

Pair/Share: How familiar are you with the science topics on the TASC? For which of these topics do you have good lessons you could share?

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)

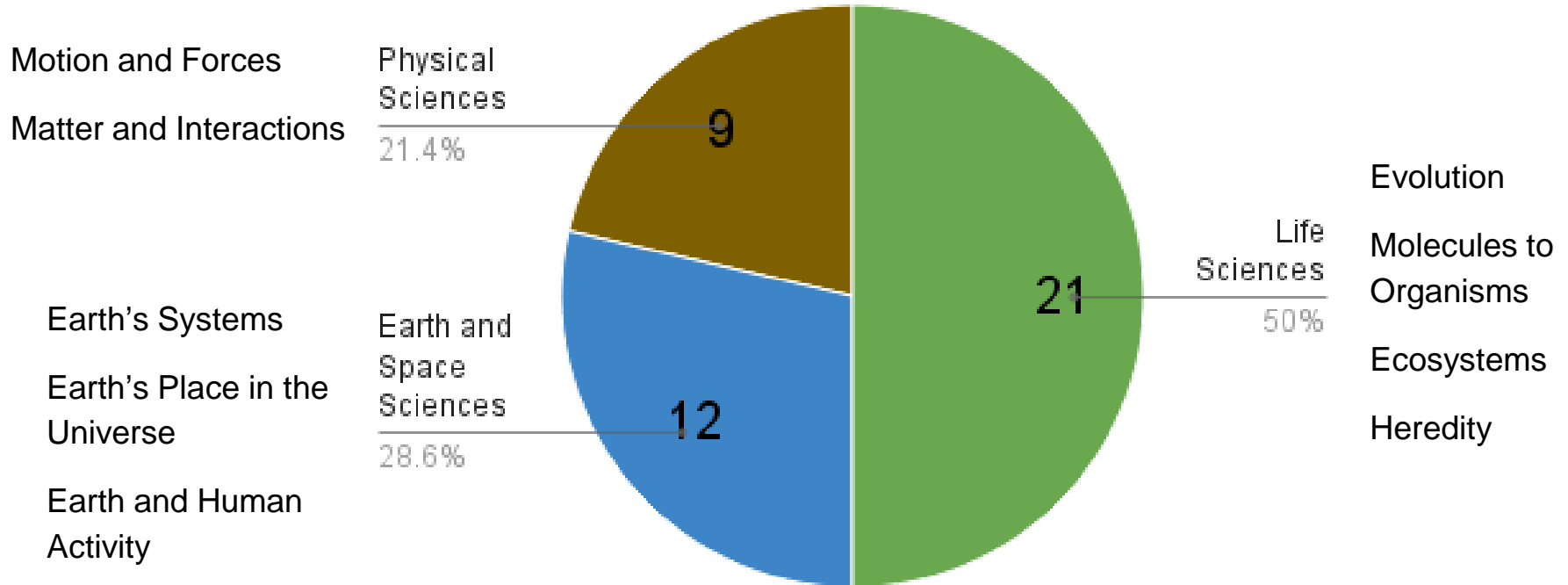
Domain/ Reporting Category	Subdomain/ Core Idea	Standard/ Performance Expectation	Standard Description	TASC Emphasis for Forms GHI
Life Sciences <i>continued</i>	HS-LS3 Heredity: Inheritance and Variation of Traits	HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes 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

TASC Item Specifications (example)

Domain	Life Sciences
Subdomain	LS4 Biological Evolution: Unity and Diversity
Standard	LS4-1. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
Emphasis Level	High
Evidence Statements	<p>The examinee will demonstrate understanding that evolution is the change of species over time.</p> <p>The examinee will demonstrate understanding that Earth's present-day species developed from earlier, distinctly different species.</p> <p>The examinee will demonstrate understanding that the theory of evolution is the central unifying theme of biology.</p> <p>The examinee will demonstrate understanding that the theory of evolution is well documented by extensive evidence from a wide variety of sources.</p> <p>The examinee will demonstrate understanding that evolutionary theory provides a scientific explanation for the molecular and structural similarities observed between the diverse species of living organisms and the fossil record of ancient life-forms.</p> <p>The examinee will demonstrate understanding that many thousands of layers of sedimentary rock provide evidence for the long history of Earth and for the long history of changing life-forms whose remains are found in the rocks.</p> <p>The examinee will demonstrate understanding that fossils are evidence that a great variety of species existed in the past. Recently deposited rock layers are more likely to contain fossils resembling existing species.</p> <p>The examinee will demonstrate understanding that billions of years ago, life on Earth began as simple, single-celled organisms.</p> <p>The examinee will demonstrate understanding that about a billion years ago, increasingly complex multicellular organisms began to evolve.</p> <p>The examinee will demonstrate understanding that evolutionary change is distinguished from the changes that occur during the lifetime of an individual organism.</p> <p>The examinee will recognize that species evolve over time.</p>

