Department of Education

Learn at Home
Grade 8

May 2009
Version 2

Dear Eighth Grade Scholars,

We are facing difficult and unusual times right now with some schools closing for a week. We recognize that a break in school may be a challenge for you and your family. Even though your school is closed, you can use this time to continue learning.

To help stay on track for success:

- Read from a book, magazine or newspaper in English or the language you speak at home
- Write each day in English or the language you speak at home.
- Participate in a fitness activity and/or a creative activity to keep your body and your mind strong
- Review your notes and books from school
- Enlist the help of siblings, grandparents, or other family members and friends to make your time learning at home fun
- Share what you learn each day with your parent or caregiver
- Choose TV shows and websites in English or the language you speak at home to further your learning
    - Suggested TV shows can be found at the back of this guide
    - Suggested websites can be found at http://schools.nyc.gov/learnathome

On the following pages, you will find a day-to-day guide for you to use to help stay organized and on track for success. For additional resources and updated materials, go to: http://schools.nyc.gov/learnathome.

Day 1 Schedule

Subject	Minutes Per Day (At Least!)	Assignments	What Did I Learn Today?
English Language Arts	45	• Learn new vocabulary words from the Vocabulary List • Activity: Reading "Hope is the Thing"	•
Mathematics	45	• Complete Skill 50	•
Science	30	Complete at least one of the following activities: • Activity 1: *A Power Problem* (English or Spanish) • Activity 2: Begin *Forces and Motion on Earth* activity	•
Fitness and Health	30	• Exercise for 30 minutes. Choose from the Activity Calendars at the back of this booklet	•
Arts	30	• Choose one or two activities from the Arts Activities at the back of this booklet	•
TV Shows and Websites	30	• Choose TV shows and websites to further your learning at home	•

Day 1 English Language Arts

Vocabulary

Learn new vocabulary words from the Vocabulary List at the back of this booklet. Practice using these words in the activities below.

Activity 1: *Reading Poetry*

- Directions: Read the poem and complete the Poetry Reading Worksheets

Hope is the thing...

By Emily Dickinson

Hope is the thing with feathers
That perches in the soul,
And sings the tune without the words,
And never stops at all,

And sweetest in the gale is heard;
And sore must be the storm
That could abash the little bird
That kept so many warm.

I've heard it in the chillest land,
And on the strangest sea;
Yet, never, in extremity,
It asked a crumb of me.

Day 1 English Language Arts (continued)

Poetry Reading Worksheet

First, paraphrase the poem. Restate each sentence of the poem in your own words.

Second, identify the subject of the poem. Look for hints in the poem that tell you who the speaker is.

This poem is about _____. I know that because _____ _____.

Another reason why I know that is because _____ _____.

Day 1 English Language Arts (continued)

Poetry Reading Worksheet (continued)

Third, make as many inferences as you can about the speaker's interests, ideas, and feelings, based on evidence presented in the poem.

Complete one or all of the statements below.

- After reading the poem I can conclude that the speaker is interested in _____ _____. I know that because _____ _____.

  (Tell some things you may think the speaker might be interested in.)

- I think that the speaker may feel _____ _____.

  (Tell about speaker's feelings. Use descriptive words to tell about his/her feelings.)

  The reason I think that is because _____ _____.

Fourth, identify the theme, or main idea, of the poem.

- This poem tells about _____.

  The main idea in the poem is _____ _____.

Poetry Reading Worksheet (continued)

Fifth, jot down a literary technique or elements used in the poem, such as simile or personification.

Literary Technique 1

Examples from the poem:

-
-
-
-

Literary Technique 2

Examples from the poem:

-
-
-
-

Think about how these techniques and elements improve the poem and help communicate the poem's theme.

Day 1 Mathematics

Vocabulary

Learn the new math vocabulary words below. You will use these vocabulary words in the activities today.

- **Combination:** A set of objects in which order is not important.

Activity 1: *Make a List*

Please complete the worksheet on the following pages. Solve all exercises. Be sure to show all work. Solve at least 3 Application problems (# 6, 7, 8, 9, 10).

- Skill 50: Make a List

If you need Spanish activities for the concept of probability please follow the steps below.

- Step 1: Go to tutorial site: http://destination.nycenet.edu

- Step 2: Login with the following user ID and PW:
  - User: studentnyc
  - Password: student

- Step 3: Click on the Exploration Icon to access the tutorial

- Step 4: Scroll down to Mastering Skills & Concepts: Course V: Pre-Algebra – Spanish

- Step 5: Select the skill/concept to review.
  - Activity 1: 6.1.1 – Defining and Expressing Probability

Notebook Activity

Review Exercise 1. Describe what would happen if a triangle, square, circle and pentagon were used. How would the answer differ?

SKILL 50

Name _____ Date _____

Make a List

Pat's Pizza offers 7 different toppings: pepperoni, sausage, bacon, green peppers, onions, mushrooms, and anchovies. The Davis family wants to order a 3-topping pizza. Tommy Davis does not like anchovies.

EXAMPLE ***How many different pizzas can the Davis family order if they want to satisfy all members of the family?***

Let P = pepperoni, S = sausage, B = bacon, G = green peppers, O = onions, M = mushrooms, and A = anchovies. List the possible combinations that do not include anchovies.

PSB	PSG	PSO	PSM
PBO	PBM	PGO	PGM
SBG	SBO	SBM	SGO
SOM	BGO	BGM	BOM
PBG	POM	SGM	GOM

There are 20 different pizzas the Davis family can order.

EXERCISES ***Solve by making a list.***

1. How many different ways can a triangle, a square, and a circle be arranged in a row?

2. How many different four-digit numbers can be formed from the numbers 4, 5, 6, and 7 if all the digits must be different?

3. How many different three-digit numbers can be formed from the numbers 4, 5, 6, and 7 if all the digits must be different?

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4. How many different two-digit numbers can be formed from the numbers 4, 5, 6, and 7 if both the digits must be different?

5. How many numbers between 77 and 103 are divisible by 3?

APPLICATIONS

6. A vendor at a rock concert sells T-shirts in three colors: red, blue, and yellow. The T-shirts come in 4 sizes: small, medium, large, and extra large. How many different T-shirts are available to the customers?

7. Four chairs are placed in a row on the stage. The three candidates for class president, Adrian, Toni, and Miwa, are seated on the stage. How many different ways can the candidates seat themselves?

8. Leslie wants to take a picture of her four dogs. She has a beagle, a terrier, a collie, and a poodle. How many ways can she arrange her dogs in a row if the beagle and terrier must be next to each other?

9. Using only dimes and nickels, how many different ways can a clerk make change for a dollar?

10. Earl attends a convention every three years. The year 1992 was a leap year, and Earl attended a convention. What is the next leap year that Earl will be attending a convention?

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Day 1 Science

Choose Activity 1 or 2 below:

Activity 1: *A Power Problem*

- Read the article below and answer the questions that follow.
- Para Espanol, prime aquí: http://schools.nyc.gov/Documents/teachandlearn/LearnatHome/ELL/8day1sp.pdf

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in today's activity.

- **commute** (noun): a journey to and from a job
- **emission** (noun): the release of something harmful into the air
- **hybrid** (noun): a car that uses more than one kind of power

A Power Problem

AP Photo/Elaine Thompson

SEATTLE, Washington (Achieve3000, November 24, 2008). Keeping a regular car from running out of fuel is pretty easy, since there's usually a gas station nearby. Keeping an electric car powered up, on the other hand, requires a bit more planning—and a 50-foot extension cord.

That's because an all-electric car doesn't run on gasoline. It runs on electricity, which is stored on batteries that are charged when the car is plugged in. The batteries power an electric motor that provides propulsion. An electric vehicle (EV) does not burn gasoline, so it does not produce emissions. Therefore, it is an environmentally friendly method of transportation.

Since EVs don't harm the planet, they've become fairly popular. Experts estimate there are several thousand road-certified EVs, meaning that they can be driven on highways. There may be tens of thousands of Neighborhood Electric Vehicles (NEVs), which can hold only enough power to be driven slowly and for short distances. Still, that is a small percentage of the more than 250 million vehicles on the road. The vast majority of drivers still own traditional gasoline vehicles.

Why aren't EVs more widespread? It could be because charging an electric car battery requires plugging the car into an electrical outlet. EV owners can use their home outlets, and most people charge their cars while they sleep, so it's not a problem for them to drive the car in the morning. If EV owners plan to take a long trip, however, they need to know where they will be able to charge their batteries, just as someone wandering through the desert would need to know where to get water. After all, NEVs that can travel up to 25 miles per hour typically go about 35 to 40 miles on a single charge; a few can't even go that far. While California has more than 500 public charging stations at parks, malls, and grocery stores to serve electric vehicles, such resources are still rare across the rest of the country.

The situation forces EV drivers like Steve Bernheim to get creative. Bernheim's Corbin Sparrow is an EV that can run only 25 miles on a single charge. Therefore, Bernheim, who lives near Seattle, Washington, has come to know the locations of outlets like a firefighter knows hydrants.

Day 1 Science (continued)

"I'm an expert at finding [outlets]," said Bernheim. He added that there are about 30 reliable places in Seattle to plug in. Most of these outlets are free, but others charge a fee that is considerably less than the cost of filling a regular car with gasoline. Sometimes, Bernheim cannot find a public outlet and must convince another EV owner to let him plug in.

Driving an electric car can be a challenge for drivers whose commute to work is much longer than their EVs can travel on a single charge. EV owner Jason Henderson is in this situation, but he feels obligated to make it work because he feels that gasoline-powered cars produce too much pollution. Henderson's car, a Saturn, was originally a traditional car. He paid an expert $12,000 to convert it to an all-electric vehicle. Henderson estimates that in one 18-month period, the car costs him about $252 in electricity to drive 9,000 miles. He doesn't find it difficult to find places to plug in, but "there should absolutely be more spots," he said. "Everyone has power outlets, so it's just a matter of making them available."

Many EV owners are making their outlets available. Jeff Smith has a sign posted next to the outlet at his home in Seattle. It reads, "plug-in vehicle parking only" and invites others to use the outlet. No one has taken him up on the offer yet. Still, Smith keeps the sign up because he knows firsthand how hard it can be to find an outlet.

Although public outlets are still rare, clusters of them are cropping up. For example, government officials in King County, Washington, which includes Seattle, are adding new outlets at public parking garages.

"We want to make sure we're ahead of the curve in doing what we can to support the use of these vehicles," said Rochelle Ogershok, a county transportation spokesperson.

These new outlets will serve current EV users. They might also pave the way for a new breed of plug-in cars that companies hope will appeal to the mass market.

"Every auto company in the world is developing all-electric [vehicles] or … hybrids [that switch between electric and gasoline power]," said Zan Dubin Scott, a spokesperson for Plug In America, a nonprofit advocacy group for electric car owners. "The utilities, municipalities, and smart businesspeople are seeing that this is the future."

The Associated Press contributed to this story.

Instructions: Select the correct answer.

Question 1:
Based on information in the article, what is one way that all-electric cars are different from traditional cars?

- ○ All-electric cars run on batteries that power an electric motor, while traditional cars are powered by engines that burn gasoline.
- ○ All-electric cars are easy to keep powered up, while it's more difficult to find fuel for traditional cars.
- ○ All-electric cars produce emissions, while traditional cars are a more environmentally friendly method of transportation.
- ○ All-electric cars are used by a vast majority of drivers, while traditional cars are used by relatively few drivers.

Day 1 Science (continued)

Question 2:
The best alternate headline for this article would be _____.

- ◯ Drivers Find Sparse Outlets for Electric Cars
- ◯ Drivers Find NEVs Travel 25 Miles Per Hour
- ◯ Most Drivers Prefer Gasoline-Powered Vehicles
- ◯ Most Drivers Plug In EVs While They Sleep

Question 3:
The author probably wrote this article in order to _____.

- ◯ Explain the benefits and drawbacks of owning an all-electric vehicle
- ◯ Convince prospective car buyers to purchase new all-electric vehicles
- ◯ Explain the reasons why all-electric vehicles are growing in popularity
- ◯ Convince businesspeople around the U.S. to set up charging outlets for EVs

Question 4:
The article states:
may be tens of thousands of Neighborhood Electric Vehicles (NEVs), which can hold only enough power to be driven slowly and for short distances. Still, that is a small percentage of the more than 250 million vehicles on the road. The *vast* majority of drivers still own traditional gasoline vehicles.
Which would be the closest **synonym** for the word *vast*?

