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TO ENGAGE, ACTIVATE, AND GROW OUR STUDENTS

GRADES K–1

Energy

ENGLISH LANGUAGE ARTS

The Sun and wind are both sources of energy. Listen to this version of Aesop's fable "The North Wind and The Sun:" https://www.youtube.com/watch?v=TrFUYAJXWLU

Make paper puppets of the Sun, the North Wind, and the man. Retell the story to a family member using the puppets.

Discuss with your family:

- Which is stronger in this fable, the sun or the wind? Use details from the story to support your opinion.
- Which do you think gives more energy in real life? Give reasons for your opinion.
- What is the moral (lesson) that is told at the end of the story? How does this story teach that lesson to people?

SOCIAL STUDIES

How do people change the environment? Watch this video to see how humans changed the island of Manhattan: https://thekidshouldseethis.com/post/how-do-living-things-change-their-environments

Think about your community. Draw a picture or make a list comparing your community today to what you imagine it may have been like 400 years ago.

- What plants and animals live there?
- What natural resources do people use in your community? (water, wind, sunlight, plants, wildlife, etc.)
- How have people changed the environment where you live? (planting, building, roads, water use)
- Which resources used and changes made are related to our need for energy?

SCIENCE

Plants need energy to live. Watch this video to learn about how plants use a process called photosynthesis to make their own food: https://www.youtube.com/watch?v=lln136eMl4g

Summarize the needs of plants for energy and growth.

As humans, we get some of our energy from eating plants. Plants are also food for other animals.

Make a list of plants that you eat.

- Is there a plant you'd like to try?
- Is there a plant that is your favorite? Why?

MINDFULNESS

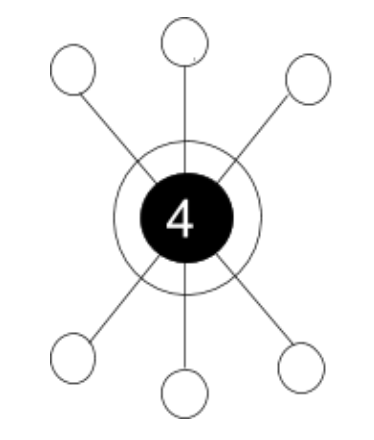
Do you ever have trouble feeling energetic in the morning? You can connect your breath with movement to help you wake up and gain energy.

Practice the strategy in this video: https://www.youtube.com/watch?v=O29e4rRMrV4

- How did you feel before practicing?
- How did you feel after practicing?
- Do you think this might be a good way to help yourself wake up in the morning?
- How could you use this strategy at other times in your day?

LOGIC PUZZLE

Fill in the circles at the end of the sun's rays using 1,2, 3, 5, 6, 7 so that all three numbers in a line must equal 12. Use each number only one time.



FIELD STUDIES

Did you know some living things can create their own light? This is called bioluminescence. Watch this video to learn more: https://www.youtube.com/watch?v=oKjFVBVGad0

- Can you think of any potential uses for bioluminescence?
- If you could create your own light, from where on your body would you want it to be emitted?
- When and why would you use the ability to create your own light?

Draw a picture of yourself with bioluminescence and share it with a family member or friend.

RESEARCH EXPLORATIONS

Let's explore kinetic energy!

Kinetic energy is the energy of motion. Create a chain reaction that will demonstrate kinetic energy.

1. Gather some dominos or similar objects.
2. Create a path where each domino stands on its end close enough to the next domino so that it will hit it if it falls.
3. Look at the dominos after they are set up. They are still, so they have potential energy.
4. Tap the lead domino and watch the chain reaction. Motion is kinetic energy!
5. Create more complex chain reaction paths.
   - What does your research through repeated trials teach you about kinetic energy?
   - List some other times you see kinetic energy.

MATH

Daily habits contribute to your energy level. Collect and analyze data to determine which habits make you feel healthy and energetic.

Track your habits for one week. Include what you eat, how many times you exercise, and how much rest you get.

Create a chart to display the data you collected.

- How does your data differ from day to day?
- What day did you get the most rest? The least exercise?
- Which day did you feel the best? What does your data tell you about this day?
- What questions can you create about your data? Ask a family member to answer.

