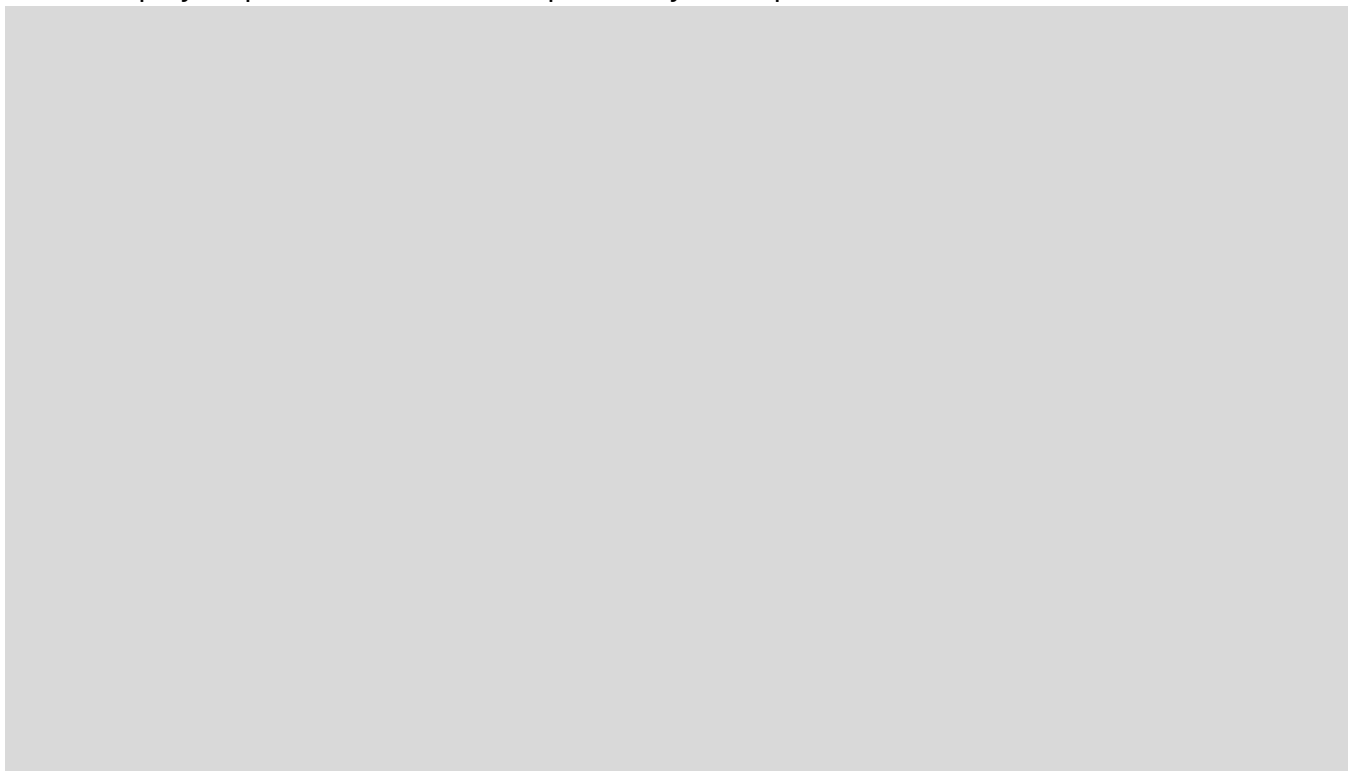
How can you solve this problem? How will you determine whether or not the mass of double-stuffed Oreos is twice that of single-stuffed Oreos?



Write Your Procedures:

Before you carry out your investigation it is important to write detailed step-by-step instructions. This is your experiment. You are the lead scientist. This means that you and only you can decide how many steps your procedures will include. Just make sure that your steps are very detailed so that anyone else could follow them and get the same result as you.

Write detailed step-by-step instructions for the experiment you will perform:



Record Your Results:

After completing your experiment it is important to record accurate results. Use the space below to record your results.

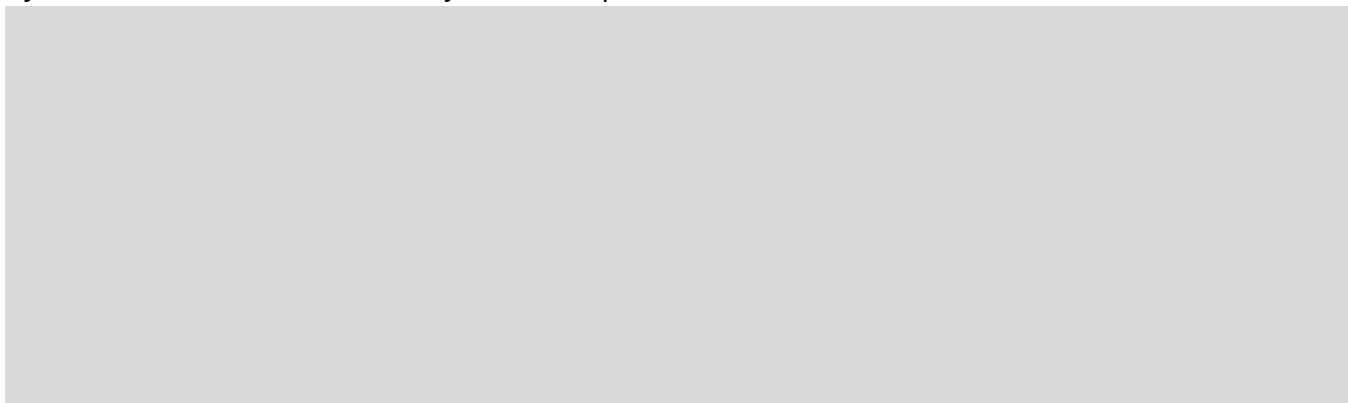
What is the mass of the frosting of a regular (single-stuffed) Oreo cookie?



