

RAEN SCIENCE WORKSHOP

DECEMBER 05 & 06, 2016

FACILITATORS

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&

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WHAT IS TODAY ALL ABOUT?

... TODAY YOU WILL LEAVE WITH

- AN INCREASED AWARENESS OF WHAT TO EXPECT FROM TASC SCIENCE FORMS G,H, & I
- AN INCREASED AWARENESS OF HOW AND WHY WE USE INFOGRAPHICS IN THE CLASSROOM
- STRATEGIES FOR TURNING THE STUDENTS INTO RESEARCHERS AS THEY STUDY “WHAT IS MATTER?”
- ONLINE RESOURCES TO HELP BETTER PREPARE YOUR STUDENTS (AND MAYBE YOURSELF) FOR TASC SCIENCE

TODAY'S AGENDA

- REVIEW OF THE CHANGES TO THE TASC (AND TRA) SCIENCE SECTION
- INTRODUCTION TO INFOGRAPHICS
- LUNCH
- WHAT IS MATTER?
- RESOURCE SHARE
- WRAP UP

DON'T WORRY... THERE WILL BE A COFFEE/TEA BREAK AS WELL!!!

LET'S GET TO KNOW ONE ANOTHER... ...SHARE WITH US

- YOUR NAME
- YOUR ORGANIZATION
- HOW LONG YOU HAVE BEEN TEACHING IN ADULT EDUCATION
- HOW COMFORTABLE YOU ARE TEACHING TASC SCIENCE

WHAT'S NEW WITH THE TASC...

- TASC FORMS D,E, & F CONSISTED OF:
 - 40% EARTH SCIENCE
 - 40% LIFE SCIENCE
 - 20% PHYSICAL SCIENCE

- TASC FORMS G,H, & I CONSISTS OF:
 - 30% EARTH SCIENCE
 - 50% LIFE SCIENCE
 - 20% PHYSICAL SCIENCE

Information about the TASC Science Exam

- ❖ TASC Test Blueprints (9 pgs.) <http://www.tasctest.com/resources.html>
- ❖ TASC Item Specifications (116 pgs.) <http://www.acces.nysed.gov/hse/tasc-test-and-item-specifications>

Domain/ Reporting Category	Subdomain/Core Idea	Subdomain %	Domain %
Earth and Space Sciences	ESS1 Earth's Place in the Universe	12%	30%
	ESS2 Earth's Systems	12%	
	ESS3 Earth and Human Activity	6%	
Life Sciences	LS1 From molecules to Organisms: Structures and Processes	15%	50%
	LS2 Ecosystems: Interactions, Energy, and Dynamics	15%	
	LS3 Heredity: Inheritance and Variation of Traits	12%	
	LS4 Biological Evolution: Unity and Diversity	8%	
Physical Sciences	PS1 Matter and Its Interactions	6%	20%
	PS2 Motion and Stability: Forces and Interactions	6%	
	PS3 Energy	5%	
	PS4 Waves and Their Applications in Technologies for Information Transfer	3%	

- ❖ Readiness Assessments 4 & 5

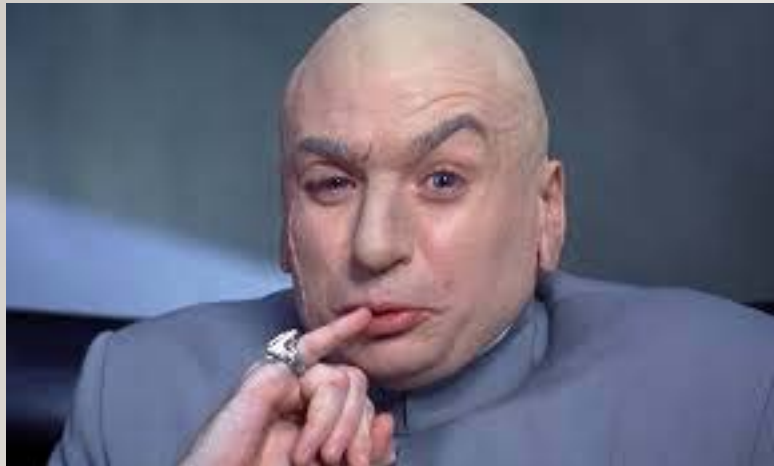
TASC Blueprints (example)