What does your data tell you about which habits make you feel healthy and energetic?

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GRADES 2–3

Energy

ENGLISH LANGUAGE ARTS

Words are powerful and have the ability to impart energy...causing people to think, to feel and to act. What is a topic that you feel strongly about? What would you like to see people start doing or stop doing for the betterment of a cause, person, or place?

Once you choose a topic, plan and write an opinion piece that takes a position on the topic, supporting your opinion with reasons that ultimately energizes the readers and encourages them to act.

Your opinion piece could be in the form of a letter to the editor of a newspaper, magazine or blog. The topic and format you choose are completely up to you and depend upon your own interests and energy.

SOCIAL STUDIES

Energy is a combination of a person's physical and mental powers, typically as applied to a particular task or activity. How can citizens' energy contribute to the well-being of a community's natural environment?

Brainstorm ways citizens in your community can use both their physical and mental energy to benefit the local natural environment. Then create an "environmental energizer work-out plan" for yourself choosing items from the list that utilize both your mental and physical energy.

Take before and after pictures of the physical environment you're helping and then advertise your "environmental energizer work out plans" to others to encourage them to help contribute to the well-being of your community's natural environment.

SCIENCE

Static electricity is the buildup of electrical energy created when rubbing two objects together. How do you measure this type of energy? An electroscope is one instrument used to measure energy in the form of electricity.

Use this guide to create your own electroscope: https://www.scientificamerican.com/article/static-science-how-well-do-different-materials-make-static-electricity/

Then test the ability of different materials to make static electricity. Record your observations in your science notebook.

MINDFULNESS

Your energy can be grounded when it is too much, just like a fixture in your home is grounded as a safety measure. Through the mindful practice of grounding your energy, you can calm your body when you are too positively or negatively charged, and return to a neutral state. One way to ground your energy is to take time to notice things around you and be mindful of your surroundings.

Find a quiet place to help you focus on your surroundings and ground your energy through the five senses. In your mind or on paper, list 5 things you can see, 4 things you can touch, 3 things you can hear, 2 things you can smell, and 1 thing you can taste.

After creating your list, put it to work, being mindful of your energy and how you feel afterwards.

LOGIC PUZZLE

Wind Toys Logic Puzzle

Figure out each student's favorite toy using the following clues:

- Roberto does not like bubbles.
- Meng-Wei likes the sky.
- Mariam does not like to throw.
- Jeremy does not like spinning things.
- Roberto likes to throw and catch.

NAME	KITE	BUBBLES	PINWHEEL	FRISBEE
Roberto				
Mariam				
Meng-Wei				
Jeremy				

FIELD STUDIES

Music has a direct impact on the energy level and mood of many people. Upbeat, fast-paced music gets them pumped up and energized, while quiet music helps them feel calm and relaxed. How does music impact your energy level and mood? Create two playlists: one with fast-paced songs and one with slower-paced songs. Set a route (a circular route works best) and see if any family or friends want to join in your field study.

- Week one: run the route with no music, record everyone's times, distance, etc.
- Week two: run with fast-paced music and record the data.
- Week three: run the route with slower-paced music and record the data.

Did the faster-paced music energize people? Make them run longer? What about you personally? Did one type of music energize you? Design an experiment to test what type of music helps to best lower your energy and calm you.

RESEARCH EXPLORATIONS

Static electricity was first discovered around 600 BC by the Greek philosopher Thales of Miletus. He noticed that if amber was rubbed hard enough, particles of dust would start to stick to it. Some 2,000 years later, the word "electricity" was first used, based on the Latin word "electricus" meaning "like amber." These days, static electricity is used in copy machines, in air fresheners, to paint cars, and to control pollution of smokestacks. You can read more here: https://www.loc.gov/everyday-mysteries/item/how-does-static-electricity-work/

Despite static electricity being energy and not magic, watch this video for ideas on how to create your own magic show using static electricity: https://www.youtube.com/watch?v=ViZNgU-Yt-Y

MATH

Energy comes in many forms, but how do you access it? One way we "get" energy is from the food we eat. Here's a recipe for "Peanut Butter Energy Bites:" https://tasty.co/recipe/peanut-butter-energy-bites

Research and add up the costs to buy each of the ingredients (though you will not need a whole bag of chocolate chips, you will have to buy a whole bag).