- ◯ Substantial
- ◯ Commercial
- ◯ Natural
- ◯ Traditional

Question 5:
Which of these is a statement of opinion?

- ◯ Everyone who travels by car to work should purchase an all-electric car.
- ◯ If an electric vehicle is road-certified, it means that it can be driven on highways.
- ◯ Since an electric vehicle does not burn gasoline, it does not produce emissions.
- ◯ California has more than 500 public charging stations at parks, malls, and grocery stores.

Question 6:
According to the article, why is it difficult to find a place to charge an all-electric vehicle?

- ◯ Since all-electric vehicles are just now becoming popular, there are only a few public charging stations available around the U.S.
- ◯ Since all-electric vehicles are declining in popularity, most public charging stations are ending this service.
- ◯ Since it is so expensive to charge an all-electric vehicle, most cities can't afford to offer charging services to electric vehicle owners.
- ◯ Since most electric vehicle owners don't usually carry an extension cord, it isn't practical to create public charging stations.

Day 1 Science (continued)

Question 7:
Which two words from the article are the closest **synonyms**?

- ○ Vehicle and auto
- ○ Batteries and emissions
- ○ Transportation and electricity
- ○ Utility and outlet

Question 8:
Which of these statements is **contrary** to the ideas presented in this article?

- ○ Although originally thought to be environmentally friendly, it has been discovered that all-electric vehicles produce harmful emissions.
- ○ Although all-electric cars are gaining popularity in the United States, public charging stations are still hard to find.
- ○ Most public outlets for charging electric vehicles are available for free, but some charge a small fee for the service.
- ○ Many electric vehicle owners make their outlets available to others who might need to charge their EVs.

Thought Question
Based on the article, what are the advantages and disadvantages of driving an electric vehicle?

Support your answer with details from the article, as well as ideas of your own.

Write your answer below.

Day 1 Science (continued)

www.teenbiz3000.com

Activity 2: *Science Inquiry Project – Forces and Motion on Earth*

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in the activities today.

- **Wind:** A current of air, especially a natural one that moves along or parallel to the ground.
- **Wave**: A disturbance or vibration that passes through a medium, such as air or water, transferring energy.

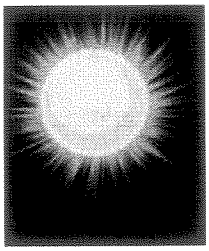
Directions: This is day one of a four day assignment.

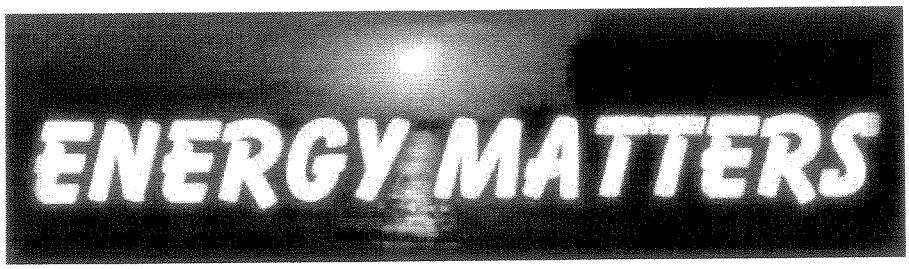
- Day 1: Research the following types of energy resources: windmills, wave and water mills, solar panels, dams, geothermal stations, and composting gas for energy. Use the Energy Matters site http://library.thinkquest.org/20331/types/ for fossil fuels, fission, hydroelectric, biomass, solar, wind, geothermal and fusion energy.

Additional Resources:
The following websites will also help you research types of energy resources. You may also read the excerpts from the *Energy Matters* website provided in the following pages.

Wikipedia Encyclopedia: Type in "windmills, watermills, solar panels, dams"
http://en.wikipedia.org/wiki/Main_Page
Energy Matters: http://library.thinkquest.org/20331/types/
Fact Monster – Types of Energy: http://www.factmonster.com/ipka/A0907040.html

Source: This activity is from Glencoe NY Science, Grade 8 Unit 4: Forces and Motion on Earth
http://glencoe.mcgraw-hill.com/sites/0078778808/student_view0/unit4/unit_project_2.html





Energy Through History

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1600's

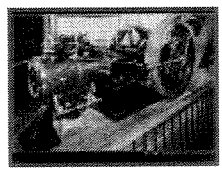
The Netherlands was the first country to find coal in Europe, and it provided the fuel to England and other nearby countries. In the 17th century, England started producing coal of its own and supplying it to other countries. It suddenly became the provider of virtually the whole world.

In this century, Europeans also learned to contain solar heat in a closed room made out of glass (a greenhouse) to grow plants with the indoor warmth even in the cold weather.

1700's

Because most of Europe, especially England, had considerably diminished its forests by this century, it relied extensively on coal as its fuel. Another of the main causes of the considerable demand for coal was the invention of the steam engine. Coal mines were often filled with water that leaked in from the surface and had to be removed by means of lifting up a bucket attached to a rope in order to proceed with the mining. Seeing the inefficiency of the operation, Captain Thomas Savery invented a steam engine in 1698. Its purpose was exclusively to extract water out of the coal mines. His steam engine operated by means of the pressure of the atmosphere and is therefore called an atmospheric engine. It worked by filling a cylinder with steam and then pulling the water when the steam condensed with cooling.

In 1712, Thomas Newcomen invented a more effective steam engine. Like the Savery steam engine, it was an atmospheric engine and was made for pumping water out of coal mines. However, it was simpler and more effective than the previous one. Instead of making the water from the mine directly fill the cylinder of the engine, the Newcomen engine pumped the water indirectly with exterior pumps. It was a powerful and economical engine that had the capacity of up to 4.7 million foot-pounds of work per bushel of coal. Later, its efficiency was increased to 9 million foot-pounds/bushel of coal by J. Smeaton.

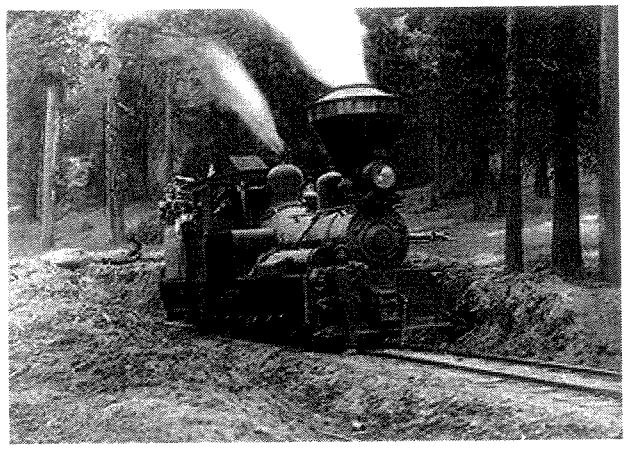


A Steam Engine from 1926
Credit: Alfred Harrell; Courtesy of The Smithsonian Institution

A superior steam engine was developed by James Watt in the 1770's. Unlike the two previous engines that relied on only one operating cylinder, Watt's

engine had two and operated with the flow of heat between the two cylinders rather than using the pressure of the atmosphere. Its efficiency was up to 20 million foot-pounds/bushel of coal, doubling the capacity of the Newcomen-Smeaton engine. Watt's steam engine was not only to be used in pumping water out of mines. It soon proved to have the greater significance of being the driving force of the Industrial Revolution.

1800's

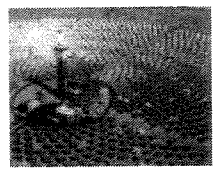


A Steam Locomotive

photo courtesy The Amazing Picture Machine

During the 19th century, the world went throught a great change as the Industrial Revolution that started in England spread to the rest of Europe, North America and other parts of the world. Characterized by mass production aided by machines and the supply of much clothing, furniture and many other products, the demand for energy increased remarkably. Also, new means of transportation were developed with the application of the new technology such as the construction of the first steam boat in 1807 and the first locomotive in 1804. This situation required the invention of more effective engines and cheaper energy sources.

While coal was being used extensively by the industrial movement, some scientists were already becoming concerned about the exhaust from combustion of the fossil fuel. Some of these scientists started developing natural energy sources as an alternative to coal. The energy sources include solar energy, hydroelectric energy, and geothermal energy.

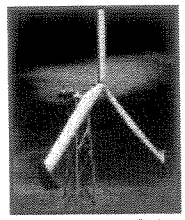


Modern solar panels
Credit: Sandia National Laboratories; Courtesy DOE/NREL

Solar energy was first developed by Mouchout of France in 1860. His solar engine consisted of a a glass-enclosed iron cauldron with reflectors that concentrated solar radiation to boil water and to operate a small steam engine with the steam produced. After observing this engine, William Adams improved the solar engine by reflecting solar radiation with several mirrors to a copper boiler elevated on a tower. A modern version of it looks like the picture on the left. With a configuration of 72 mirrors it was possible to produce 3 times as much power as the Mouchout solar engine. Several other modifications made by Charles Tellier, John Ericsson, Henry E. Willsie, Eneas, and Shuman considerably improved the performance of the solar engines, but the engines failed to commercialize because of the widespread and relatively

cheaper use of coal.

Constructions of small hydroelectrical power plants were also constructed in the 19th century. Windmills that up until then were used for pumping water or grinding crops were also developed in an attempt to produce electrical power. Geothermal energy began to be used to heat up houses and, by the end of the century, to produce electricity.


A wind turbine
Credit: Warren Gretz. Courtesy of DOE/NREL

Another big change occurred when Colonel Edwin Drake managed to drill and extract crude petroleum oil out of the ground in Titusville, Pennsylvania. It was discovered that several useful products could be produced from petroleum, including kerosene, a gas that was ideal for lighting purposes, and gasoline, a fuel that could be used for locomotive purposes. With the invention of internal combustion engines mounted on automobiles, petroleum gradually began to dominate coal in the energy industry.

Next Section: 1900's and the Modern Times

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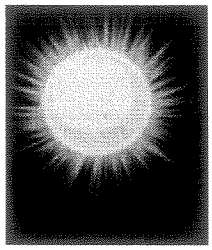

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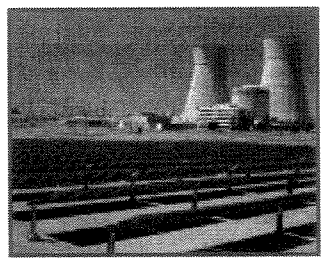
1900's

The French inventor Lenoir invented an internal combustion engine that used gasoline as fuel. It was a big relief for the oil companies since petroleum was not a preferred automobile fuel. The German inventors Dailmer and Benz invented the first automobile by mounting the engine on a carriage. Henry Ford later put automobiles into mass production, and the car started to become a common means of transportation. The Wright brothers invented the first airplane with a gasoline engine, which ushered in an era of faster and cheaper transporation.

Modern Times

As the exhaustion of fossil fuels and the enviromental damage cause by the pollutants produced thereof become notable, scientist began to seek for an alternative source of energy. Some of the types of energy sources that are becoming popular are solar, wind, hydroelectric, biomass and geothermal energy. Many of them had already been developed nearly a century ago, but are only now coming into widespread use. Nuclear energy is widely used today. Its efficiency in producing energy is very attractive but the disposal of radioactive waste that is harmful to the environment is the main concern.

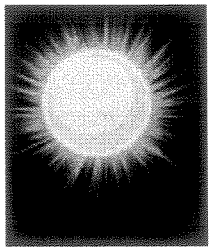


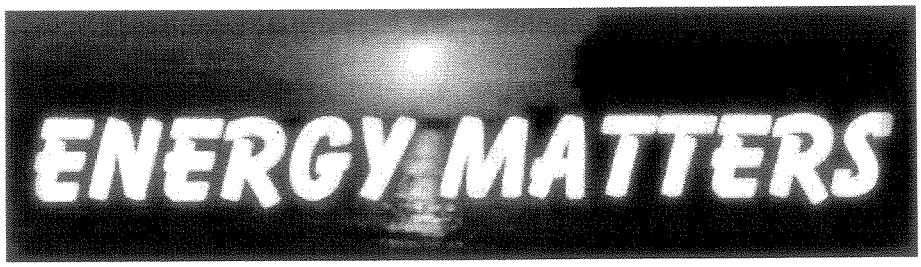
Nuclear cooling towers with a photovoltaic array in the foreground
Credit: Warren Gretz; Courtesy: DOE/NREL

As we look over our energy's history, one thing is clear: the energy sources that have sustained civilized society for so long, namely fossil fuels, have been abused and are now rapidly becoming nonexistent. It is important for us to learn that whatever the energy source of the future turns out to be, we must learn to conserve and value it.

