



Science Monthly

District NGSS and Science News

AUTUMNAL EQUINOX

SEPTEMBER 2019



Website of the Month:
Timeanddate.com

Youtube Channel Of the Month:
Because Science

California Environmental Principles & Concepts

Website of the Month: TimeandDate.com

<https://www.timeanddate.com>



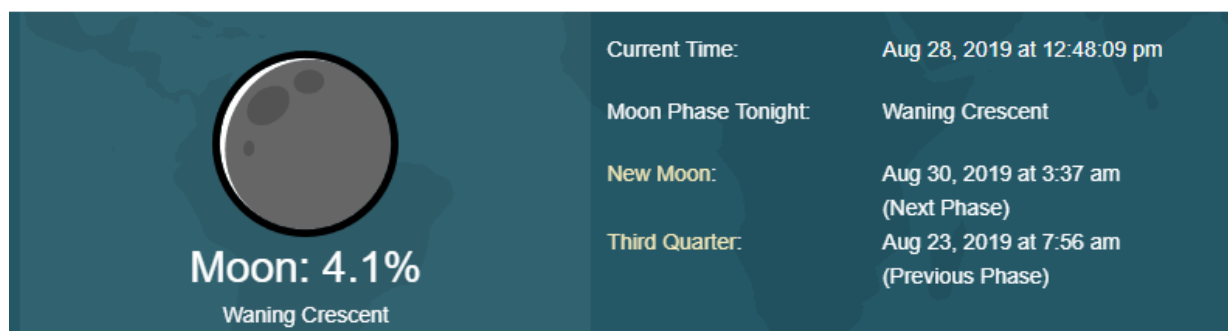
Phenomenon: When looking up the date for the next autumnal equinox, there are two possible dates provided, one for the northern hemisphere (9/23/19 @12:50am PDT) and one for the southern hemisphere (3/20/20 @12:49am BRT).

Present this fact to your students and ask them what questions does this makes them think of. Why are there different dates? What is an equinox? What hemisphere are we in and how do we know? What do PDT and BRT mean? Students will begin to think about the patterns of the seasons and what they already know about Fall but chances are they don't usually get a chance to investigate how and when those seasons and patterns are occurring on different parts of the globe. Some students may be working with the misconception that the rest of the world runs on the same time and date as they see on the clocks here in San Jacinto. Seasonal patterns may continue across the globe but as teachers we know that they do not necessarily occur at the same time.

[Sun Calculator](#) | [Moon Calculator](#) | [Moon Phases](#) | [Seasons](#) | [Eclipses](#) | [Night Sky](#) | [Day and Night Map](#) | [Moon Light Map](#) | [Meteor Showers](#) | [Astronomy Articles](#)

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Moon Phases 2019 – Lunar Calendar



Current Time:	Aug 28, 2019 at 12:48:09 pm
Moon Phase Tonight:	Waning Crescent
New Moon:	Aug 30, 2019 at 3:37 am (Next Phase)
Third Quarter:	Aug 23, 2019 at 7:56 am (Previous Phase)

TimeandDate.com is a website with a multitude of tools to help students get a grasp of differences in time, weather, and astronomical patterns across the globe giving students a chance to compare these patterns to what they experience here in San Jacinto. Students can compare time zones, view calendars from different years and compare weather on a single day in multiple cities at once. The raw data provided could be helpful for research as students can also look up information on the dates of meteor showers, eclipses, and other astronomical data that can be determined through the use of calendar patterns.

YouTube Channel of the Month: Because Science

<https://www.youtube.com/channel/UCvG04Y09q0HExnIjdgaqcDQ>




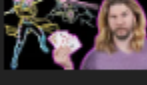
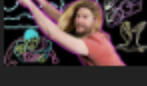



Ever wondered just how realistic the science is in your favorite video games, shows and movies? What would it take to fight a dragon or could a superhero really do the same stunts if they were real? With his strong background in math and science, *Nerdist Science* editor Kyle Hill explains our favorite hypothetical situations. Modeling the process of inquiry, Hill often starts with a video clip or scenario and presents his questions. Once he has established his question, he explains the major variables that would play out and how they mathematically would affect each other.