Once you have the total cost of all ingredients (you can round the cost), divide by the serving size (16) to calculate the cost to make one serving *(note: the actual cost will be a little less because for most ingredients you'll have some left over).*

Decide how to price each energy bite to make a profit (profit=difference between amount earned and amount spent).

Give your energy bites a unique name and make a poster advertising them for sale.

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GRADES 4–5

Energy

ENGLISH LANGUAGE ARTS

Good writing has the ability to energize people and call them to action. What is a topic that you feel strongly about? It often helps to think about something you want people to start doing or that you want them to stop doing.

Once you choose a topic, craft an opinion piece that takes a position on a topic, supporting your opinion with reasons and information that ultimately energizes the readers and encourages them to act.

Your opinion piece could be in the form of a recorded video commentary on a local news channel, vlog, motivational speech or TEDTalk. The topic and format you choose are completely up to you and depend upon your own interests and energy.

SOCIAL STUDIES

Civic participation is the energy we invest in the health of our community. Research ways citizens can participate in their community as well as signs of a healthy community. Create a civic participation energy scale and corresponding community health scale to show this relationship.

Give examples of minor ways (low energy-10/Red-ex. picking up litter) and major ways (high energy-100/Green ex. volunteering to register voters) that citizens can participate in their community. Chart its corresponding energy impact on the health of the community. Why is energizing levels of civic participation in the U.S. so important?

SCIENCE

Using wind as a source of energy dates back to 5000BC when early Egyptians used wind to sail boats on the Nile River. The National Energy Education Development (NEED) Project began as a way to educate people about energy efficiency and using renewable resources.

Read more about types of wind, uses of wind, and ways to measure wind in the "Energy from the Wind" student guide developed through NEED: https://www.need.org/wp-content/uploads/2019/11/Energy-From-The-Wind-Student-Guide.pdf

On page 17, follow the instructions to learn how to make an anemometer to measure wind speed and gather your own wind data!

MINDFULNESS

Through the mindful practice of grounding your energy, you can calm your body and return to a neutral state. When you connect with others, whether negatively or positively, you're engaging in some form of energy exchange, and eventually that can zap your energy. One way to ground your energy is to shield it by taking quiet time for yourself to think, reflect and calm yourself.

Find a quiet space and design an "energy shield" for yourself; think of things that replenish your energy and help you to feel calm, safe, secure, supported. Use those things to inform your shield design. Hang it up somewhere in your room and each day this week, take five minutes for yourself to sit and think, focus on your shield, and work to ground your energy. Reflect on your energy levels at the end of that week.

LOGIC PUZZLE

Harry Spotter Windy Myths Logic Puzzle

Professor Huggdatreaz asked Nevi to take the researchers' reports to Professor Dieseldore. Unfortunately, a gust of wind came up and blew the reports out of Nevi's hands into the lake.

Help match the researcher to their data in this puzzle: https://docs.google.com/document/d/1E5j_ZqgT32-61LAlz_UtTGAkfuJkCGRM3tSzZIZQX-o/edit?usp=sharing

FIELD STUDIES

Music has a direct impact on the energy level and mood of many people. Upbeat, fast-paced music gets them pumped up and keeps them energized and quiet music helps them to calm down and relax. Read this article: "4 Remarkable Ways Music Can Enhance Athletic Performance:" https://thehealthsciencesacademy.org/health-tips/music-can-enhance-athletic-performance/ As you read, look for evidence of music's relationship to energy in terms of mental and/or physical performance.

Create three separate playlists based on information in the article: one to increase an athlete's speed, one to help focus on a task or skill, and one to help calm any pre-competition anxiety. Choose your top song in each category: energize, focus and calm.

RESEARCH EXPLORATIONS

Renewable energy is energy that does not take away from the earth; it comes from natural sources and is constantly replenishing. Besides wind, water, and solar, Duke University is helping pig farms in NC use pig poop to generate electricity. Read an NPR article about it here: https://n.pr/3eOd3yV

View this video for another example of using waste to create electricity: https://youtu.be/ziS7yYFT6jc

So just how much energy do we use? https://www.energy.gov/articles/how-much-do-you-consume

Brainstorm ways your family could start using less energy. Share your research findings with your family by creating an energy conservation plan for them. Discuss if there are ways you can start using renewable resources.