Domain/ Reporting Category	Subdomain/ Core Idea	Standard/ Performance Expectation	Standard Description	TASC Emphasis for Forms GHI
Life Sciences <i>continued</i>	HS-LS3 Heredity: Inheritance and Variation of Traits	HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.	High
		HS-LS3-2	Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.	Medium
		HS-LS3-3	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.	Low
	HS-LS4 Biological Evolution: Unity and Diversity	HS-LS4-1	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.	High
		HS-LS4-2	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.	Low
		HS-LS4-3	Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	Low
		HS-LS4-4	Construct an explanation based on evidence for how natural selection leads to adaptation of populations.	Low

LET'S LOOK AT THE TASC READINESS ASSESSMENT (TRA) FORMS 4 & 5...

- WHY ARE WE LOOKING AT THE TRA forms 4 & 5?

IF THIS IS THE TASC...



...THEN THIS IS THE TRA!!!

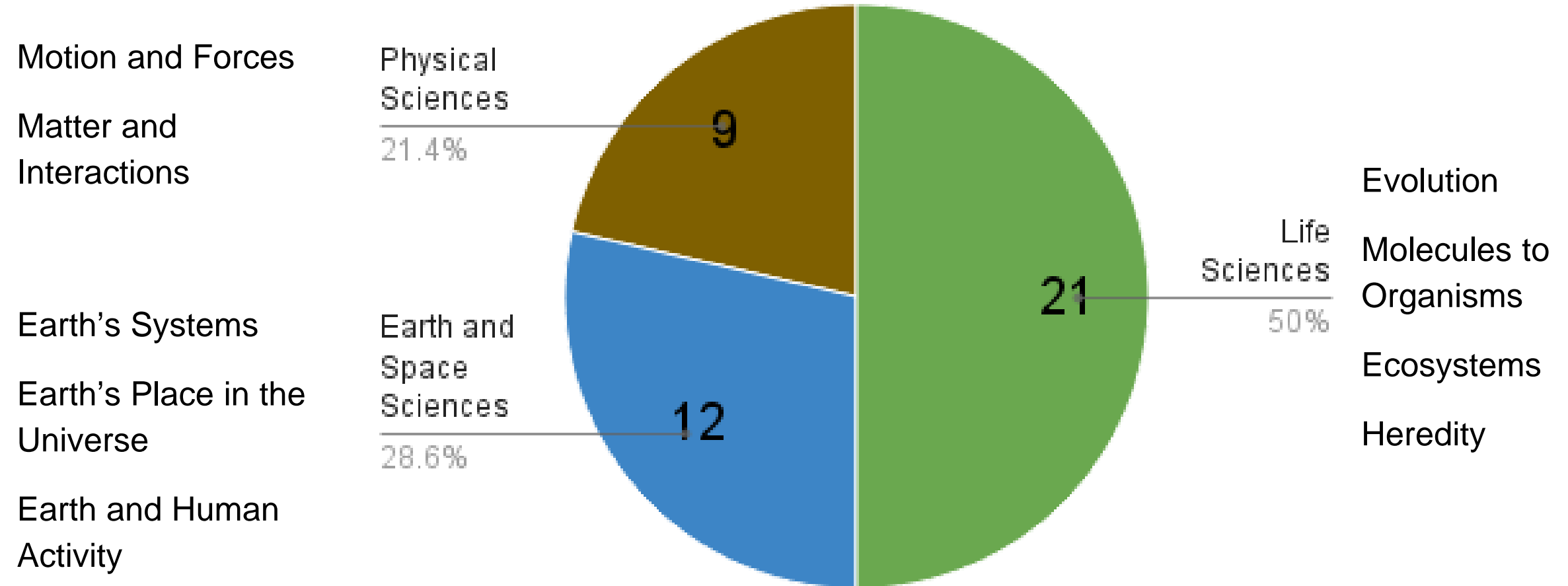


TRA FORM 4 & 5 ANALYSIS

- How do Forms 4 & 5 of the TRA correspond to the TASC Science Framework/Blueprint ?