Take for example the scene in *Spiderman 2* where Peter Parker jumps in front of the train and shoots his spider silk to catch the frame of the bridge, slowing the train to a stop and leaving our hero with arms that are still in his shoulder sockets. At first glance, this really does seem to be a stretch so what would it really take to stop the train? How strong would the spider silk be if it were as thick as a rope? What are the physics involved? Videos like these can get students to start asking these questions on their own.

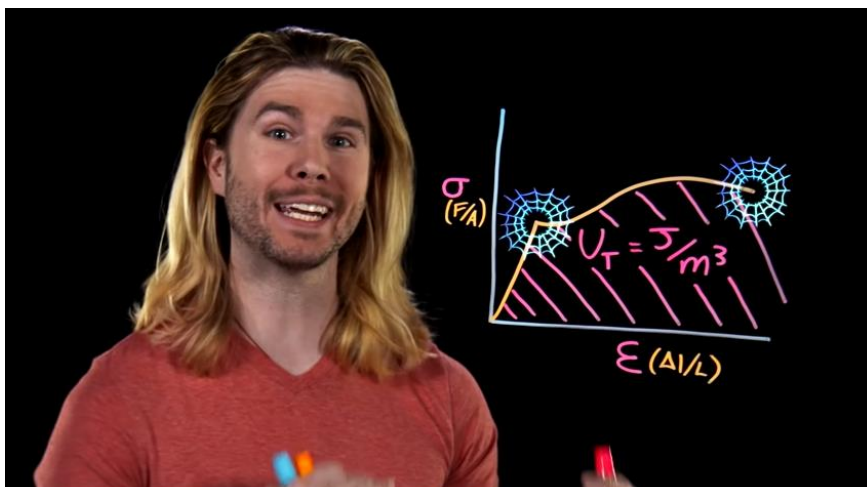
Because Marvel Science
Because Science • 13/79 videos

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- ▶  **Can Spider-Man Stop a Train?**
Because Science
- 14  **How Captain Marvel Survives in Space**
Because Science
- 15  **Wolverine's Antimatter Cigar | Because Science Footnotes**
Because Science
- 16  **How Deadly Are Gambit's Exploding Cards?**
Because Science
- 17  **Why You Don't Want the Power of Flight**
Because Science
- 18  **Can You Lift Thor's Hammer in Space?**
Because Science

Try this activity out on your own, see how it sparks your imagination and provides snippets of information as you learn-

Before starting, make a prediction. Do you think that if Spiderman were real he could actually slow down and stop a moving train? Begin the video and pause at the following to times to think about these questions:



1. **0:50**- What do you notice/wonder when watching that movie clip?

2. **1:45**- How many different forces are acting on Spiderman and the train?

3. **3:00**- What do rocket ships use to brake when they are landing back on Earth?

4. **4:40**- How could you test the “toughness” of other materials you can find at home or in school? Ex: wooden pencil, plastic spoon, pipe cleaner...

5. **9:15**- Did the evidence shared in the video support your hypothesis? Could Spiderman actually stop a train if he were real according to how he is described in the comics and movies?



Wrap up questions:

1. If spider silk is so tough, what else should Spiderman be able to do with it?
2. Scientists are actively researching spider silk and how humans can harvest it. What things could be improved if they were made with spider silk instead of regular materials?

For more information, visit the *Nerdist* website at nerdist.com and if you are on Twitter you can follow Because Science @becausescience and Kyle Hill @Sci_Phile.

CA Environmental Principles and Concepts

<https://www.californiaeei.org/epc/>

The following principles and concepts bring to light the relationships between humans, our choices, and the natural systems we interact with. Natural systems like the water and rock cycle are impacted by our needs for natural resources as we dam rivers and mine for minerals and we as humans are impacted by those cycles in the cases of extreme precipitation and tectonic activity. Everything on the planet is connected in some way and the state has outlined these concepts to be embedded in any future state-adopted instructional materials. This does not only include science; law now mandates that ALL adopted materials for any subject must address each EP&C. For more information on embedding the CA EP&Cs in your science lessons, visit the California Education and the Environment Initiative's website at californiaeei.org.



Principle 1 - People Depend on Natural Systems

The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

Concept A. The goods produced by natural systems are essential to human life and to the functioning of our economies and cultures.