MATH

Using energy costs money. The more you use, the more you pay. Use the energy calculator below, to make a list of the top 10 ways your family uses electricity. Add the totals to get your average yearly cost for all ten ways. Divide to see how much the cost is per month, then per week, and finally per day.

Discuss with your family how you can start using less energy in the form of electricity each day. Then calculate the costs again, using the amount your family agreed upon. How much did you save per year, month, week, and day?

Energy Calculator: https://www.energy.gov/energysaver/maps/appliance-energy-calculator

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GRADES 6–7

Energy

ENGLISH LANGUAGE ARTS

Many of today's modern movie and comic book heroes have superpowers that have been derived from sources such as radiation, mutations, or even exposure to aliens.

Create an original superhero whose power is derived from a source of energy, such as wind, solar, wave, etc.

Write a narrative of the superhero's experiences that led to superherodom. Be sure to include narrative techniques such as dialogue, pacing, and description to develop experiences, events, and characters.

SOCIAL STUDIES

Between 1960 and 1970, Egypt undertook a mammoth engineering project that would lead to flood control, irrigation system, and hydroelectric energy; it was the building of the Aswan High Dam. The dam, however, would flood several monuments that had been built during Ancient Egypt, including the Temple of Abu Simbel and the Temple of Isis. There was an outcry worldwide that led to the saving of these monuments.

Watch the video to learn more about the building of the dam and the saving of the historical sites: https://whc.unesco.org/en/list/88/vid

With the info from the video and other sources, create a podcast arguing how communities should weigh the benefits of hydroelectric power against the importance of cultural heritage.

SCIENCE

Energy is defined as the capacity to do work. Follow the first link to check out Astronaut Joe Acaba demonstrating potential and kinetic energy aboard the International Space Station. https://www.nasa.gov/stemonstrations-energy.html

As you watch, jot down the differences in the two types of energy. How can the same object have different potential energies?

Design an experiment to determine which of several household objects have the most kinetic energy when being held at the same height? How can you increase an object's potential energy? Record this in your science notebook.

View the video for a more complex understanding of the concepts: https://www.youtube.com/watch?v=g7u6plfUVy4

MINDFULNESS

When we approach situations or people with enthusiasm sometimes our energy levels are depleted. This happens when the energy we bring to the situation is blocked or rejected. Like liquid in a paper cup with small holes in it, our energy drains. Think about the relationship you have with others.

- Do these relationships foster your energy or drain your energy?
- What do you do to foster energy in those around you?

Devise a plan of action for when you are around someone who drains your energy.

Need some ideas? Try some of the tips from *Psychology Today* to help you overcome negative energy. https://www.psychologytoday.com/us/blog/the-ecstasy-surrender/201412/tips-sensitive-people-protect-their-energy

LOGIC PUZZLE

This “burning rope” problem is a classic logic puzzle.

You have two ropes that each take an hour to burn, but they burn at inconsistent rates. How can you measure 45 minutes?

FIELD STUDIES

Ocean waves are powerful. Whether you have felt them at the beach, seen them in a movie, or read about them in a book, you are most likely familiar with the image of someone getting knocked over in the ocean. There are scientists who are studying how to harness the energy of ocean waves to create renewable energy. Explore both links to see two different methods that are under research:

- https://www.youtube.com/watch?v=1LJpBnxzG30
- https://www.sciencenewsforstudents.org/article/ocean-energy-could-be-wave-future

Which of these two methods seems like the more viable option? Research to see if there are additional methods being explored. Have any of the methods been used yet to generate electricity? Record in your science notebook your thoughts about the barriers to making this a common energy source.

RESEARCH EXPLORATIONS

You work for a design company that specializes in harnessing water energy. Your city wants to use hydroelectric power instead of coal as an energy source to limit air pollution. Your engineering team will design and test several water wheels for the firm to present the most efficient design for the city. You will calculate power and work by measuring force, distance, and time for your team-built waterwheel.