Looking at the Readiness Assessments 4 & 5

(42 unique questions)



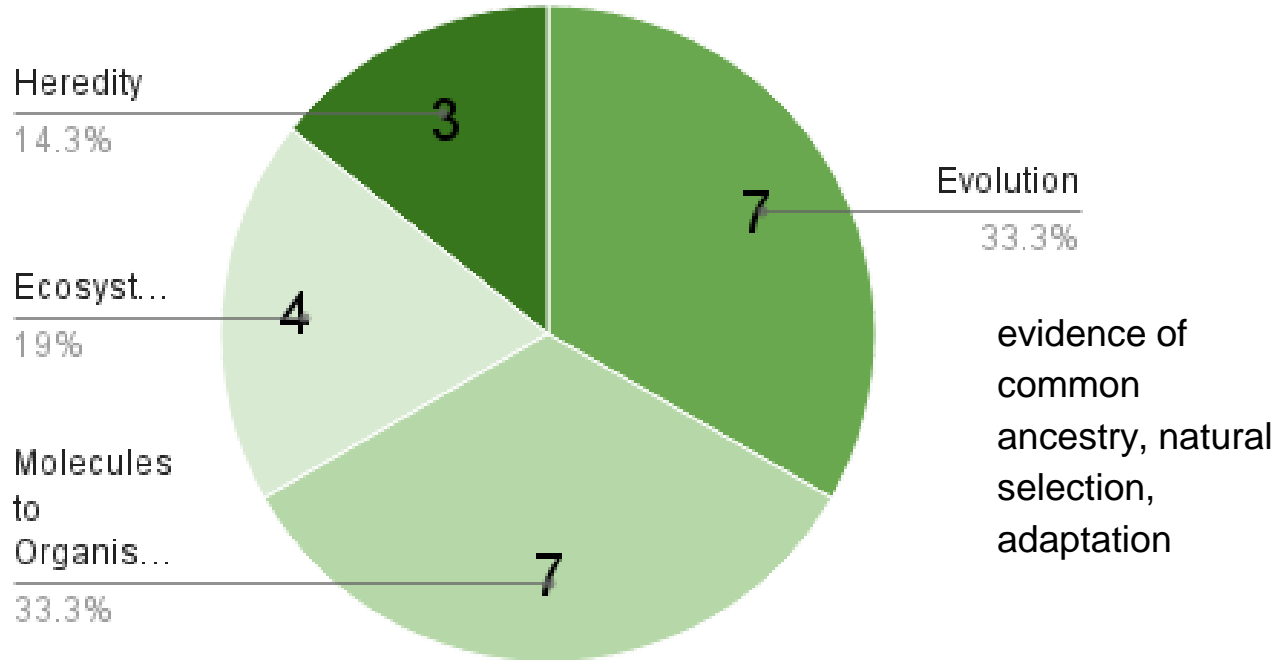
What do you notice? What do you wonder?

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%

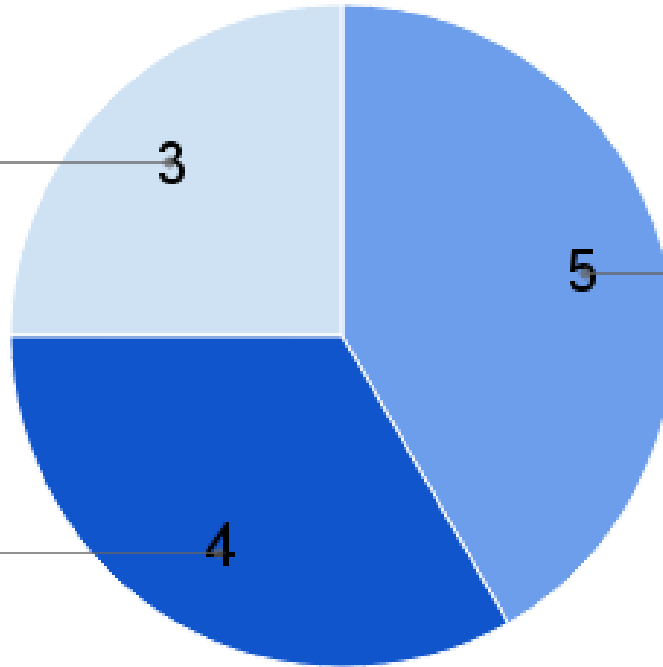
climate change,
global warming, fossil
fuels, alternative
energy