Looking at the Readiness Assessments 4 & 5

(42 unique questions)



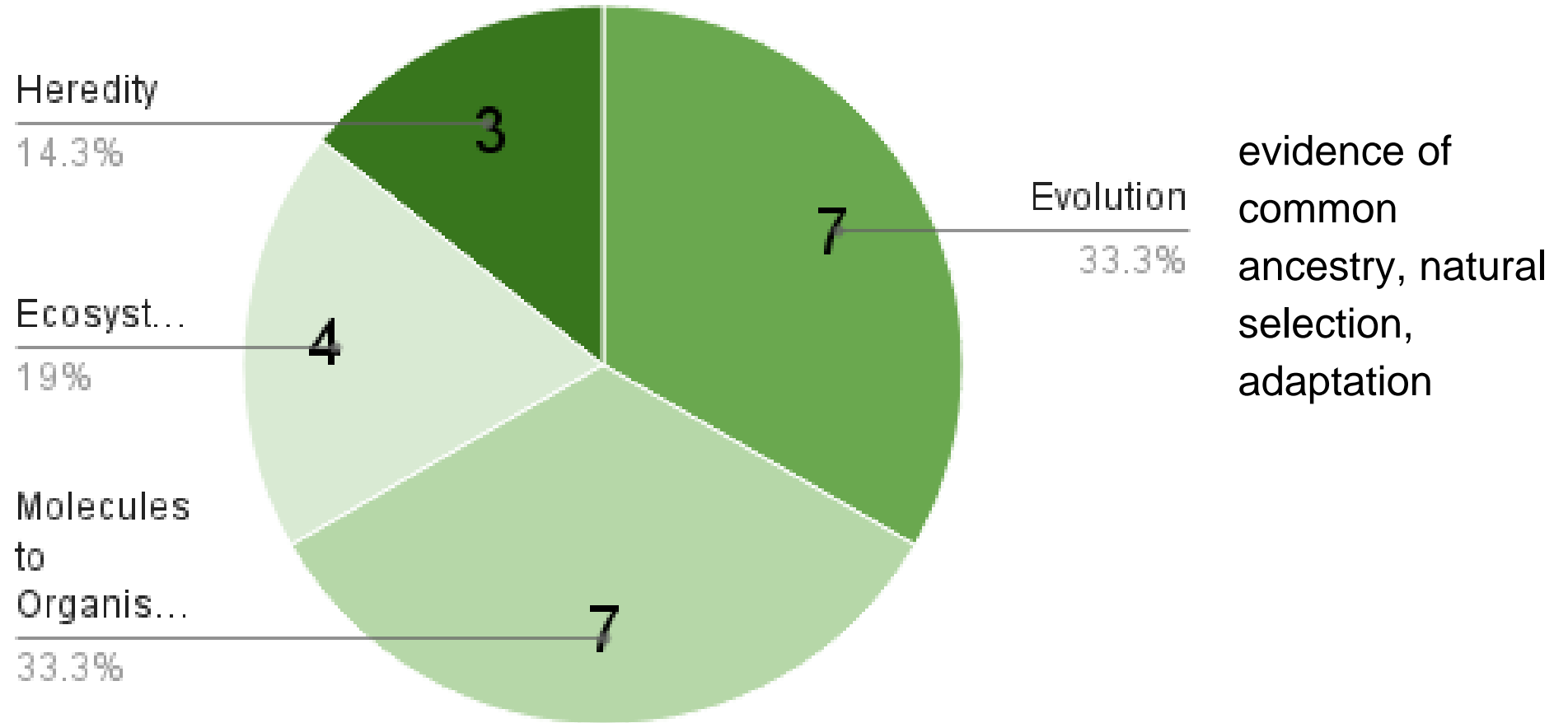
What do you notice? What do you wonder?