Watch the video for instructions to create a waterwheel and use the H2O solutions sheet to calculate power and work: https://www.teachengineering.org/activities/view/cub_energy_lesson02_activity1

H2O Solutions Sheet: https://www.teachengineering.org/content/cub_/activities/cub_energy/cub_energy_lesson02_activity1_waterwheelworksheet.pdf

MATH

The Juno spacecraft became the most distant solar-powered spacecraft in 2016. To gather enough power during its journey Juno has three, 30-foot arms covered in solar cells. Scientists use the inverse square law to determine the solar power required for a journey. Visible light follows the inverse square law, which is represented as $1/r^2$. Jupiter is 5 times farther away from the Sun than Earth, so using the inverse square law, $1/(5)^2$, Jupiter has only 1/25 as much available light as Earth.

Set up a demonstration (see link below) of how the inverse square law helps determine the required solar power for space trips. Did your finding fit the inverse square law? Explain. Why is it important for scientists to understand this relationship on space missions? https://www.jpl.nasa.gov/edu/teach/activity/collecting-light-inverse-square-law-demo/

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GRADES 8–9

Energy

ENGLISH LANGUAGE ARTS

You work for an investment firm that is dedicated to supporting renewable resources while also turning a profit. You have been tasked with researching all possible investments in renewable resource energy, evaluating environmental impact and production cost, and deciding what the best investment is for your company. Doing well on this task could result in a promotion, so it's important to be thorough and prepared.

Your boss has asked you to prepare the following:

- A one-page argument supporting your claim as to which renewable resource is the best choice for the firm, using valid reasoning and relevant and sufficient evidence.
- A presentation to share with the board overviewing the options and arguing for the best choice.

SOCIAL STUDIES

In the early 1940s, the Tennessee Valley Authority (TVA) built the Fontana Dam in western North Carolina to provide power for the war effort. While it provided flood control measures and made electricity possible for those who lived in the region, many towns were flooded under the lake's deep waters. This phenomenon is also true in other manmade lakes in neighboring states.

Explore the links provided, as well as ones you find on your own to learn more, and create a presentation that showcases how the creation of these hydroelectric lakes affected the quality of life and settlement patterns. Remember to cite your sources.

- https://bit.ly/3jyKBVc
- https://www.sosnc.gov/divisions/publications/kids_page_history

SCIENCE

The sun produces energy by radiation. This is the energy source that people use when they have solar panels, but any of us can use the sun's radiation to cook. With guardian permission, follow the link and create a solar oven with a handful of household items- a box, aluminum foil, plastic wrap, tape, a pie tin (or more aluminum foil), a skewer or a stick, and a black sheet of paper.

Solar Oven link: https://www.youtube.com/watch?v=kBmy-Aelzp0

There are several recipes available at the recipes link. In your science notebook, note the steps you are taking and, of course, record the results for each recipe you try!

Recipes Link: https://www.sunshineonmyshoulder.com/6-easy-recipes-for-kids/

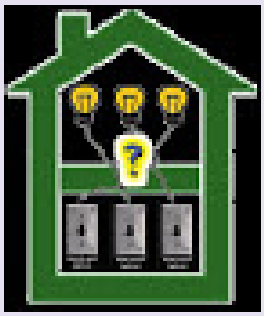
MINDFULNESS

Lack of energy can impede our ability to focus. Fortunately feeling energized can be as simple as getting enough sleep, exercising, or taking mental breaks. Mental breaks can be as easy as the following activity:

- Hold your arms out in a circular shape in front of your chest with your fingers loosely touching, as if holding a big ball.
- Close your eyes and visualize energy flowing in a counterclockwise direction through the circle created by your arms.
- Imagine the energy is like a gush of water in a huge hose, powerful and unstoppable.
- Focus on the energy flowing through your arms.
- Hold this pose as long as you can.
- Shake your arms out and try again.
- Do this several times each week until you can hold your arms out several times without feeling tired.

LOGIC PUZZLE

You have three light switches in the basement of your house. The lights are on the top floor of your house and are turned off. You do not know which switch is connected with which light. You can go upstairs only once to check the results after you are finished with changing the light settings (i.e. turn switches). Given these restrictions, how do you find out the connectivity between all switches and bulbs?