Concept B. The ecosystem services provided by natural systems are essential to human life and to the functioning of our economies and cultures.

Concept C. That the quality, quantity, and reliability of the goods and ecosystem services provided by natural systems are directly affected by the health of those systems.



Principle 2 - People Influence Natural Systems

The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

Concept A. Direct and indirect changes to natural systems due to the growth of human populations and their consumption rates influence the geographic extent, composition, biological diversity, and viability of natural systems.

Concept B. Methods used to extract, harvest, transport, and consume natural resources influence the geographic extent, composition, biological diversity, and viability of natural systems.

Concept C. The expansion and operation of human communities influences the geographic extent, composition, biological diversity, and viability of natural systems.

Concept D. The legal, economic, and political systems that govern the use and management of natural systems directly influence the geographic extent, composition, biological diversity, and viability of natural systems.



Principle 3 - Natural Systems Change in Ways that People Benefit From and Can Influence

Natural systems proceed through cycles that humans depend upon, benefit from, and can alter.

Concept A. Natural systems proceed through cycles and processes that are required for their functioning.

Concept B. Human practices depend upon and benefit from the cycles and processes that operate within natural systems.

Concept C. Human practices can alter the cycles and processes that operate within natural systems.



Principle 4 - There are no Permanent or Impermeable Boundaries that Prevent Matter from Flowing Between Systems

The exchange of matter between natural systems and human societies affects the long-term functioning of both.

Concept A. The effects of human activities on natural systems are directly related to the quantities of resources consumed and to the quantity and characteristics of the resulting byproducts.

Concept B. The byproducts of human activity are not readily prevented from entering natural systems and may be beneficial, neutral, or detrimental in their effect.

Concept C. The capacity of natural systems to adjust to human-caused alterations depends on the nature of the system as well as the scope, scale, and duration of the activity and the nature of its byproducts.



Principle 5 - Decisions Affecting Resources and Natural Systems are Complex and Involve Many Factors

Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

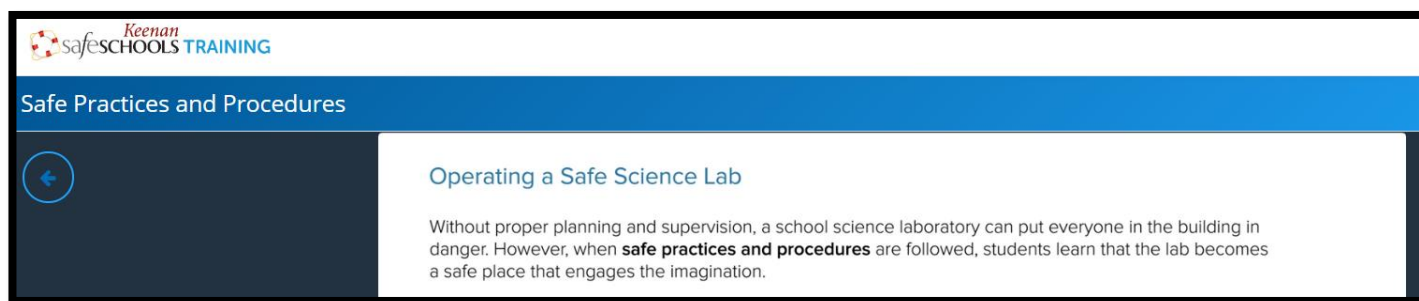
Concept A. There is a spectrum of what is considered in making decisions about resources and natural systems and how those factors influence decisions.

Concept B. The process of making decisions about resources and natural systems, and how the assessment of social, economic, political, and environmental factors has changed over time.

Hands-On Learning & Lab Safety:

Attention middle and high school science teachers who have not recently brushed up on lab safety procedures, there are two optional trainings you can search for on the Keenan SafeSchools website. While most elementary teachers may stop at using household chemicals like dish soap and rubbing alcohol, these modules could also be applicable since it covers topics such as handling broken glass and physical contact with unknown chemicals.