Life Sciences: 50%

recessive &
dominant traits,
Punnett square

biodiversity, genetic
diversity, carbon
cycle, human impact,
group behavior

photosynthesis,
cellular respiration,
cell theory, cellular
division, DNA,
genes,
chromosomes



Earth and Space Sciences: 30%

climate change,
global warming,
fossil fuels,
alternative energy

4.5 billion years,
continental
movement, Big
Bang, motion and
rotation of planets

Earth and
Human
Activity

25%

3

Earth's
Place in
the
Universe

33.3%

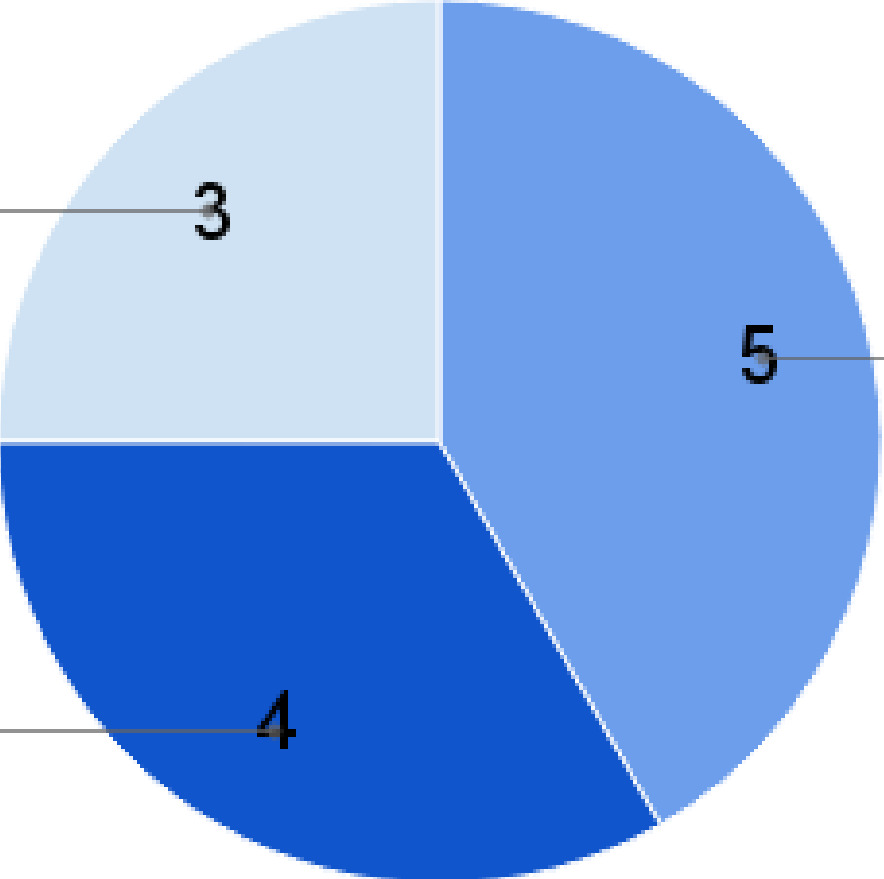
4

Earth's
Systems

41.7%

5

weather, tectonic
plates, earthquakes,
ocean currents,
carbon cycle, water
cycle



Physical Sciences: 20%

benefits/challenges
of digital storage of
information

explanation for water
holding Earth's
energy

structure of an atom,
elements, states of
matter, periodic
table, bonding,
chemical reactions

Waves
and
Applicati...