What is the mass of the frosting of a double-stuffed oreo?

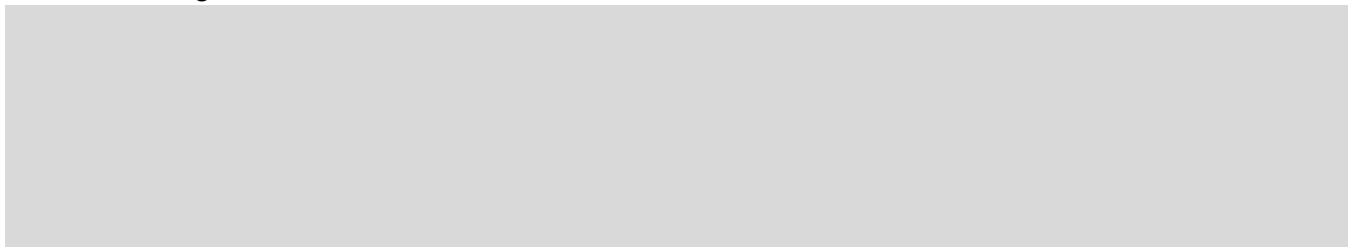
**Draw Conclusions Based on Evidence:**

If Oreos' claims are true, then your second measurement should be exactly twice as large as your first measurement. What did you discover? Is Oreo telling the truth about their cookies being double stuffed? Support your answer with evidence from your own experimentation.

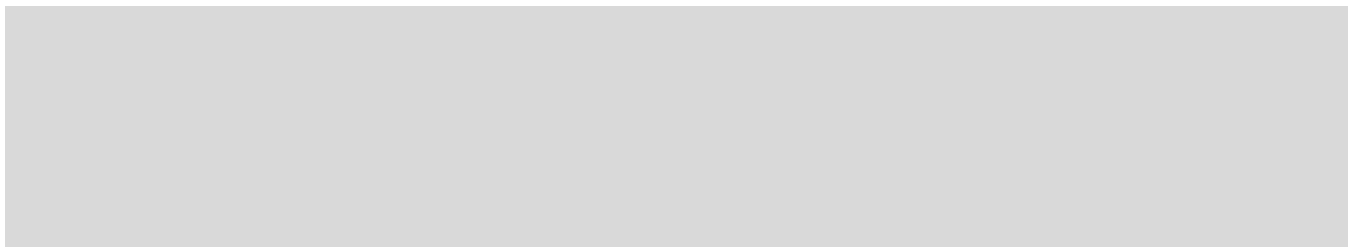
**Final Questions:**

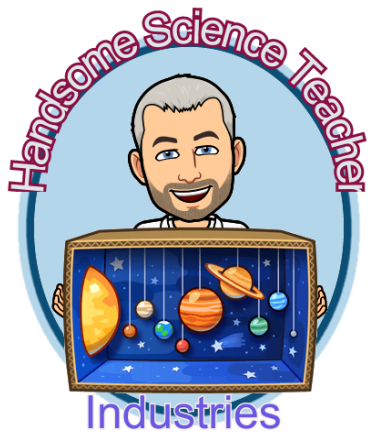
Answer each question using complete sentences.

1. **What does weight measure?**



2. **What does mass measure?**





Congratulations! You Have Completed The Entire Mastery Badge

You have worked really hard to earn this mastery badge. More importantly, you have worked hard to earn your knowledge!

Time To Evaluate Your Work

Check each of the following to evaluate your work:

1. Did you do every assignment?
2. Did you read the assigned article?
3. Did you watch the assigned video?
4. Did you answer all the questions using complete sentences?
5. Are your answers accurate?

My Self-Evaluation:

Based on the criteria listed above, I believe I have passed off this Mastery Badge because...
(Be detailed and specific)

Mastery Badge Counselor Evaluation:

I have reviewed this student's work. Based on the criteria listed above I hereby certify that they have passed off the Mastery Badge because... (Be detailed and specific) Note: Any adult may serve as a Mastery Badge Counselor, so long as they are committed to ensuring the highest standards of excellence.

Student's Signature

Date

**Signature of Mastery
Badge Counselor**

Date

Certificate For Your Homeschool Records

The following certificate which has been awarded through self-evaluation by the student, and also certified by a mastery badge counselor proves that the student listed thereon has completed all the work and has mastered all the concepts for the specified topic.

Keep this on file as evidence of your successful completion of this topic.

If audited by the State, these certificates stand as evidence that you have worked on and successfully completed a rigorous science curriculum.



The certificate is enclosed in a decorative, repeating pattern border. On the left side, there is a circular logo featuring a cartoon man with a beard and glasses, wearing a white lab coat, holding a tablet that displays a solar system with various planets. The text "Handsome Science Teacher" is written in a pink, curved font above the man, and "Industries" is written in a blue, curved font below the man.

Mastery Badge Certificate

Topic: Mass & Weight

Student Name: _____

This certificate certifies that the person named above has completed all of the requirements to earn this Mastery Badge.

MASTERY BADGE COUNSELOR SIGNATURE

DATE AWARDED



A smaller version of the logo is located in the bottom right corner of the certificate.