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

Earth and
Human
Activity
25%

Earth's
Place in
the
Universe
33.3%

Earth's
Systems
41.7%



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%

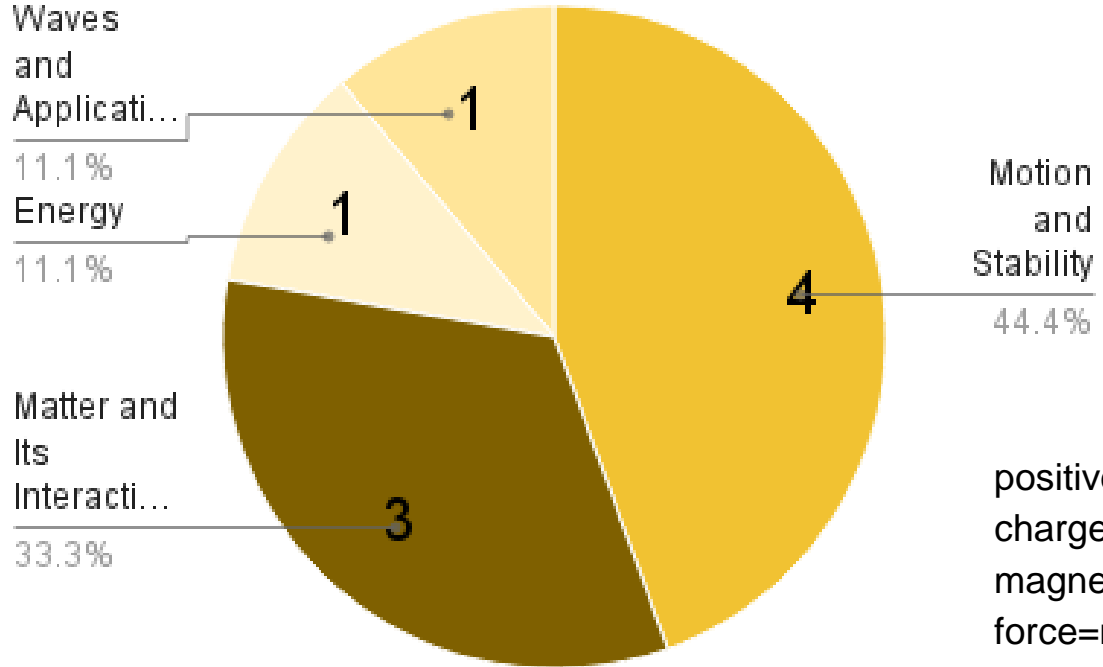
Matter and Its Interacti...

33.3%

Motion and Stability

44.4%

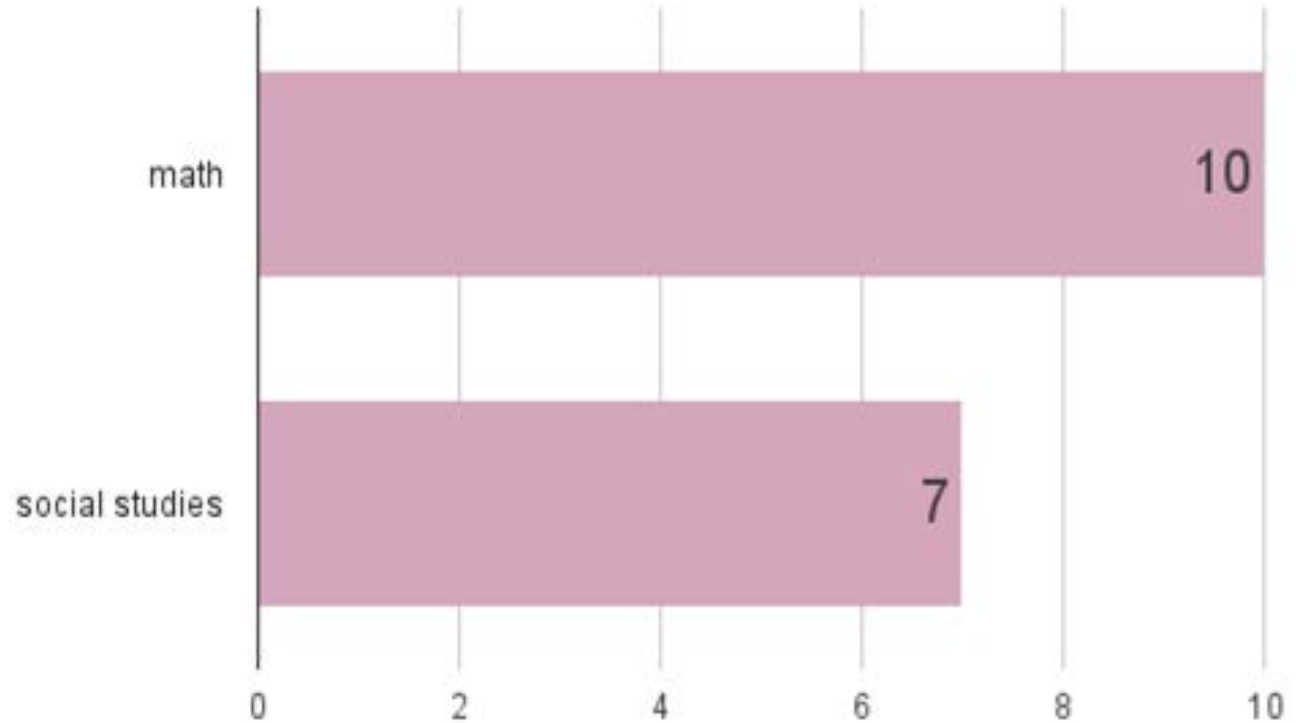
positive & negative charge, electricity, magnetism, gravity, $\text{force} = \text{mass} \times \text{acceleration}$