The 1970's Mideast Oil Crisis

Home Search Credits Help





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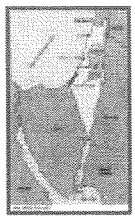
The Mideast Oil Crisis

In October, 1973, panic gripped the United States. The crude oil-rich Middle-Eastern countries had cut off exports of petroleum to Western nations as punishment for their involvement in recent Arab-Israeli conflicts. Although the oil embargo would not ordinarily have made a tremendous impact on the US, panicking investors and oil companies caused a gigantic surge in oil prices. The situation, caused more by fear and irrationality than any firm economic basis, turned out to be one of the most memorable of the 1970s. Those who can remember the so-called "Mideast oil crisis" also remember long lines at the gas pump due to petroleum shortages and high gasoline prices.

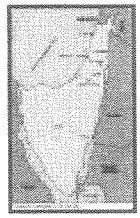
To understand the oil crisis that gripped the world during the 1970s, we need to know a little of the history of Middle Eastern history and politics.

After World War II, the Allied powers created a Zionist state known as Israel to serve as a homeland for the millions of disfranchised (property-less) Jews throughout the world. Israel was proclaimed an independent nation by its people on May 14, 1948. The land for the new country was carved out of the British-controlled territory known as "Palestine." Although the Jews agreed to the settlement, the local Arabs refused to acknowledge the Israeli state and launched frequent attacks along its borders throughout the year 1949. The attacks eventually escalated into a full-scale conflict known as the "Suez-Sinai War."

The British and the French joined in on the side of the Israelis, presumably to punish Egyptian president Gomar Nasser for claiming control of the Suez canal, a manmade waterway connecting the Mediterranean and Red Seas. Only by decisive action on the part of the United Nations was the conflict resolved. During the fighting, Israeli forces managed to capture the Sinai Peninsula and the Gaza strip, but relinquished the territories at the urgings of the United States and other United Nations members.



Israel before June, 1967

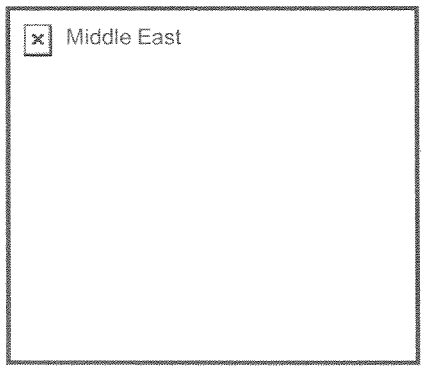


Cease-fire lines after the Six-Day War

Above maps courtesy of the Government of Israel

In response to their defeat at the hands of the Israelis, the Arabs began to unite with a common anti-Israel objective. An Arab attack force that gathered along Israel's borders prompted Israeli nationals to launch another offensive in 1967 which came to be known as the "Six-Day War." Backed by Western powers (primarily France), Israel succeeded in destroying the Arab forces and claimed the Gaza Strip, the Sinai Peninsula, the Golan heights, East Jerusalem, and the West Bank from the neighboring countries of Syria, Jordan, and Egypt.

In 1973, Arab forces led by Egypt and Syria retaliated. Attacking on "Yom Kippur," the holiest of Jewish holidays, the Arabs were repulsed but nevertheless succeeded in impressing the Soviet Union. Backed by Soviet technology, the Arabs renewed their efforts against Israel. Furthermore, to punish the Western powers for aiding the Israelis, the Arab nations abruptly halted oil exports to countries such as the United States and the Netherlands. Although the Israelis-Arab conflict was eventually resolved with the help of the United States, the economic impact of the cutoff of Arab petroleum was extensive. Panic by western nations led oil prices to be greatly inflated. "Long lines at the gas pump" is now a phrase understood in America to describe the lack of gasoline in the United States due to rationing of limited petroleum imports during the 1970s.



A map of the modern-day Middle East
Map courtesy The Virtual Tourist

There were more oil scares throughout the next two decades. When the shah of Iran was deposed during a revolution in that country, petroleum exports were diminished to virtually negligible levels, causing crude oil prices once again to be raised by an exorbitant amount. Further, Iraq's invasion of Kuwait in the 1990s also inflated oil prices, albeit for only a short time. These disturbing trends perhaps reinforce the world's dependence on Middle Eastern oil and argue for the development of new energy sources not tied to any particular geographic region of the planet.

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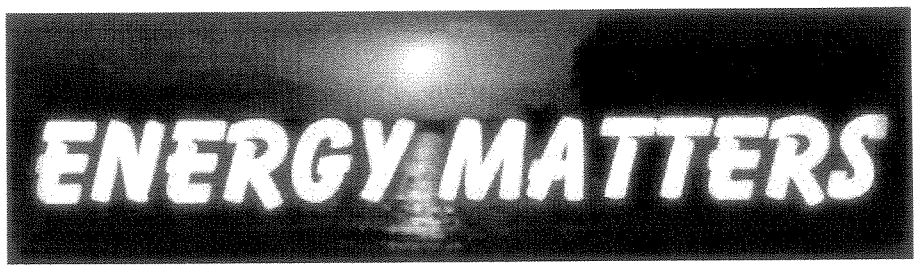

The Physics of Energy

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There is no energy problem.

Although the above statement might seem surprising, even shocking, given the length we have gone to explain the importance of energy to the world and the possibility of a crisis in the future, it is absolutely true when speaking from a physics point of view.

One of the most important and firmly established laws of physics is that energy is conserved, that is, energy will always remain at the same level in a closed system. The Earth can be considered a closed system, and many people argue that the Earth *gains* a useful net energy from the sun. So strictly speaking, even though the following terms are widely used, we will never actually "run out" or "use up" energy.

The problem we actually have is related to the storage of energy. A store of energy is called a fuel. A high level of energy is stored in coal, natural gas, and oil, making them the three most widely used and important energy sources in the world. Unfortunately, when these fuels are burned in chemical or nuclear reactions to release the energy, the original fuel mass is used up and cannot be recreated without spending more energy than the amount that could be obtained (defeating the purpose of an energy source altogether!). It is for this reason that we must find viable, infinite sources of energy before our finite supplies run out.

Laws of physics dictate that energy can be change from one form to another (or into matter - the reason why there's energy in fossil fuels). There are various forms of energy: kinetic energy (energy of motion), potential energy, mechanical energy, nuclear energy, etc., but we cannot directly use these forms of energy to turn on our TV or to cook food in the microwave. That's where electricity comes in. Since electricity is the primary form of energy consumed by the majority of the world's population, power plants must exist to convert heat from burning biomass or kinetic energy from falling water into the energy that flows through the wire in our homes.

So, as you can see, physics is indeed important in understanding our energy use. Here are more sections that deal with the physics of energy:

- Kinetic and Potential Energy Explained
- Missing Mass and the Theory of Relativity

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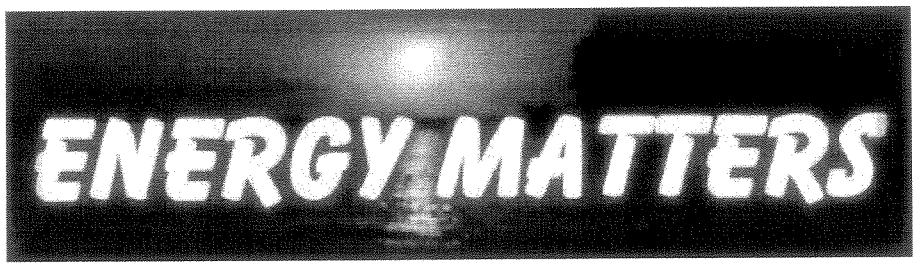

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Kinetic and Potential Energy

Learning about these two forms of energy is extremely important in understanding why man can obtain the usable energy from things like waterfalls and spinning turbines. Power plants serve to convert these physical forms of energy into energy to run our TVs and cook food in the microwave -- electricity!

Kinetic Energy (KE) is the name for energy associated with moving objects. A good way to remember this is by the formula $KE=(1/2)mv^2$, where m; is the mass of the object and v; is the velocity of the object. If you remember the formula, you will remember that kinetic energy is dependent upon velocity and mass, and thus has to do with moving objects.

Potential Energy (PE) is the name for energy stored in an object--or, the "potential" of an object to do work. For instance, a rock at the top of a cliff has more potential energy than one on the ground, because you could drop the rock off of the cliff and hit something below (converting the potential energy to kinetic).

The picture below of the world-famous Horseshoe Fall at Niagara Falls will further illustrate the difference between kinetic and potential energy. In this case, the two forms of energy are experienced by molecules of water. Point your mouse onto the photo (do not click) and watch the bottom status line of your browser.

Horseshoe Fall at Niagara

Horseshoe Fall at Niagara

Horseshoe Fall at Niagara

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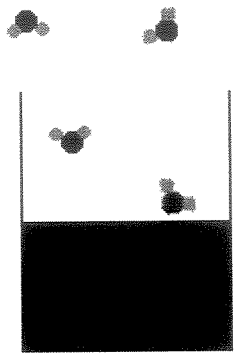
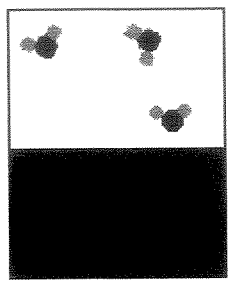
All About Vapor Pressure

Why does boiling a liquid create vapor that can spin a turbine? Actually, all liquids have a certain "vapor pressure" at certain temperatures. For instance, a cup of water at room temperature has vapor pressure even though you don't see steam coming out of it. So what causes vapor pressure?

Let's go back to the cup of water example. Look at the surface of the water. Now imagine zooming in really close. If you could see the individual molecules, you would notice that they were all moving around slightly, constantly jostling and shoving each other but staying in the same overall position. The movement is caused by the energy associated with the given temperature.



When there is no lid, water molecules can escape until there is eventually no water left in the container.



With a lid, the molecules are trapped in the container and so there is no net loss of water

At room temperature, the molecules will all have a certain amount of energy and will therefore be moving around at a certain speed, whereas at a colder temperature, the molecules will have less energy and will not be moving around as much. At absolute 0 (0 Kelvin, or -273 degrees Celsius), the lowest possible temperature, technically the movement of the molecules would be at a minimum (although there would still be movement).

Now imagine that one of the molecules of water near the surface is pushed a little harder from below. The molecule gains just enough energy to "break free" of the other molecules and is launched into the air. The free molecule will most likely escape into the open air if there is no lid on the container; if there is a lid, however, then the molecule will bounce off of the different surfaces within the system and eventually return to the surface of the liquid where it "reattaches" itself to the other molecules.

Next Section: Kinetic and Potential Energy

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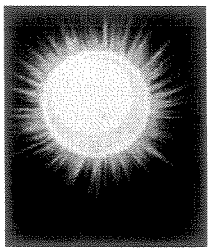

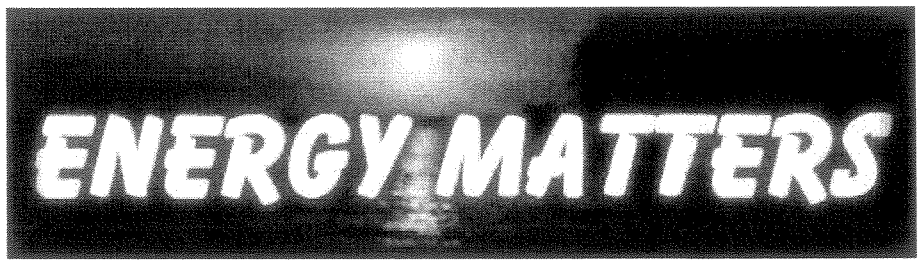

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The Physics Definition of Energy

Energy and work occupy an important part of our ordinary life and are among the most important topics in physics. Work in terms of physics has quite a different meaning than the work we normally think of. In physics, work is done only when an object is moved in the direction of the applied force.