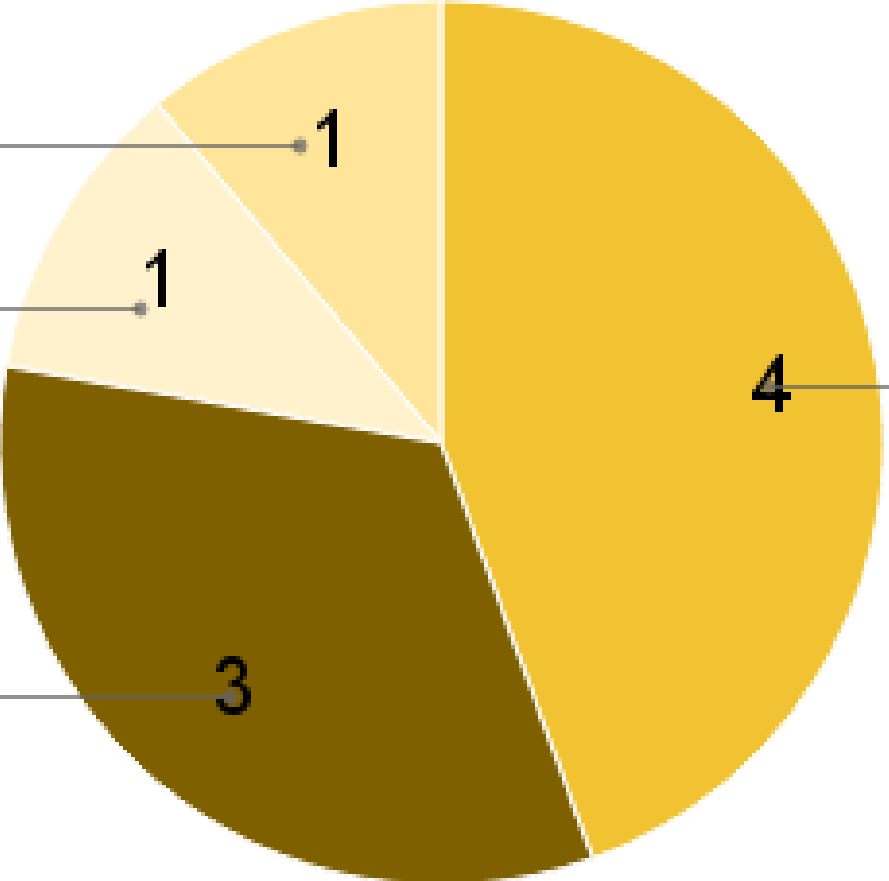
11.1%

Energy

11.1%

Matter and
Its
Interacti...

33.3%



Motion
and
Stability

44.4%

positive & negative
charge, electricity,
magnetism, gravity,
 $\text{force} = \text{mass} \times \text{acceleration}$

INFOGRAPHICS

- What are infographics?

- Why do Scientists use infographics?

What do you Notice?

What do you Wonder?



Peak Break-Up Times

According to Facebook status updates

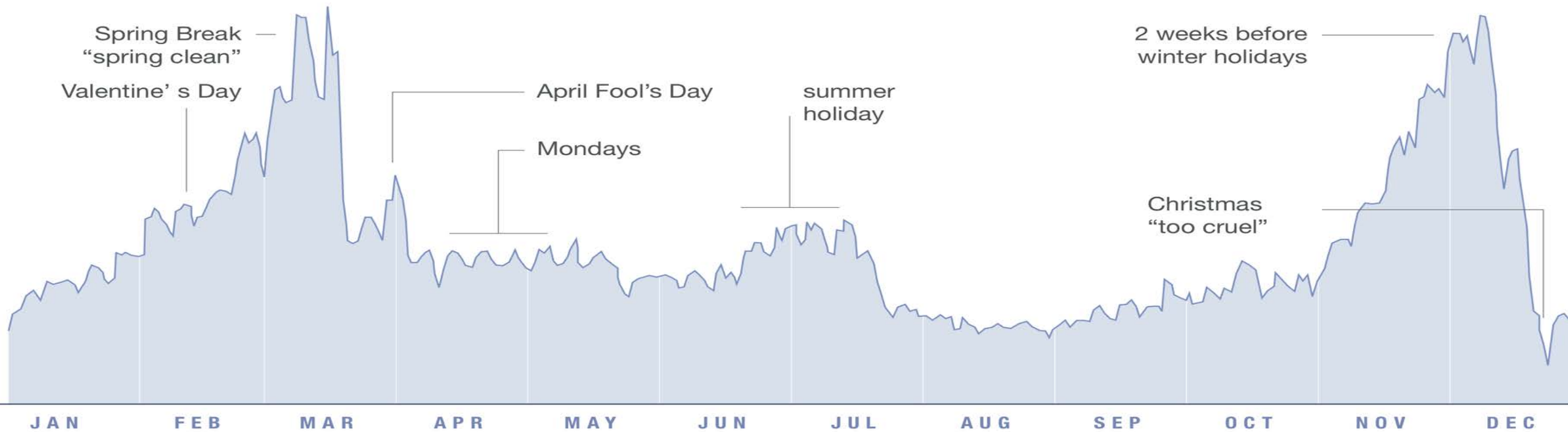


What do you Notice?