Math and Social Studies Topics on Science Test

line graphs, line of best fit, tables of data, ratio, understanding and using formulas, Fahrenheit/Celsius, metric system

climate change, global warming, alternative energy, industrial revolution, reading graphs

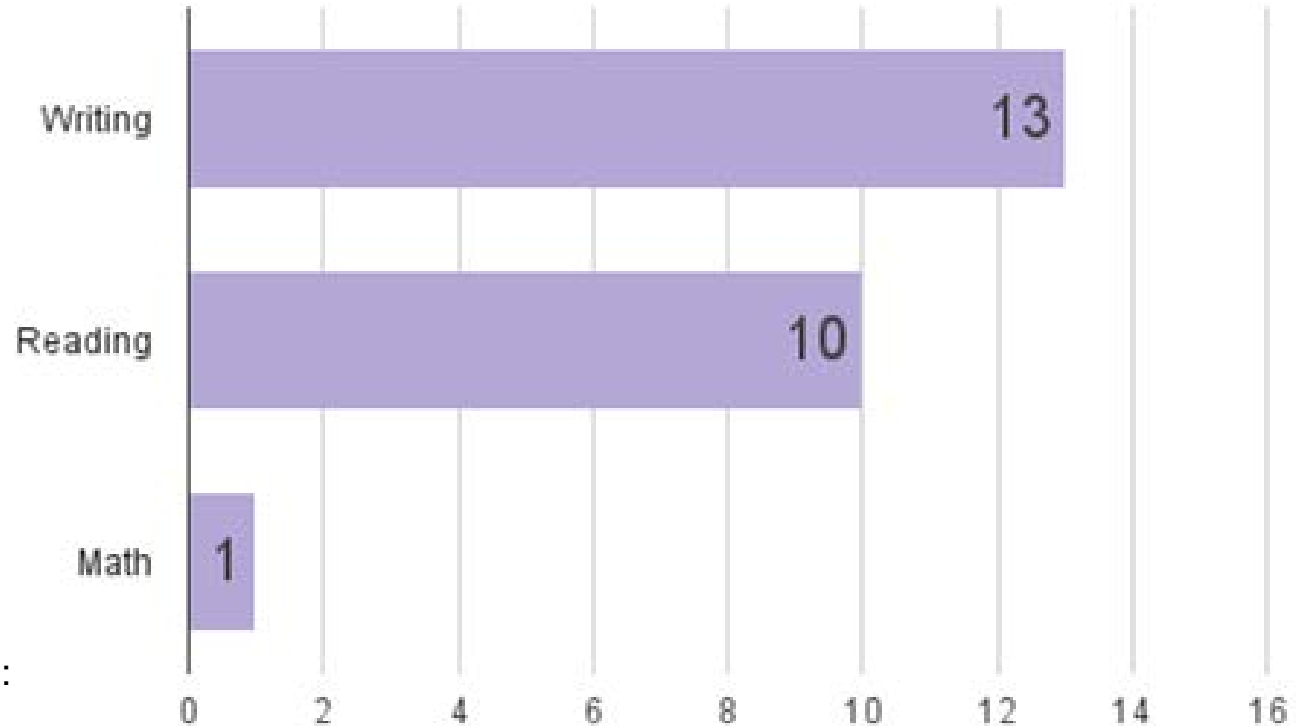


Science Topics on Other Tests

health care
(diabetes), hybrid
vehicles/energy
policy, technology,
chemical reactions,
mammalian traits,
epidemiological
research