Contents

- More on Energy and Work
- Kinetic and Potential Energy
- The Conservation of Energy
- The Various Forms of Energy

Related Pages

- Describing Kinetic and Potential Energy

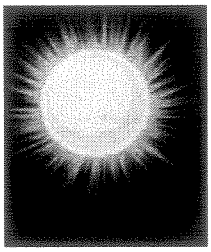
Energy in physics is defined as the ability to do work. That makes sense, right? After all, the more energy you have, the more schoolwork you can do...right. So anyway, another way to see it is that work is the force exerted multiplied by the distance, or W=FD. That also makes sense. If you push a really heavy object a certain distance, you do more work than if you push a lighter object that same distance.

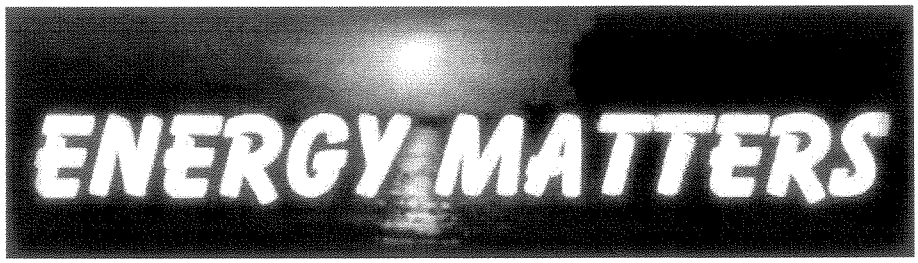
The energy stored in the various sources covered in this page is, in one way or another, derived from the energy of the sun. For instance, when we burn wood, we are simply converting the sun's power that was stored in the growing plant into radiant (light) and thermal (heat) energy. Hydroelectric power is derived from the running water that flows from higher elevations to lower elevations. Again, it is the sun that provided the energy to evaporate water from lower heights and transported it to the upper heights as rain. So all the energy we deal with comes from the sun.

You've already read about kinetic and potential energy. Other types of energy that are discussed in this site are derivatives of kinetic energy. For instance, thermal energy is kinetic energy in the form of heat.

Read on to discover a much more in-depth view of the physics of energy.

Next Section: More on Energy and Work





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Although there are many different types of fossil fuels, we have chosen three that we feel are especially important: coal, petroleum, and natural gas. Because virtually all fossil fuel uses produce energy in pretty much the same way (see the *Theory* section), we have condensed them into one area on this website.

Contents

- Theory Behind Fossil Fuels
- The Pollution Problem
- Advantages and Disadvantages

Types of Fossil Fuels

- Petroleum
- Coal
- Natural Gas

Related Pages

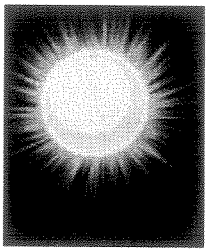
- Mideast Oil Crisis

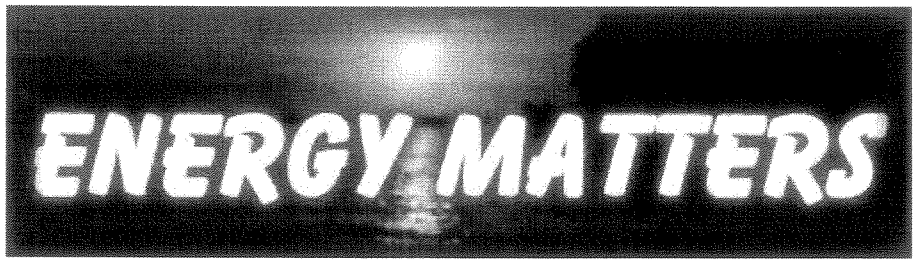
An oil rig in the North Sea

Fossil fuels have been a widely used source of energy every since the Industrial Revolution just before the dawn of the 20th century. Fossil fuels are relatively easy to use to generate energy because they only require a simple direct combustion. However, a problem with fossil fuels is their environmental impact. Not only does their excavation from the ground significantly alter the environment, but their combustion leads to a great deal of air pollution.

Follow the link to learn more about how fossil fuels can create energy.

Next Section: Theory Behind Fossil Fuels





Fossil Fuels

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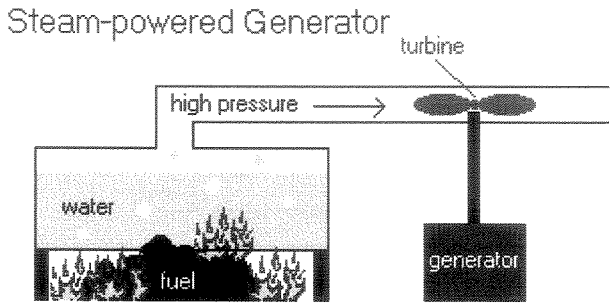
Theory

The theory behind fossil fuels is actually quite simple. Burning coal, natural gas, and petroleum releases energy stored in the fuel as heat. The energy contained by the fuels is derived from the energy of the sun. For more detailed explanations of the origins of the different fossil fuels, visit the coal, natural gas, and petroleum pages.

The heat that is recovered upon combustion of the fuel can be used by us in several ways. Industrial processes that require extremely high temperatures may burn a great deal of very pure coal known as "coke" and use the energy released to directly heat a system. Some people make use of clean burning natural gas to heat their homes. Combustion of fossil fuels can also be used to generate electricity; the fuel is burned to heat water, and the steam from the boiling water spins turbines that power a generator, thereby manufacturing electricity:



Next Section: The Pollution Problem

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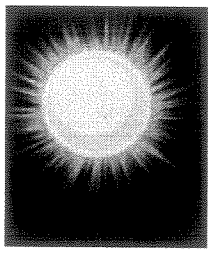

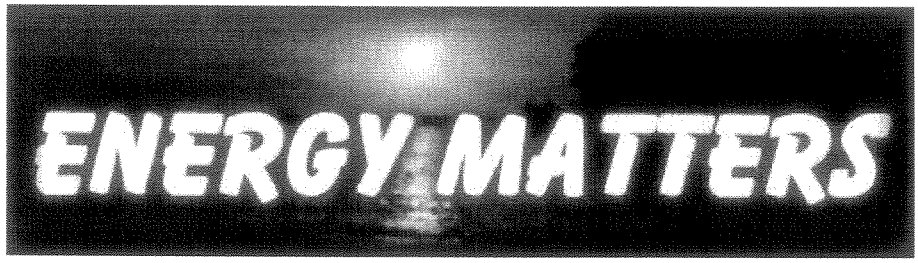

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Pollution

Global Warming

You have probably heard of something called "global warning" before. Perhaps you are also familiar with the term "Greenhouse effect." Because those two terms are so important in understanding the pollution problem associated with burning biomass and fossil fuels, we should touch upon their definitions now.

Scientists believe that global warming is caused by the "Greenhouse effect." The greenhouse effect describes the accumulation of carbon dioxide in our earth's atmosphere. A layer of gas forms that traps heat inside the atmosphere, thereby acting as the glass ceiling of a greenhouse. Because heat is trapped by the carbon dioxide, it is believed that the earth is slowly warming. A potential (but relatively distant) danger of global warming is the melting of the so-called "polar ice caps" at the north and south poles. This occurrence would cause the ocean level to rise and perhaps flood many coastal cities.

The Advent of Fossil Fuels

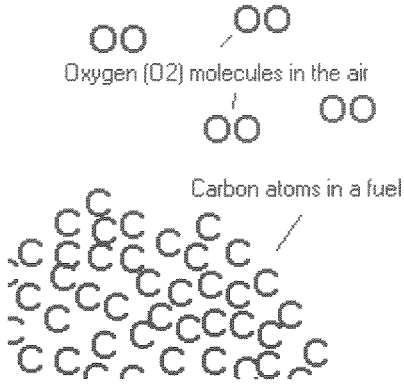
Before humans were around on the earth, there was a relatively even recycling of carbon dioxide and oxygen. Plants require carbon dioxide to live, and they emit oxygen in return. Animals, on the other hand, need oxygen, but exhale carbon dioxide. But as humans began to burn fossil fuels to create energy (especially beginning just before the 20th century during the "Industrial Revolution"), more and more carbon

dioxide was emitted into the air until the balance was slowly destroyed.

The Harmac Pulp Mill on Vancouver Island, British Columbia, Canada

How Do Fossil Fuels and Biomass Pollute?

All fossil fuels and biomasses consist of carbon and hydrogen atoms. When these fuels are burned, or "combusted," carbon atoms unite with oxygen in the air to form carbon dioxide:



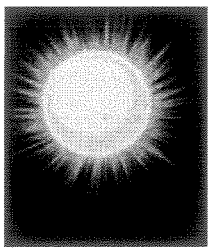
Other Polluting Byproducts of Fossil Fuel and Biomass Burning

Carbon dioxide is not the only byproduct of direct combustion of fuel. Small "particulates" that can become imbedded in the human respiratory system are also emitted. Particulates can cause coughing and damage to the lungs. Further, they can lead to cancer and lung disease.

Carbon monoxide is produced when less oxygen is available in the immediate area. Carbon monoxide is more directly harmful to humans because it is odorless, colorless, and reduces the body's ability to transport oxygen. This leads to fatigue, nausea, and headaches (flu-like symptoms).

The Spectrum of Pollution

According to the Electronic Universe Project, "Materials on the low end of the energy scale such as wood and charcoal create the most pollution. Sources on the high end of the energy scale, such as natural gas burn very cleanly resulting in less air pollution."



Hydroelectric Power

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Man has utilized the power of water for years. Much of the growth of early colonial American industry can be attributed to hydropower. Because fuel such as coal and wood were not readily available to inland cities, American settlers were forced to turn to other alternatives. Falling water was ideal for powering sawmills and grist mills.

Contents

- Theory Behind Hydroelectric Power
- Types of Hydroelectric Power Plants
- Problems with Hydroelectric Power
- Advantages and Disadvantages

Related Pages

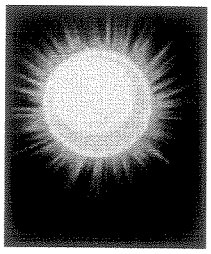
- Kinetic and Potential Energy

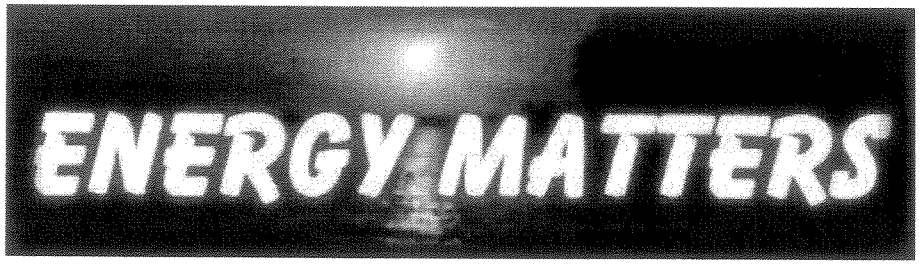
As coal became a better-developed source of fuel, however, the importance of hydropower decreased. When canals began to be built off of the Mississippi River, inland cities became linked to mainstream commerce. This opened the flow of coal to most areas of America, dealing the final blow to hydropower in early America.

Water power really didn't stage a major comeback until the 20th century. The development of an electric generator helped increase hydropower's importance. In the mid-20th century, as Americans began to move out of the cities and into "suburbia," the demand for electricity increased, as did the role of hydroelectricity. Hydroelectric power plants were built near large cities to supplement power production.

An overhead view of the Noxon Rapids Hydroelectric Power Project on the

Hydropower had some help from the federal government in being established in America. The Tennessee Valley Authority (TVA) was implemented during the Great Depression of the 1930s. The program was designed to correct several problems in the Tennessee River Basin. These problems included frequent floods, erosion, and deforestation. The TVA provided for the building of several hydroelectric dams. Not only were the dams





Solar Power

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The name "solar power" is actually a little misleading. In fact, most of the energy known to man is derived in some way from the sun. When we burn wood or other fuels, we are releasing the stored energy of the sun. In fact, there would be no life on earth without the sun, which provides energy needed for the growth of plants, and indirectly, the existence of all animal life. The solar energy scientists are interested in is energy obtained through the use of solar panels. Although the field of research dealing with this type of solar power is relatively new, bear in mind that man has known about the energy of the sun for thousands of years.