FIELD STUDIES

In 1977, in the Soviet Union, the first nuclear reactor at Chernobyl came online. When all of the reactors were built, they supplied 10% of the power for the state of Ukraine. In 1986, a design flaw led to a power surge during a test to reactor #4 and the nuclear core reactor overheated. While more than 100 individuals died as a direct result of the radiation, there have been thousands of deaths attributed to the radiation that was released. Only eight months after the accident, a sarcophagus was built over reactor #4 to help contain the ongoing radiation. In 2017 another layer of containment was added as the first sarcophagus had deteriorated. Learn about this process and more about the accident at Chernobyl: https://youtu.be/oY3fZH9VWhc

In your science notebook, reflect on what happened at Chernobyl and how it has impacted the lives of those who lived in the area.

RESEARCH EXPLORATIONS

The first law of thermodynamics states that energy is neither created nor destroyed. As a pendulum swings, it will convert between potential energy and kinetic energy. Will a pendulum starting at a higher height go faster?

Visit the link to create an experiment to help answer the question: https://www.teachengineering.org/activities/view/cub_energy_lesson03_activity2

Engineers use math and science to solve technical problems. How could an engineer use the information you concluded to solve a practical problem? Think about transportation vehicles, home appliances, factory equipment or roller coasters. The construction of some high rises includes the use of pendulums.

MATH

The energy that an item possesses due to its motion is called kinetic energy. The kinetic energy of an object, measured in joules, varies jointly with the mass of the object and the square of its velocity. If the kinetic energy of a 3 kg ball traveling 12 m/s is 216 Joules, what is the mass of a ball that generates 250 Joules of energy when traveling at 10 m/s? Predict what would happen to the ball's energy as its mass doubles. Predict what happens to the ball's energy as its velocity doubles. Calculate and compare your prediction vs actual results. Did your prediction align with the actual results? Explain your reasoning.

For more information about measuring energy: https://energy-101.org/units-of-measurement/

For more information about joint variation: https://youtu.be/v-k5L0BPOmc

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GRADES 10-12

Energy

ENGLISH LANGUAGE ARTS

The American Energy Innovation Act is currently being discussed in Congress. This Act supports long-term innovation in the solar industry and works to advance America's clean energy portfolio: https://www.greentechmedia.com/articles/read/massive-senate-energy-bill-falters

- How do you feel about environmental protection?
- What are your concerns about the depleting fossil fuel crisis?
- What do you think you and your family can do to help promote clean energy?

Research effective ways that you can help Earth by using cleaner energy. Brainstorm a few simple things that your neighborhood or school communities can do to protect the environment. Make a poster to display in a central location for each to put into practice.

SOCIAL STUDIES

In 1935 the Hoover Dam tamed the once wild Colorado River and provided water and hydroelectric power to the southwest. Read more here: https://www.history.com/topics/great-depression/hoover-dam

If the opportunity to build something like that came up again, how would you advise Congress to act, based on historical evidence?

Create a multimedia presentation defending your stance. Consider the following:

- What happened in the southwest to urge the government to build this marvel?
- How has the Hoover Dam impacted the economies in surrounding states?
- What other states have the natural resources that could benefit from hydroelectricity?
- How is the Hoover Dam a symbol for American grit and ingenuity?

SCIENCE

Have you ever considered alternative energy forms for the world's energy crisis? This means not solar, water, or wind - really *alternative*. Capturing methane emissions from cows, excrement from microorganisms, or coffee grounds - could these options actually work? Read more about alternative energy solutions at the following link: https://science.howstuffworks.com/environmental/green-science/five-forms-alternative-energy1.html

Which option(s) in the article do you think could be the most successful? How could this choice be used on a large scale? In addition to environmental benefits, what other kinds of benefits would result?

Create a set of 10 interview questions that you would ask the "inventor" of this alternate form of energy.

MINDFULNESS

Pay careful attention to your mood, energy and health after a poor night's sleep versus a good one. Ask yourself, "How often do I get a good night's sleep?" Like a good diet and exercise, sleep is a critical component to overall health.