What do you Wonder?

Peak Break-Up Times

According to Facebook status updates



Source: searches for "we broke up because" from Facebook Lexicon

INFOGRAPHICS ACTIVITY

- Understanding what the pictures are telling us...

... and what they are **not** telling us!!!

MORNING WRAP UP

- This morning...

What did you notice?

What do you wonder?

BEFORE LUNCH, A LITTLE FOOD FOR THOUGHT...

- [Human Population Through Time](#)
- [How The World Map Looks Wildly Different Than You Think](#)

... Enjoy Lunch!!!



Welcome Back! Hope you enjoyed lunch!

Afternoon Agenda

- ❖ Activity 2: What is Matter
(CUNY HSE Curriculum Framework)
- ❖ Resources Share
- ❖ Question & Answer

*What is Matter?

Student objectives

- Students understand what is and is not matter
- Students understand mass, volume, and how they are different
- Students understand that gas is matter too

Matter, Energy, and Interactions

MATTER

1. STUFF. Matter is Stuff in the world. Like water, people, clothes, iPhones, grass, food, and air.



2. Matter is anything (or stuff) that has mass and takes up space.

Mass

A measurement of how something weighs.



- ❖ Weight
- ❖ Heaviness
- ❖ Use a scale to measure it.
- ❖ Pounds, ounces, grams

- * How much mass do you think each image has?
- * With a partner, sort the cards from less mass to more mass. Record the order on a piece of paper.
- * Anything have the exact SAME mass?

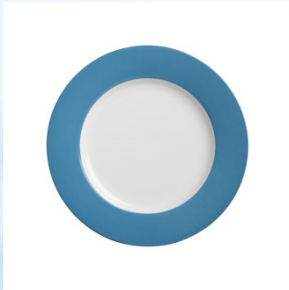
Sorting Cards

- * Exact Weight of images: *Remember 1 oz.=28g, 1lb=16oz*
- * *Ceramic Pan-6 lbs.*
- * *Cup of honey-12 oz.*
- * *Cup of water-8.3 oz.*
- * *Empty Coke can-16.5g*
- * *Foil Pan-23g*
- * *Full Coke-366g*
- * *Golf Ball-1.62 oz.*
- * *Ping Pong Ball-2.7g*
- * *Plastic Cooler-9 lbs.*
- * *Popped kernel-.09g*
- * *Styrofoam cooler-5.6 oz.*
- * *Unpopped kernel- 0.1g*

Sorting Cards

Volume

A measurement of how much space something takes up.



- ❖ Size
- ❖ How big or small it is
- ❖ How much space something takes up

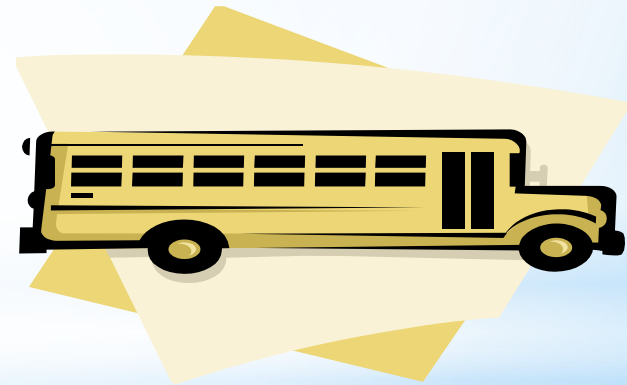
- * Which card item has less volume or more volume?
- * With a partner, sort the cards from less volume to more volume. Record the order on a piece of paper.

Sorting Cards

What changed position when you organized by volume? Why?