Earth and space
science, atoms and
molecules

bacteria population
growth (previous tests:
health research,
horsepower/RPM)



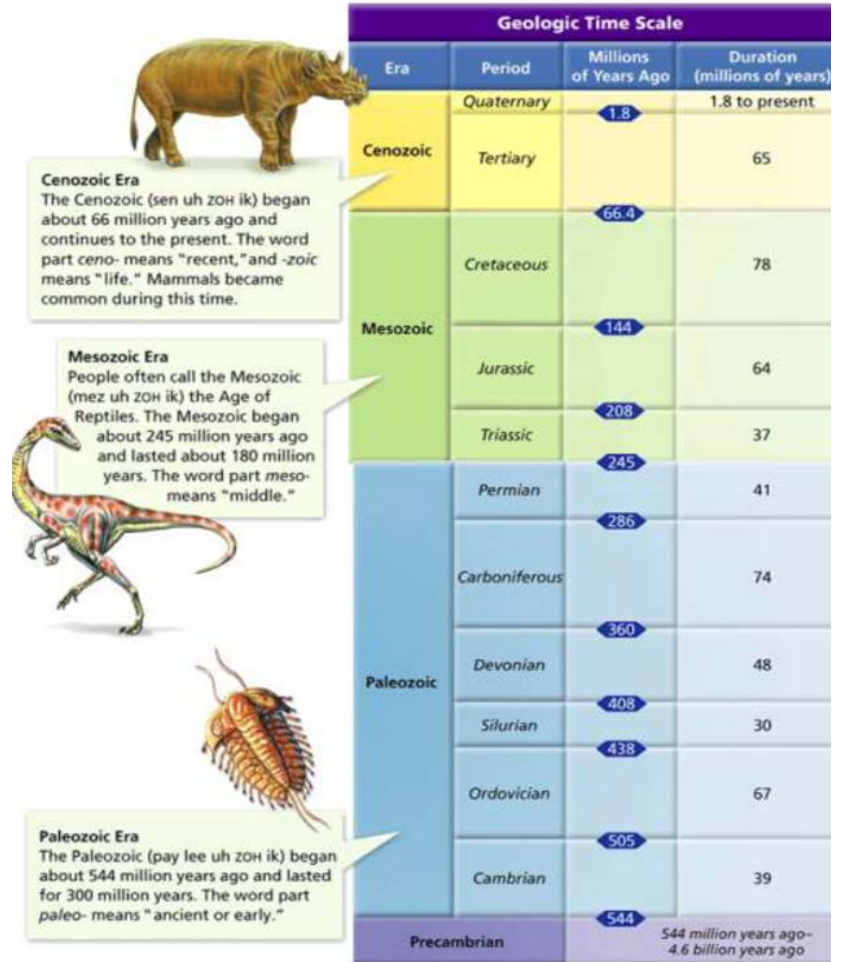
Timelines

What are the advantages of using a timeline with your students?

What bothers Sue about this chart?

Evolution: Teaching Science through Math (2:20-2:36)

<http://www.collectedny.org/videos/>



Prediction Guide - History of Earth

Consider the following statements and decide which you think are true and which you think are false.

1. T F Earth is about 500 million years old.
2. T F Dinosaurs were still around when the first humans appeared.
3. T F Dinosaurs went extinct about 65 million years ago.
4. T F Humans have been around for about 3,000 years.
5. T F Earth once had very little oxygen in its atmosphere.
6. T F Life first appeared on Earth more than 4 billion years ago.
7. T F About 200 million years ago, all the continents were connected in a supercontinent called Pangaea.

Question Stems from TASC Science

Which statement best represents...?

Which of these is an example of...?

How is the... related to the...?

Which of these is directly related to...?

What can be concluded from this observation?

Which of these explains...?

Which best describes?

Which conclusion is supported by this evidence?

Which of these statements about... is supported by this finding?

Which did the most to validate...?

Which explanation supports why...?

Which is most likely to...?

Which is not likely to...?

How has... affected...?

Which of these is the most likely cause of...?

Which pattern could be predicted...?

Which process results in...?

Describe one way in which...

Why does the...?

See more at <http://bit.ly/TASCsciencestems>

Teaching from the Timeline of the History of Earth

Work together in groups to brainstorm connections to the timeline of Earth's history.

Record your work here:

<http://bit.ly/teachearthtimeline>