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- Theory Behind Solar Power
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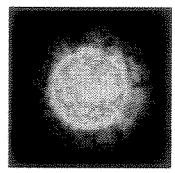
Related Pages

- Solar Thermal Applications
- Photovoltaic Applications



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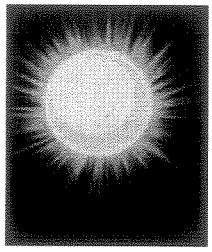

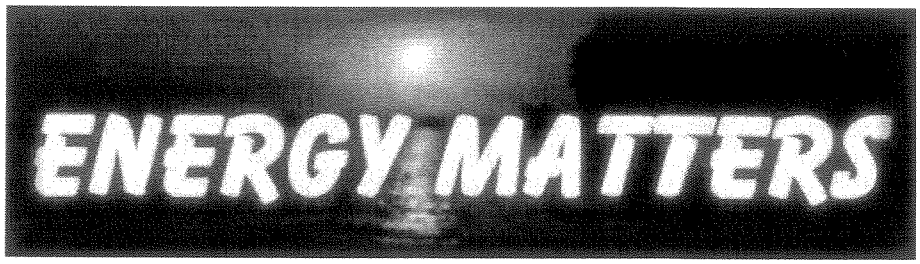

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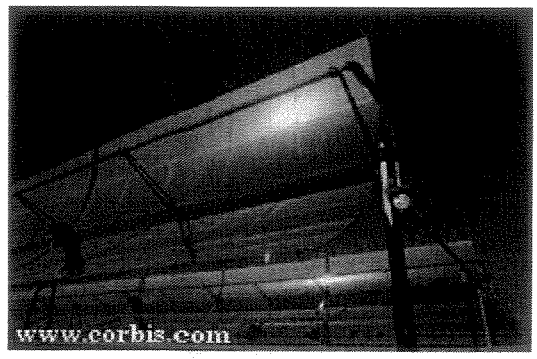
Theory

The energy of the sun can be used in many ways. When plants grow, they store the energy of the sun. Then, when we burn those plants, the energy is released in the form of heat. This is an example of indirect use of solar energy.



Solar power panels at a solar power plant in Boron, California

The form we are interested in is directly converting the sun's rays into a usable energy source: electricity. This is accomplished through the use of "solar collectors," or, as they are more commonly known as, "solar panels."

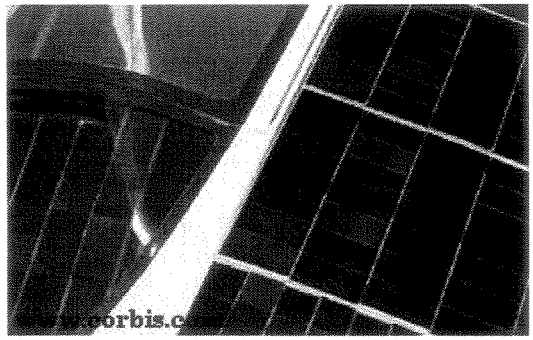
There are two ways in which solar power can be converted to energy. The first, known as "solar thermal applications," involve using the energy of the sun to directly heat air or a liquid. The second, known as "photoelectric applications," involve the use of photovoltaic cells to convert solar energy directly to electricity. Learn more about them by following the links below.

Thermal

Photoelectric

Solar power has an exciting future ahead of it. Because solar power utilizes the sun's light, a ubiquitous resource (a resource that is everywhere), solar panels can be attached

to moving objects, such as automobiles, and can even be used to power those objects. Solar powered cars are being experimented with more and more frequently now.



Solar energy panels on "Dream Car I", Australia

Next Section: Problems with Solar Power

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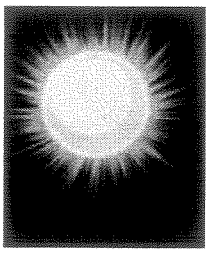

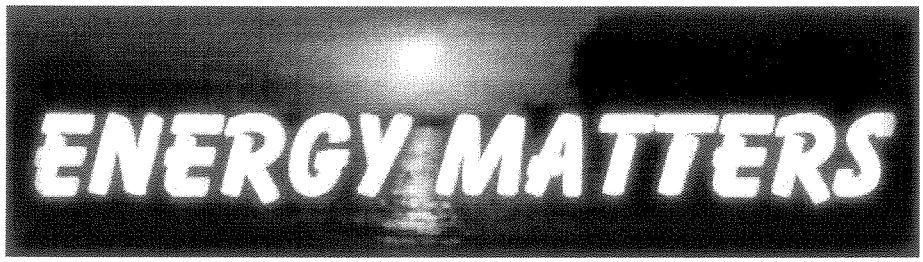

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Advantages and Disadvantages

Advantages

- Inexhaustible fuel source
- No pollution
- Often an excellent supplement to other renewable sources
- Versatile--is used for powering items as diverse as solar cars and satellites

Disadvantages

- Very diffuse source means low energy production--large numbers of solar panels (and thus large land areas) are required to produce useful amounts of heat or electricity
- Only areas of the world with lots of sunlight are suitable for solar power generation

Back to Types of Energy Sources

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Day 2 Schedule

Subject	Minutes Per Day (At Least!)	Assignments	What Did I Learn Today?
English Language Arts	45	• Learn new vocabulary words from the Vocabulary List • Activity: Reading "The Debt"	•
Mathematics	45	Complete: • Lesson 10.4 Study Guide and Intervention • Lesson 11.1 Study Guide and Intervention	•
Science	30	Complete at least one of the following activities: • Activity 1: *Lights off Around the World* (English or Spanish) • Activity 2: Continue *Forces and Motion on Earth* activity looking at types of energy	•
Fitness and Health	30	• Exercise for 30 minutes. Choose from the Activity Calendars at the back of this booklet	•
Arts	30	• Choose one or two activities from the Arts Activities at the back of this booklet	•
TV Shows and Websites	30	• Choose TV shows and websites to further your learning at home	•

Day 2 English Language Arts

Vocabulary

Learn new vocabulary words from the Vocabulary List at the back of this booklet. Practice using these words in the activities below.

Activity 1: *Reading Poetry*

- Directions: Read the poem and complete the Poetry Reading Worksheet

The Debt

By Paul Laurence Dunbar (1872–1906)

THIS is the debt I pay
Just for one riotous day,
Years of regret and grief,
Sorrow without relief.

Pay it I will to the end—
Until the grave, my friend,
Gives me a true release—
Gives me the clasp of peace.

Slight was the thing I bought,
Small was the debt I thought,
Poor was the loan at best—
God! but the interest!

Day 2 English Language Arts (continued)

Poetry Reading Worksheet

First, paraphrase the poem. Restate each sentence of the poem in your own words.
Second, identify the subject of the poem. Look for hints in the poem that tell you who the speaker is. This poem is about _____. I know that because _____ _____. Another reason why I know that is because _____ _____.

Poetry Reading Worksheet (continued)

Third, make as many inferences as you can about the speaker's interests, ideas, and feelings, based on evidence presented in the poem.

Complete one or all of the statements below.

- After reading the poem I can conclude that the speaker is interested in _____ _____. I know that because _____ _____.

  (Tell some things you may think the speaker might be interested in.)

- I think that the speaker may feel _____ _____.

  (Tell about speaker's feelings. Use descriptive words to tell about his/her feelings.)

  The reason I think that is because _____ _____.

Fourth, identify the theme, or main idea, of the poem.

- This poem tells about _____.

  The main idea in the poem is _____ _____.

Poetry Reading Worksheet (continued)

Fifth, jot down a literary technique or elements used in the poem, such as simile or personification.

Literary Technique 1

Examples from the poem:

-
-
-
-

Literary Technique 2

Examples from the poem:

-
-
-
-

Think about how these techniques and elements improve the poem and help communicate the poem's theme.

Day 2 Mathematics

Vocabulary

Learn the new math vocabulary words below. You will use these vocabulary words in the activities today.

- **Probability:** The chance that an event will happen, described as a number between 0 and 1
- **Tree diagram**: A diagram that shows how things can be arranged, using the form of branches.
- **Outcome:** A possible result in a probability experiment

Activity 1: *Counting Strategies*

Please complete the following activities.

- Lesson 10.4 Study Guide and Intervention: Make Matches
- Lesson 11.1 Study Guide and Intervention: Counting Strategies

If you need Spanish activities to review the concept of probability**,** please follow the steps below.

- Step 1: Go to tutorial site: http://destination.nycenet.edu

- Step 2: Login with the following user ID and PW:
  - User: studentnyc
  - Password: student

- Step 3: Click on the Exploration Icon to access the tutorial

- Step 4: Scroll down to Mastering Skills & Concepts: Course V: Pre-Algebra – Spanish

- Step 5: Select the skill/concept to review.
  - Activity 2: 6.1.2 - Calculating Probabilities on a Color Wheel

Notebook Activity

Describe in words how you determined the answer for Lesson 10.4, Exercise #1.

Name **Date**

Lesson 10.4 Study Guide and Intervention

Make Matches

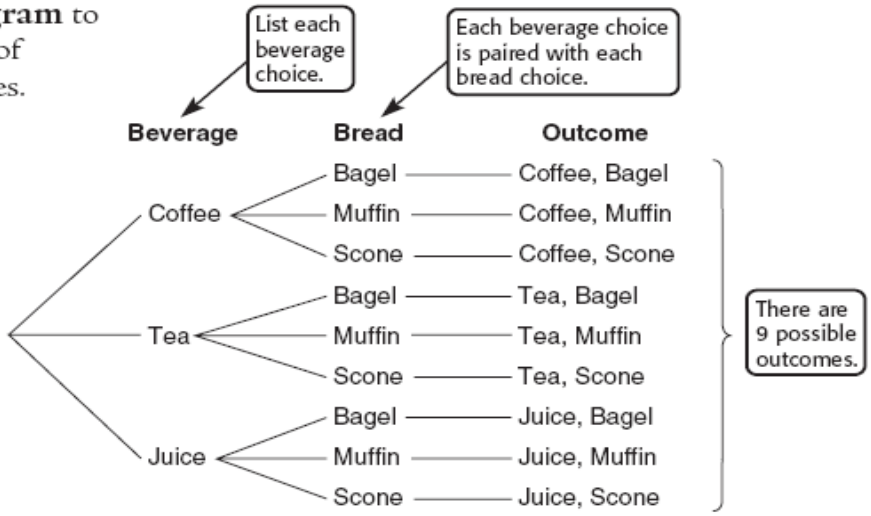
Example 1 **Suppose you go to breakfast and have 3 choices for a beverage and 3 choices for bread.**

a. What is the probability that you choose to have coffee and a bagel?

b. What is the probability that you have tea and any bread choice?

c. What is the probability that you have a muffin or a scone?

Draw a **tree diagram** to find the number of different outcomes.



There are 9 possible outcomes.

a. Since 1 outcome consists of coffee and a bagel, the probability is $\frac{1}{9}$.

b. Since 3 outcomes consist of tea, the probability is $\frac{3}{9} = \frac{1}{3}$.

c. Since 6 outcomes consist of a muffin or scone, the probability is $\frac{6}{9} = \frac{2}{3}$.

Exercises

For each problem draw a tree diagram to help find the probablity.

1. Jim has a choice of going to the movies, the carnival, or a ball game. Wherever he goes, he intends to have a bag of popcorn or a pop. What is the probability that he goes to the carnival and has a pop?

2. Tamika is ordering a pizza. She has two choices of crust, crispy or soft, two choices of meat, pepperoni or sausage, and two choices of vegetable, mushroom or onions. What is the probability that she orders a pizza with a crispy crust, sausage, and onion?

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Lesson 11.1 Study Guide and Intervention

Counting Strategies

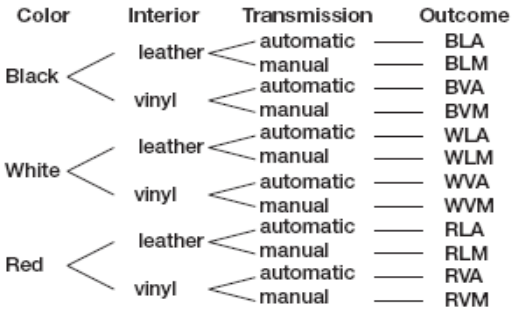
A **probability** is a number between 0 and 1 that indicates how likely something is to happen. Often, to find the probability that something will occur, you need to find all the possible **outcomes**.