Use the link to Keenan SafeSchools on the internal links page and sign in using your employee ID number. On the left-hand side you will find a symbol that looks like a play button and it will send you to the Extra Training page where you can select optional modules for your own professional development. Under the Environmental category you will find the modules titled **“Science Lab Safety”** and **“Science Laboratory Chemical Spills.”** If at any point you plan on using chemicals beyond what is already found in the home or classroom (hydrogen peroxide, baking soda & vinegar, etc.) it is highly recommended that you take the time to run through these trainings.



The screenshot shows the Keenan SafeSchools Training interface. At the top left is the logo with the text 'Keenan safeSCHOOLS TRAINING'. Below it is a blue header bar with the text 'Safe Practices and Procedures'. On the left side, there is a dark blue sidebar with a circular icon containing a play button symbol. The main content area has the title 'Operating a Safe Science Lab' and a short paragraph: 'Without proper planning and supervision, a school science laboratory can put everyone in the building in danger. However, when **safe practices and procedures** are followed, students learn that the lab becomes a safe place that engages the imagination.'

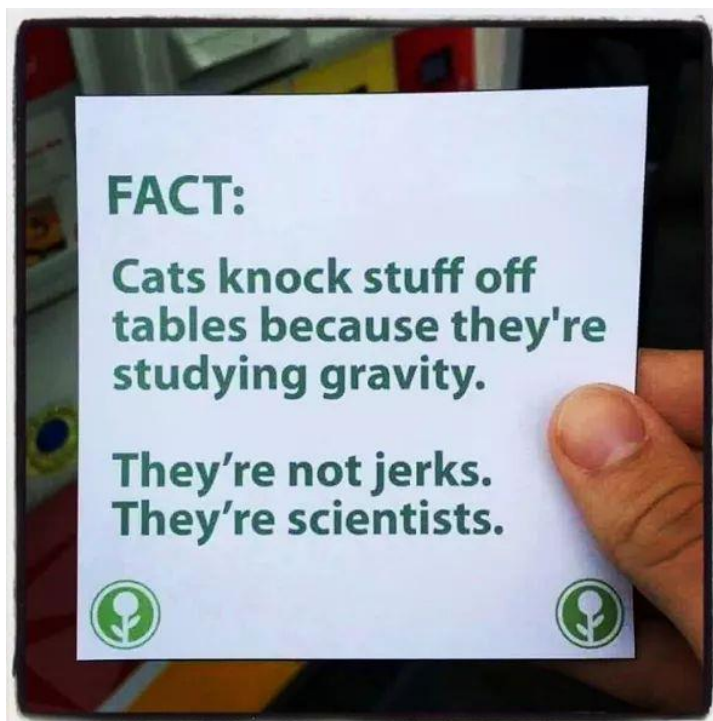
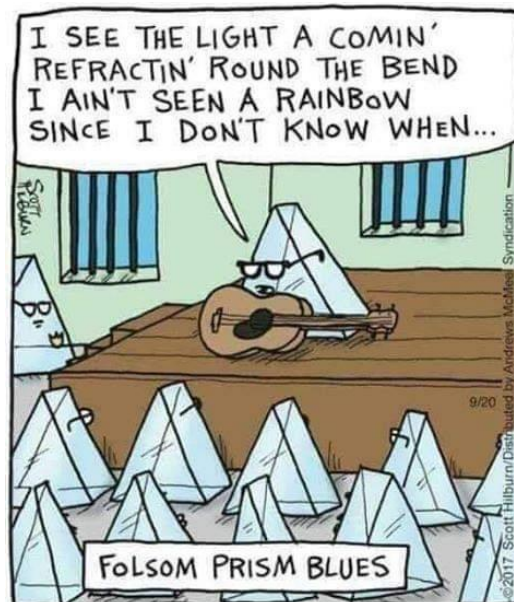
Name the New Mars Rover: Deadline Nov. 1st

<https://mars.nasa.gov/mars2020/participate/name-the-rover/>

Curiosity, Spirit & Opportunity have a new Mars rover sibling on the way! NASA is now accepting essay submissions from students in Kindergarten – 12th Grade. In 150 words or less, students should give their suggestion for a name and explain why you think it is the best fit. The Mars 2020 rover will be looking for signs of life and taking samples from the planet’s surface. For rules and to submit the student essays, visit the NASA website above.



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635 nm	590 nm	560 nm	490 nm	450 nm	400 nm



Contact and Support

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