Does the empty or full coke have more volume?

- ❖ What is the difference between mass and volume?



Sentence Starters



- * Work on the worksheet on your own or with a partner.

What is Matter again?

How would you decide if something is matter or not?



If it has MASS and VOLUME,
then it is MATTER!

IS IT MATTER?

Work in groups of 2 or 3 to complete the worksheet.

GAS

Is Gas Matter?

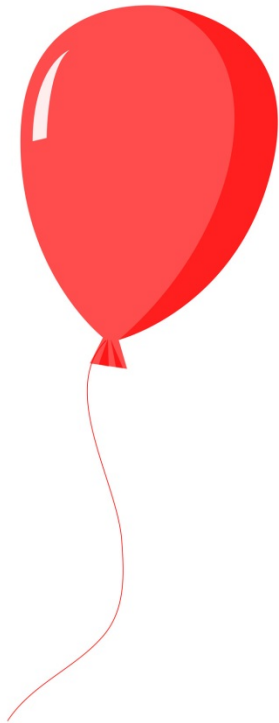


Does Gas have a mass and/or volume?

How could we test if a gas has a mass or volume?

How do we measure it?

Air is a gas

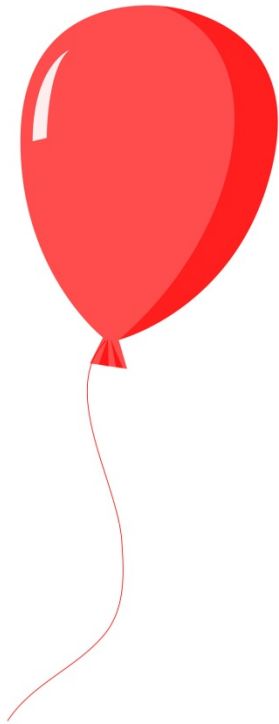


Volume Test: Test if air has volume by blowing up a balloon.

Does the air take up space inside the balloon??



Air is a gas



Mass Test: Compare the weight of a blown up balloon to an empty balloon.



Which balloon weighs more?

Why do you think?

What did we learn today?

❖ Matter

❖ Mass

❖ Volume

❖ Gas

Pick the best summary of today's class.
Why is it the best? What's wrong with the
other two? How can you improve the best
one?

#1

* Today we learned about matter, which is anything that has mass and volume. We sorted different objects by mass and then by volume. Then, we completed sentences about mass and volume. Next, we tried to decide whether different things like water, sound and air were matter. Then, we did a demonstration with a balloon and a yardstick.

Pick the best summary of today's class.
Why is it the best? What's wrong with the
other two? How can you improve the best
one?

#2

- * The topic of today's lesson is matter, which is stuff. Next week we will have a quiz on it. First, we learned about the definition of mass and volume. Then, we arranged some things according to size. The plastic cooler was the biggest and the popcorn kernel was smallest. The plastic cooler was heavier than the styrofoam cooler. My partner and I disagreed about whether a full and an empty Coke can have the same volume. I didn't think air was matter, but my teacher said it was.

Pick the best summary of today's class.
Why is it the best? What's wrong with the
other two? How can you improve the best
one?

#3

* Everything in the world is made of matter (unless it's form of energy). One definition of matter is STUFF in the world. A formal definition is anything that has mass (weight) and volume. Mass is a measurement of how much something weighs. We use a scale to measure weight. I like the word "heaviness" to remember what mass is. Volume is a measurement of how much space something takes up. I remember volume by thinking of the word "size". A bowling ball is an example of something with a lot of mass, but not a lot of volume. A cloud has a lot of volume, but not much mass. Light and sound don't have mass or volume, so they aren't matter. It might seem like air isn't matter either, but we showed that a balloon filled with air is heavier than an empty balloon, so air must be matter.

Readings on Matter

- ❖ Read the readings for homework and summarize the main ideas in one paragraph for next time.

RESOURCES



Question & Answers...

What was good about today?

How would you tweak it or use it in the
classroom?

Other thoughts...

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 **Thanks for coming!**
We hope you found today worthwhile and useful!