Example 1 **A certain type of watch comes in brown or black and in a small or large size. Find the number of color-size combinations that are possible. Make an organized list.**

brown/small brown/large black/small black/large

In 2 of the 4 outcomes, the watch is brown. The probability that the watch is brown is $\frac{2}{4}$, or $\frac{1}{2}$.

Example 2 **Suppose you can select an automobile with the color choices of black, white, or red, a choice of leather or vinyl interior, and a choice of manual or automatic transmission. Draw a tree diagram to show the sample space.**



The tree diagram shows that there are 12 ways to customize the automobile.

If chosen at random, the probability that the automobile has leather interior and automatic transmission is $\frac{3}{12}$, or $\frac{1}{4}$.

Exercises

In Exercises 1-3, a pizza can be ordered with a choice of sausage, pepperoni, or mushrooms for toppings, a choice of thin or pan for the crust, and a choice of medium or large for the size.

1. Draw a tree diagram to show the sample space.
2. How many different kinds of pizza are possible?
3. What is the probability that the pizza has mushrooms on it?

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Day 2 Science

Choose Activity 1 or 2 below:

Activity 1: *Lights Off Around the World*

- Read the article below and answer the questions that follow.
- Para Espanol, prime aquí: http://schools.nyc.gov/Documents/teachandlearn/LearnatHome/ELL/8day2sp.pdf

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in today's activity.

- **brokerage** (noun) a place where property is bought and sold by professionals on behalf of customers
- **cadence** (noun) the flow or rhythm of events
- **landmark** (noun) an important building or place

Lights Off Around the World

SYDNEY, Australia (Achieve3000, April 17, 2008). On Saturday, March 29, the Sydney Opera House went dark. So did Rome's Colosseum, Chicago's Sears Tower, and several other landmarks around the world. People turned off the lights of these icons of civilization to take part in Earth Hour, a worldwide campaign to highlight the possible threat of climate change.

Earth Hour is an annual event established by the environmental group World Wildlife Fund. Its promoters urged governments, businesses, and households to turn off their lights and use candle power for at least 60 minutes starting at 8 p.m. on March 29, wherever they were. Why? Scientists say that electric plants produce greenhouse gases that remain in the atmosphere and trap sunlight. This, some scientists say, contributes to climate change. Earth Hour officials hoped that 100 million people would turn off their nonessential lights and electronic goods for the hour. This would reduce electricity consumption and demand on electric plants.

Earth Hour first took place in Australia in 2007. This year, it expanded to encompass much more of the globe. In the South Pacific, Europe, and North America, people turned off their lights in cadence with the different time zones.

"What's amazing is that [Earth Hour is going beyond] political boundaries and happening in places like China, Vietnam, [and] Papua New Guinea," said Andy Ridley, executive director of Earth Hour. "It really seems to have [struck a chord with many people]."

In cities around the U.S., people participated in Earth Hour. In Chicago, Illinois, lights on more than 200 downtown buildings were dimmed during the evening on March 29, including the stripe of white light around the top of the John Hancock Center. The red-and-white marquee outside Wrigley Field also went dark. Workers in Phoenix, Arizona, turned out the lights in all downtown city-owned buildings for one hour. In San Francisco, California, darkened restaurants glowed with candlelight. Some of the lights on the Golden Gate Bridge, Coit Tower, and other landmarks were extinguished for the hour.

Day 2 Science (continued)

Greece, which lies in a time zone one hour ahead of most of Europe, was the first on the continent to mark Earth Hour. On the isle of Aegina, near capital city Athens, much of the population marched by candlelight to the port. Parts of Athens itself, including the floodlit city hall, also turned to black.

In Ireland, the government turned off the lights in scores of its buildings, as well as at bridges and monuments in more than a dozen cities and towns. However, the lights remained on at the international banks and brokerages of Dublin's financial district, where desks sat empty with their computers running.

"The banks should have embraced this wholeheartedly, and they didn't. But it's a start. Maybe next year," said Cathy Flanagan, an Earth Hour organizer in Dublin. Likewise, much of Europe—including France, Germany, Spain, and European Union institutions—planned nothing to mark Earth Hour.

Earth Hour was observed in many other places, however, including New Zealand, Fiji, and Australia. In Sydney, where an estimated 2.2 million observed the blackout last year, the two architectural icons, the Opera House and Harbour Bridge, faded to black against a dramatic backdrop of a lightning storm.

Internet search engine Google also supported Earth Hour by blackening its normally white home page. The page read, "We've turned the lights out. Now it's your turn."
The Associated Press contributed to this story.

Instructions: Select the correct answer.

Question 1:
According to the article, what is the purpose of Earth Hour?

- ○ The World Wildlife Fund created the event to raise global awareness about the possible threat of climate change.
- ○ The World Wildlife Fund created the event to help cities save electricity on monuments all year long.
- ○ The World Wildlife Fund created the event to raise awareness about a change in time zones.
- ○ The World Wildlife Fund created the event to help consumers pay for electricity in their homes.

Question 2:
What is this article mainly about?

- ○ In cities around the world, citizens marched by candlelight through major streets and thoroughfares.
- ○ In cities around the world, government officials turned off the lights on bridges and monuments.
- ○ In cities around the world, people turned off their lights for one hour to take part in Earth Hour.
- ○ In cities around the world, the World Wildlife Fund helped turn off lights on some landmarks.

Question 3:
Which of these is **most** important to include in a summary of this article?

- ○ The country of Greece lies in a time zone that is one hour ahead of most of Europe.
- ○ Some people around the world turned off lights to take part in Earth Hour.
- ○ The red-and-white marquee outside Wrigley Field went dark for Earth Hour.
- ○ Some people in Ireland left their computers running during Earth Hour.

Day 2 Science (continued)

Question 4:
The article states:

> **Earth Hour officials hoped that 100 million people would turn off their *nonessential* lights and electronic goods for the hour. This would reduce electricity consumption and demand on electric plants.**

Look at the passage above and think about the article. Which would be the closest **antonym** for the word *nonessential*?

- ○ Defective
- ○ Logical
- ○ Petty
- ○ Vital

Question 5:
Which of these is a statement of opinion?

- ○ In Chicago, Illinois, lights on 200 downtown buildings were dimmed during Earth Hour.
- ○ Earth Hour is the best way for people to show that they care about the planet.
- ○ On the isle of Aegina, near Athens, Greece, people marched by candlelight to the port.
- ○ Earth Hour calls for people to turn off their lights for one hour in a year.

Question 6:
Based on the article, how was Earth Hour this year different from Earth Hour 2007?

- ○ This year, the World Wildlife Fund asked businesses to turn off their lights, while last year it only asked households to participate.
- ○ This year, Earth Hour included turning off all nonessential electronic devices, while last year included turning off lights only.
- ○ This year, the World Wildlife Fund asked financial institutions to participate, while last year it only asked leaders to dim the lights on bridges.
- ○ This year, Earth Hour included countries from around the world, while last year the event was held in Australia only.

Question 7:
Which is the closest **synonym** for the word *cadence*?

- ○ Rhythm
- ○ Review
- ○ Radius
- ○ Reward

Day 2 Science (continued)

Question 8:
The news article says all of the following **except** _____.

- ○ Some scientists say that electric plants produce greenhouse gases that remain in the atmosphere and trap sunlight.
- ○ Earth Hour officials hoped that 100 million people would turn off their nonessential lights and electronics for one hour.
- ○ Some scientists say that people should use more electricity to reduce the amount of greenhouse gases in Earth's atmosphere.
- ○ Earth Hour officials urged governments, businesses, and households to turn off their lights and use candles for at least 60 minutes.

Thought Questions

The first Earth Hour campaign took place in 2007. How was this year's event different from the one held last year? Do you think that Earth Hour will make a difference in how much electricity people use? Why or why not?

Refer to the article for ideas. You can use your own ideas, too.

Write your answer below.

Day 2 Science (continued)

www.teenbiz3000.com

Activity 2: *Science Inquiry Project – Forces and Motion on Earth*

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in the activities today.

- **Solar Energy:** The energy produced or radiated by the sun.
- **Wave**: A disturbance or vibration that passes through a medium, such as air or water, transferring energy.
- **Hydroelectric**: Generating electricity through the use of the energy of running water.

Directions: This is day two of a four day assignment.

- Day 2: Continue to research the following types of energy resources: windmills, wave and water mills, solar panels, dams, geothermal stations, and composting gas for energy. Research environmental energy by utilizing the following site: http://www.factmonster.com/ipka/A0907040.html.

Additional Resources:
The following websites will also help you research types of energy resources.

Wikipedia Encyclopedia: Type in "windmills, watermills, solar panels, dams"
http://en.wikipedia.org/wiki/Main_Page
Energy Matters: http://library.thinkquest.org/20331/types/
Fact Monster – Types of Energy: http://www.factmonster.com/ipka/A0907040.html

Source: This activity is from Glencoe NY Science, Grade 8 Unit 4: Forces and Motion on Earth
http://glencoe.mcgraw-hill.com/sites/0078778808/student_view0/unit4/unit_project_2.html

Day 3 Schedule

Subject	Minutes Per Day (At Least!)	Assignments	What Did I Learn Today?
English Language Arts	45	• Learn new vocabulary words from the Vocabulary List • Activity: Reading "Rain Music"	•
Mathematics	45	• Complete Skill 51	•
Science	30	Complete at least one of the following activities: • Activity 1: *Will This Oil Fly?* (English or Spanish) • Activity 2: Continue *Forces and Motion on Earth activity by writing a draft of your six-page paper*	•
Social Studies	60	• Activity about the Great Depression	•
Fitness and Health	30	• Exercise for 30 minutes. Choose from the Activity Calendars at the back of this booklet	•
Arts	30	• Choose one or two activities from the Arts Activities at the back of this booklet	•
TV Shows and Websites	30	• Choose TV shows and websites to further your learning at home	•

Day 3 English Language Arts

Vocabulary

Learn new vocabulary words from the Vocabulary List at the back of this booklet. Practice using these words in the activities below.

Activity: *Reading Poetry*

- Directions: Read the poem and complete the Poetry Reading Worksheet

Rain Music

By Joseph S. Cotter, Jr.

ON the dusty earth-drum
  Beats the falling rain;
Now a whispered murmur,
  Now a louder strain.

Slender, silvery drumsticks,
  On an ancient drum,
Beat the mellow music
  Bidding life to come.

Chords of earth awakened,
  Notes of greening spring,
Rise and fall triumphant
  Over every thing.

Slender, silvery drumsticks
  Beat the long tattoo—
God, the Great Musician,
  Calling life anew.

Day 3 English Language Arts (continued)

Poetry Reading Worksheet

First, paraphrase the poem. Restate each sentence of the poem in your own words.
Second, identify the subject of the poem. Look for hints in the poem that tell you who the speaker is. This poem is about _____. I know that because _____ _____. Another reason why I know that is because _____ _____.

Poetry Reading Worksheet (continued)

Third, make as many inferences as you can about the speaker's interests, ideas, and feelings, based on evidence presented in the poem.

Complete one or all of the statements below.

- After reading the poem I can conclude that the speaker is interested in _____ _____. I know that because _____ _____.

  (Tell some things you may think the speaker might be interested in.)

- I think that the speaker may feel _____ _____.

  (Tell about speaker's feelings. Use descriptive words to tell about his/her feelings.)

  The reason I think that is because _____ _____.

Fourth, identify the theme, or main idea, of the poem.

- This poem tells about _____.

  The main idea in the poem is _____ _____.

Poetry Reading Worksheet (continued)

Fifth, jot down a literary technique or elements used in the poem, such as simile or personification.

Literary Technique 1

Examples from the poem:

-
-
-
-

Literary Technique 2

Examples from the poem:

-
-
-
-

Think about how these techniques and elements improve the poem and help communicate the poem's theme.

Day 3 Mathematics

Vocabulary

Learn the new math vocabulary words below. You will use these vocabulary words in the activities today.