Do you have a healthy sleep routine? The amount of sleep a person gets has a direct correlation with the amount of energy a person has. Follow the healthy sleep tips on The Sleep Foundation's website: https://www.sleepfoundation.org/articles/how-much-sleep-do-we-really-need

Keep a sleep diary for a few weeks. Make sure not only to include your hours of sleep but also how much energy you had the next day. Based on your review of this information at the end of the week, develop your own plan to ensure you get the sleep that is good for you.

LOGIC PUZZLE

A frog is at the bottom of a 30-meter well. Each day he summons enough energy for one 3-meter leap up the well. Exhausted, he then hangs there for the rest of the day. At night, while he is asleep, he slips 2 meters backwards. How many days does it take him to escape from the well?

Note: Assume after the first leap that his hind legs are exactly three meters up the well. His hind legs must clear the well for him to escape.

FIELD STUDIES

Through a process called cellular respiration the energy in food is converted into energy that can be used by the body's cells. How do our cells access the energy we need? What happens when the mitochondria don't do their job and cellular respiration does not occur?

Take a journey inside the mitochondria to explore the process: https://www.youtube.com/watch?v=39HTpUG1MwQ

Create your own graphic model to explain the process that takes place inside of the mitochondria.

Use the model to explain the process to a friend or family member.

RESEARCH EXPLORATIONS

Coffee and energy drinks are very popular among Americans. Many people feel they need the energy boost that caffeine, the main stimulant found in these drinks, provides to help with clarity, alertness, and to just feel "normal" for the day.

Scientifically, how does caffeine impact the brain? body? How much caffeine is too much? Do people require more and more of the stimulant as their body gets used to it? How does your energy level change with the types of chemicals you put in your body?

The TED Ed video below gives an excellent description of how the brain uses caffeine: https://www.youtube.com/watch?v=foLf5Bi9qXs

Think about your own caffeine consumption. Is this something you need to control? Research ways to give yourself natural energy. Write a reflective journal to develop a way to cut excess caffeine out of your diet.

MATH

The concept of living "off the grid" has become a more popular idea. There are many web articles, books, and even HGTV shows all dedicated to this topic. Off the grid living involves finding your own energy sources for your home.

Would you be happy living off the grid? What are some energy sources you would utilize for your private residence? Would you use solar, wind, moving water, or another option to create power?

Imagine you are moving off the grid and will not return to a store for months. Make a list of things you would need to build or purchase to create your own energy source for your off the grid home. For more fun, make a price list to see how much it would cost for the supplies.

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Energy
Reference Guide

6-7 Logic Puzzle:

Solution: Light both ends of rope A and one end of rope B. After 30 minutes, rope A will be completely burned up and there will be 30 minutes of rope B left. Light the other end of rope B; it will burn up in 15 minutes. Total time elapsed since starting the ropes on fire: 45 minutes.

8-9 Logic Puzzle:

Solution: Number the switches 1, 2 and 3. Switch on number 1 for 1 minute, then switch it off. Switch on number 2. Go upstairs and examine the lights. The light that is on is connected to switch 2. The light that is off and warm is connected to switch 1. The light that is off and cold is connected to switch 3!!

8-9 Field Studies:

If you are interested in learning more about how nuclear energy works, visit:

https://www.nationalgeographic.org/video/what-nuclear-energ

10-12 Logic Puzzle:

Solution: 28

Each day he makes it up another meter, and then on the twenty-seventh day he can leap three meters and climb out.

Energy

NC Standards Alignment

Grade Span	English/ Language Arts	Social Studies	Science	Math
K-1	RL.1.2	1.G.2.1 1.G.2.2 K.H.1 1.G.2	1.L.2	NC.1.MD.4
2-3	W.3.1	3.C&G.2.2 3.I.1.11 3.G.1.2	3.P.3.1	NC.3.OA.8
4-5	W.5.1	5.C&G.2.4 5.C&G.2.1	4.P.3.1	NC.5.NBT.7
6-7	W.7.3	6.H.1.1 6.G.1.4 6.G.1.4	7.P.2	NC.7.G.4
8-9	W.9-10.1	8.G.1.3 8.G.1	EEn.1.1.3 EEn.1.1.4	NC.MI.A-CED.4
10-12	W.11-12.5	AH2.H.2	EEn.2.2	NC.M1.A-CED.1