- **Event:** Any happening to which a probability can be assigned
- **Independent event:** Two events in which the outcome of one event is not affected by the outcome of another event.
- **Ratio:** The comparison of two numbers

Activity 1: *Probability of Independent Events*

Please complete the following worksheet. Solve at least 5 exercises. Be sure to show all work. Solve at least 3 Applications problems (#9, 10, 11, 12).

- Skill 51: Probability of Independent Events

.

If you need Spanish activities to review the concept of probability**,** please follow the steps below.

- Step 1: Go to tutorial site: http://destination.nycenet.edu

- Step 2: Login with the following user ID and PW:
  - User: studentnyc
  - Password: student

- Step 3: Click on the Exploration Icon to access the tutorial

- Step 4: Scroll down to Mastering Skills & Concepts: Course V: Pre-Algebra – Spanish

- Step 5: Select the skill/concept to review.
  - Activity 3: 6.1.3 - Determining Probability of Complementary Events

Notebook Activity

In your notebook, describe what the outcomes would be if you tossed a penny, nickel and dime. Explain why the probability of getting all heads when you toss the three different coins will be 1/8.

SKILL 51

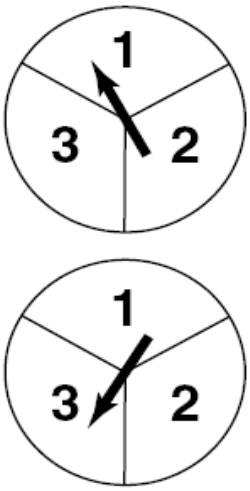
Name _____ Date _____

Probability of Independent Events

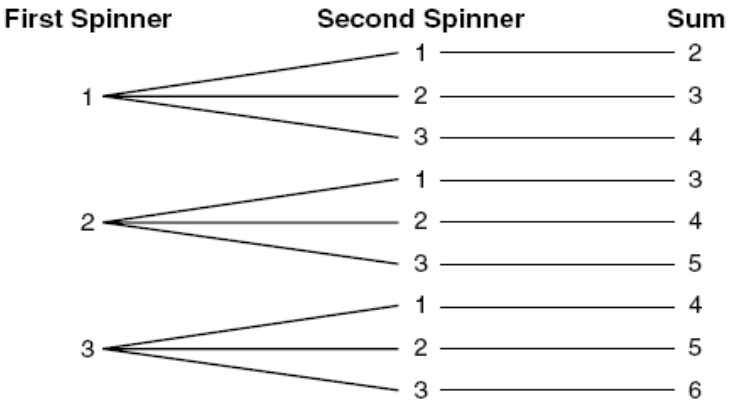
The **probability** of an event is the ratio of the number of ways an event can occur to the number of possible outcomes.

$$\text{Probability of an event} = \frac{\text{number of ways the event can occur}}{\text{number of possible outcomes}}$$

EXAMPLE ***Suppose you spin the two spinners. What is the probability that the sum of the numbers showing on the two spinners will be 4?***



Make a tree diagram to show all possible outcomes of these events.



There are 3 outcomes that have a sum of 4 and there are 9 possible outcomes.

$$\text{Probability of sum of 4} = \frac{3}{9} \text{ or } \frac{1}{3}$$

The probability that the sum will be 4 is $\frac{1}{3}$.

EXERCISES ***Use the spinners in the Example above to answer Exercises 1–4.***

1. What is the probability that the sum of the numbers showing on the two spinners is 3?

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2. What is the probability that the sum of the numbers showing on the two spinners is greater than 3?

3. What is the probability that the sum of the numbers showing on the two spinners is an even number?

4. What is the probability that the sum of the numbers showing on the two spinners is *not* a 5?

5. Make a tree diagram showing the possible outcomes of tossing a penny and a dime.

6. What is the probability that a tossed penny and a tossed dime will both show heads?

7. What is the probability that a tossed penny and a tossed dime will both show one head and one tail?

8. What is the probability that a tossed penny and a tossed dime will show at least one tail?

APPLICATIONS ***Beau, Jiang, and Marci are playing a game that requires each player to toss two number cubes. Use this information to answer Exercises 9–12.***

9. Beau needs a sum of 4 on the number cubes to win. What is the probability that Beau will toss a 4?

10. Jiang needs a sum of 9 on the number cubes to win. What is the probability that Jiang will toss a 9?

11. Marci needs a sum of 7 on the number cubes to win. What is the probability that Marci will toss a 7?

12. Who is most likely to win the game?

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Day 3 Science

Complete Activity 1 or 2 below:

Activity 1: *Will This Oil Fly*

- Read the article below and answer the questions that follow.
- Para Espanol, prime aquí: http://schools.nyc.gov/Documents/teachandlearn/LearnatHome/ELL/8day3sp.pdf

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in today's activity.

- **alternative fuel** (noun): a fuel other than regular gasoline, usually one that is better for the environment
- **carbon neutral** (adjective): leaving no carbon dioxide in the atmosphere
- **comparable** (adjective): similar

Will This Oil Fly

AP Photo/ NZ Herald,Paul Estcourt

WELLINGTON, New Zealand (Achieve3000, January 28, 2009). Air New Zealand recently announced that it had successfully flown a passenger jet that was powered in part by a type of vegetable oil. The airline believes that replacing regular jet fuel with this biofuel could cut costs and be better for the environment.

The two-hour test flight included a full-power takeoff and cruising to 35,000 feet. One of the four engines on the Boeing 747-400 airplane was powered by a 50-50 blend of standard A1 jet fuel and oil from jatropha plants. Air New Zealand Chief Executive Rob Fyfe called the flight "a milestone for the airline and commercial aviation."

The test flight took place at a time when airlines are making a push for alternative fuels. These companies are struggling to make money. Why? The petroleum that airplanes have always used as fuel became extremely costly in 2008. In addition, now that the economy has slowed down, airlines are bracing for a drop in business. Taken together, these two factors have prompted airlines to look for ways to save money.

Many people feel that biofuels offer a promising solution. That's true not only because they could be cheaper to produce than jet fuel, but also because they may be better for the environment.

Biofuels are made from plants, such as sugar, corn, or soybeans. They are sustainable fuels because unlike petroleum, the oil can be made again and again as new crops are grown. However, many biofuels have been criticized because they use food crops and may end up reducing the world's food supply.

According to Air New Zealand officials, jatropha oil is a superior biofuel. Why? The jatropha plant is not a food crop. And since it can grow with little water on land that is considered poor for farming, it does not compete with food crops for land. Like jet fuels, jatropha oil blends emit greenhouse gases when they are burned. However, airline officials insist that jatropha oil is carbon neutral because the jatropha plant absorbs the air's harmful carbon dioxide when it is growing.

Day 3 Science (continued)

Air New Zealand chief pilot Captain David Morgan, who was onboard the airplane during the test flight, said the airline wants jatropha to become a certified aviation fuel. The company hopes that by 2013, 10 percent of its flights will be powered, at least in part, by biofuels.

Reaching this goal may help the environment, but would it also have an economic benefit, as Air New Zealand is hoping? So far, officials could not say whether their jatropha fuel blend would be cheaper than standard jet fuel. They do expect the cost of the blend to at least be comparable to that of jet fuel.

Still, the cost of fuel depends on the supply. If there is an adequate supply, the cost will be lower. If the supply is low, the cost will be higher. Currently, jatropha isn't being widely grown because it is not in demand. Therefore, Air New Zealand Group Manager Ed Sims cautioned that the company would not be able to ensure easy access to large quantities of jatropha oil until at least 2013.

"[To have the] amount of fuel around the world to be able to power the world's airlines is still some years off," said Sims.

The Associated Press contributed to this story.

Instructions: Select the correct answer.

Question 1:
The best alternate headline for this article would be _____.

- ○ Jetliner Flies Partly on Biofuel
- ○ Jetliner Cruises at 35,000 Feet
- ○ Airlines Struggling To Make Money
- ○ Airlines Seeking Certified Aviation Fuel

Question 2:
According to the article, what is one reason why jatropha oil is considered a superior biofuel?

- ○ The jatropha plant can grow with little water on land that makes poor farmland, so it doesn't compete for agricultural space with food crops.
- ○ The jatropha plant is not a popular food, so only part of the crop yield is used for food while the rest can be used for biofuel.
- ○ Jatropha oil does not emit harmful carbon dioxide when it is burned, but most other biofuels do.
- ○ Jatropha oil is a certified aviation fuel that is widely used by airlines, while other forms of biofuel have not yet been certified.

Question 3:
Which is the closest **synonym** for the word *comparable*?

- ○ Equivalent
- ○ Temporary
- ○ Beneficial
- ○ Commercial

Day 3 Science (continued)

Question 4:
Suppose that Marcus wants to find out about other uses for biofuels. He would find **most** of his information _____.

- ◯ Under the heading "biofuel applications" in a reference book about alternative fuels
- ◯ Under the heading "petroleum" on a Web site about traditional fuel sources
- ◯ In a textbook entry about the manufacturing process of various biofuels
- ◯ In a newspaper article about the many types of fuels used by airlines

Question 5:
The article states:
Biofuels are made from plants, such as sugar, corn, or soybeans. They are *sustainable* fuels because unlike petroleum, their oil can be made again and again as new crops are grown. However, many biofuels have been criticized because they use food crops and may end up reducing the world's food supply.
Read the passage above and think about the article. Which of the following is probably true of a fuel that is *sustainable*?

- ◯ It is a renewable source of energy.
- ◯ It is harmful to most marine life.
- ◯ It emits greenhouse gases as it grows.
- ◯ It can be considered a petroleum byproduct.

Question 6:
Which of these is a statement of opinion?

- ◯ Jatropha oil is by far the best alternative energy source available on the market today.
- ◯ Jatropha plants absorb some of the air's carbon dioxide when they are growing.
- ◯ Biofuels are made from plants such as sugar, corn, soybeans, and jatropha.
- ◯ Biofuel was mixed with jet fuel during a recent Air New Zealand test flight.

Question 7:
Which of these is **most** important to include in a summary of this article?

- ◯ Air New Zealand recently conducted a successful test flight using a mix of biofuel and jet fuel.
- ◯ Air New Zealand Chief Executive Rob Fyfe said that he was excited about a recent airline flight.
- ◯ Biofuels have been criticized because they can use food crops and may end up reducing the world's food supply.
- ◯ Biofuels that are made from jatropha oil blends emit greenhouse gasses when they are burned.

Question 8:
This article is placed in a category of news called "Technology." In which other category would this article fit best?

- ◯ Business News
- ◯ Across the U.S.
- ◯ Sports Extra
- ◯ Animals in Action

Day 3 Science (continued)

Thought Question

What information could be added to today's article to help you better understand it? Why is this information important?

Use details from the article in your response.

Write your answer below.

www.teenbiz3000.com

Day 3 Science (continued)

Activity 2: *Science Inquiry Project – Forces and Motion on Earth*

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in the activities today.

- **Fusion:** The joining together of light atomic nuclei to form a heavier nucleus.

Directions: This is day three of a four day assignment.

- Day 3: By now, you should have researched the following types of energy resources: windmills, wave and water mills, solar panels, dams, geothermal stations, and composting gas for energy. Write a draft of a six-page report that explains how each type of energy resource works and saves energy, money, and the environment, one page per energy resource.

Additional Resources:
The following websites will help you with this activity.

Wikipedia Encyclopedia: Type in "windmills, watermills, solar panels, dams"
http://en.wikipedia.org/wiki/Main_Page
Energy Matters: http://library.thinkquest.org/20331/types/
Fact Monster – Types of Energy: http://www.factmonster.com/ipka/A0907040.html

Source: This activity is from Glencoe NY Science, Grade 8 Unit 4: Forces and Motion on Earth
http://glencoe.mcgraw-hill.com/sites/0078778808/student_view0/unit4/unit_project_2.html

Day 3 Social Studies

Learn about the Great Depression in the late 1920s and 1930s by reading letters, writing a letter, and looking at pictures. Read the background information and follow the directions below.

Background:

The **Great Depression**, starting in 1929 and ending in the late 1930s, was an economic downturn that affected many countries of the world, including the United States. It began in the United States with the collapse of the stock market on October 29, 1929. This became known as Black Tuesday. The depression that followed affected banking, the availability of credit, industry, and consumer spending. Drought and erosion combined to cause the Dust Bowl, which caused hundreds of thousands of people to leave their farms in the Midwest. The Great Depression led to high levels of unemployment, a banking crisis, and homelessness.

During the Great Depression, thousands of young children and young adults wrote letters to Eleanor Roosevelt, the wife of President Franklin D. Roosevelt, asking for help. (Franklin D. Roosevelt won the presidency in 1932.) They communicated with her as a confidant or friend with whom they could share the details of their lives, no matter how painful or even embarrassing to them. In their letters, they seemed certain that Mrs. Roosevelt, the nation's first lady, would come to their aid.

Directions:

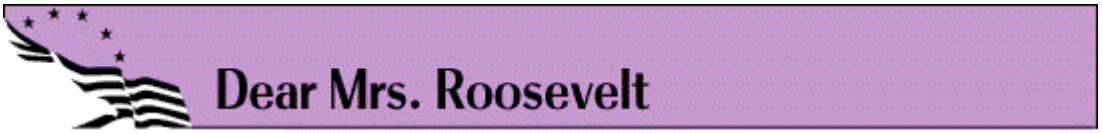
Read the letters below and answer the following questions:

- What are the characteristics of the two young people writing to Mrs. Roosevelt?
- Sometimes writing to an important or influential person about a problem is an effective means of resolving that problem. Have you ever written such a letter? What were the results?
- Do you think that Mrs. Roosevelt responded to the letters herself or do you think her responses were "canned" (already written by someone on her staff)? What makes you think that these responses were personal or canned replies?

(Please note these letters are primary-source materials that contain grammatical and spelling errors.)

Day 3 Social Studies (continued)

Letter 1



Granette, Ark.
Nov. 6, 1936

Dear Mrs. Roosevelt

I am writing to you for some of your old soiled dresses if you have any. As I am a poor girl who has to stay out of school. On account of dresses & slips and a coat. I am in the seventh grade but I have to stay out of school because I have no books or clothes to ware. I am in need of dresses & slips and a coat very bad. If you have any soiled clothes that you don't want to ware I would be very glad to get them. But please do not let the news paper reporters get hold of this in any way and I will keep it from geting out here so there will be no one else to get hold of it. But do not let my name get out in the paper. I am thirteen years old.

Yours Truly,
Miss L. H.
Gravette, Ark.
R #3
c/o A. H.

Day 3 Social Studies (continued)

Reply to the letter:

November 13, 1936

My dear Miss H:

Mrs. Roosevelt and her Secretary are away and in their absence I have been asked to acknowledge their mail.

I know Mrs. Roosevelt would be very sorry to hear of your difficulties. However, she would be unable to comply with your request as there are certain persons to whom she sends the clothing for which she has no further use.

Very sincerely yours,
[no signature]

Letter 2

Greensboro N.C.
Febuary 12,1938

Mrs. Eleanor Roosevelt,
Washington D.C.

Dear Mrs. Roosevelt

On January 1st I was layed off from my work leaving my father the whole support of our family. just recently he was cut down to three days a week with a cut in salary. With seven of us in the family it is just about impossible for us to live on this amount.

My mother has been sick for over two months having had a nervous breakdown and we are unable to buy or furnish her with the medicine required for her recovery.

I am 18 years of age the oldest girl in the family, and it just seems impossible for me to get a job any where. I have been to Mills, Stores and Firms of all sorts. I am willing and able to work. Can furnish excellent references but at this time of the year it just seems impossible to find work.

We are so in debt and each week the bills are piling higher and higher that it just seems as if there was no way out.

We must make a payment on our furniture bill. And if it isn't paid soon they will be out any day for our furniture. And on top of this we are behind in our rent.

It would be a big help if we could get some of our bills paid on as they are already impatient for their money.

If you could help us out with from $35.00 to $50.00 I believe we would be the happiest family in the world.

Day 3 Social Studies (continued)

We have a good respectable family, none of us have ever been in any trouble, and our characters are above reproach.

Just as soon as I get back to work and the family on their feet again I will pay you back as much a week as possible until your kind favor has been fully repaid.

My father's work has been very poor for the past year. He is an advertising salesman, and his work right now is practically nothing; and as he has had kidney trouble for some time, taking more than he could make, for medicine. He has been improving recently, since he had his teeth extracted, and is looking forward to a job but which will not be available for a month or more. We went through the depression without asking for relief. I registered January 14th for unemployment compensation, and although promised $6.25 a week, have not received a cent as yet.

Won't you please grant me the afore mentioned favor, please make it a personal favor, Mrs. Roosevelt, for if you would refer it to a local agency, I would suffer untold delay and embarrassment.

Although we are poor, we try to hold off embarrassment, for you know it is "hard to be broke, and harder to admit it."

Please grant me this favor and I will ever be

Gratefully yours,
D.B.

This is not intended for publication

Reply to the letter:

February 15, 1938

My dear Miss B.:

Mrs. Roosevelt has asked me to acknowledge your letter which she read with sympathy. She is indeed sorry to know of your difficult situation, but regrets that she unable to lend you the money needed. The number of demands on her resources make it impossible for her to respond to the many requests for loans, much as she would like to do so.

Mrs. Roosevelt suggests that you get in touch with the National Youth Administration, and the United States Employment Service, Department of Labor, as these agencies may be able to assist you in finding employment.

Very sincerely yours,

Secretary to
Mrs. Roosevelt

Day 3 Social Studies (continued)

Extension Activity:

Imagine you were one of these children, now grown up. Write a follow-up letter to Mrs. Roosevelt, explaining how your life has unfolded since the last letter.

May 2009

Dear Mrs. Roosevelt,

Since I wrote to you many years ago, my life has changed in many ways. Now I am …

Teaching with Documents

Directions: Study the pictures below and complete the worksheet.

Day 3 Social Studies (continued)

Day 3 Social Studies (continued)

Step 1 – Observation

Study the photographs for two minutes. Form an overall impression and then examine individual items. Next, divide each photo into quadrants and study each section to see what new details become visible.

Use the chart below to list people, objects and activities in the photographs.

Picture 1

People	Objects	Activities

Picture 2

People	Objects	Activities

Day 3 Social Studies (continued)

Step 2 – Inference Based on what you have observed above, list three things you might infer from these photographs. 1. 2. 3.
Step 3 – Questions What questions do these photographs raise in your mind? Where could you find answers to them?

Designed and developed by the Education Staff, National Archives and Records Administration, Washington, DC 20408
http://www.archives.gov/education/lessons/worksheets/photo_analysis_worksheet.pdf

Day 4 Schedule

Subject	Minutes Per Day (At Least!)	Assignments	What Did I Learn Today?
English Language Arts	45	• Learn new vocabulary words from the Vocabulary List • Activity: Reading "Chicago Poet"	•
Mathematics	45	• Complete Lesson 11.1 Skills Practice	•
Science	30	Complete at least one of the following activities: • Activity 1: *The Road to More Energy* (English or Spanish) • Activity 2: Complete *Forces and Motion on Earth* activity by writing a final copy of your six-page paper	•
Fitness and Health	30	• Exercise for 30 minutes. Choose from the Activity Calendars at the back of this booklet	•
Arts	30	• Exercise for 30 minutes. Choose from the Activity Calendars at the back of this booklet	•
TV Shows and Websites	30	• Choose one or two activities from the Arts Activities at the back of this booklet	•

Day 4 English Language Arts

Vocabulary

Learn new vocabulary words from the Vocabulary List at the back of this booklet. Practice using these words in the activities below.

Activity: *Reading Poetry*

- Directions: Read the poem and complete the Poetry Reading Worksheet

Chicago Poet

by Carl Sandburg

I saluted a nobody.
I saw him in a looking-glass.
He smiled-so did I.
He crumpled the skin on his forehead,
frowning-so did I.
Everything I did he did.
I said "Hello, I know you."
And I was a liar to say so.

Ah, this looking-glass man!
Liar, fool, dreamer, play-actor,
Soldier, dusty drinker of dust-
Ah! he will go with me
Down the dark stairway
When nobody else is looking,
When everybody else is gone.

He locks his elbow in mine,
I lose all-but not him.

Day 4 English Language Arts (continued)

Poetry Reading Worksheet

First, paraphrase the poem. Restate each sentence of the poem in your own words.

Second, identify the subject of the poem. Look for hints in the poem that tell you who the speaker is.

This poem is about _____. I know that because _____ _____.

Another reason why I know that is because _____ _____.

Poetry Reading Worksheet (continued)

Third, make as many inferences as you can about the speaker's interests, ideas, and feelings, based on evidence presented in the poem.

Complete one or all of the statements below.

- After reading the poem I can conclude that the speaker is interested in _____ _____. I know that because _____ _____.

  (Tell some things you may think the speaker might be interested in.)

- I think that the speaker may feel _____ _____.

  (Tell about speaker's feelings. Use descriptive words to tell about his/her feelings.)

  The reason I think that is because _____ _____.

Fourth, identify the theme, or main idea, of the poem.

- This poem tells about _____.

  The main idea in the poem is _____ _____.

Poetry Reading Worksheet (continued)

Fifth, jot down a literary technique or elements used in the poem, such as simile or personification.

Literary Technique 1

Examples from the poem:

-
-
-
-

Literary Technique 2

Examples from the poem:

-
-
-
-

Think about how these techniques and elements improve the poem and help communicate the poem's theme.

Day 4 Mathematics

Vocabulary

Learn the new math vocabulary words below. You will use these vocabulary words in the activities today.

- **Probability**: The chance that an event will happen, described as a number between 0 and 1
- **Tree diagram**: A diagram that shows how things can be arranged, using the form of branches

Activity 1: *Counting Strategies*

Please complete the following worksheet. Solve all exercises. Be sure to show all work

- Lesson 11.1 Skills Practice: Counting Strategies.

If you need Spanish activities to review the concept of probability**,** please follow the steps below.

- Step 1: Go to tutorial site: http://destination.nycenet.edu

- Step 2: Login with the following user ID and PW:
  - User: studentnyc
  - Password: student

- Step 3: Click on the Exploration Icon to access the tutorial

- Step 4: Scroll down to Mastering Skills & Concepts: Course V: Pre-Algebra – Spanish

- Step 5: Select the skill/concept to review.
  - Activity 4: 6.2.1 – Calculating the Probability of Independent Events

Notebook Activity

In your notebook, explain how you were able to find the answer to exercise #5. Are there more than one answer? Why or why not?

Additional Activity

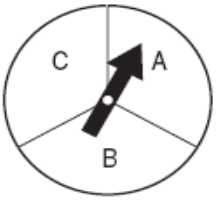
Do you have more time? Complete the following activity:

- Skill 35: Working Backward

Lesson 11.1 Skills Practice

Counting Strategies

In Exercises 1-2, the spinner at the right is spun twice.



1. Draw a tree diagram to represent the situation.

2. What is the probability of getting at least one A?

For each situation in Exercises 3–4, make a tree diagram to show the sample space. Then give the total number of possible outcomes.

3. You can choose between a hamburger or a hot dog, and you have a choice of potato salad or macaroni salad.

4. You can plant a garden with roses, zinnias, or cosmos in yellow, red, orange, or purple.

5. Two number cubes are rolled. How many outcomes are possible?

6. Draw a tree diagram to find the number of outcomes if a number cube is rolled and a coin is tossed.

Find the probability of each event in Exercises 7–9.

7. A coin is tossed twice. What is the probability of getting two tails?

8. What is the probability of rolling a 4 or higher on a six-sided number cube.

9. What is the probability of rolling an even number on an eight-sided die if all the possibilities are equally likely.

10. A hat comes in black, red, or white and in medium or large. Draw a tree diagram to determine the number of outcomes. Then find the probability that a hat would be black and large if all the possibilities are equally likely.

11. A customer has a choice of peach or vanilla yogurt topped with peanuts, granola, walnuts, or almonds. Make an organized list to determine the number of possible outcomes. Then find the probability that the next customer chooses peach yogurt topped with peanuts if each possibility is equally likely.

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4. Twenty five is added to a number. The sum is multiplied by 4, and 35 is subtracted from the product. The result is 121. What is the number?

5. Take a number, divide it by 3, add 14, multiply by 7, and double the answer. The result is 252. What is the number?

APPLICATIONS

6. Dwayne's weight is twice Beth's weight minus 24 pounds. Dwayne weighs 120 pounds. How much does Beth weigh?

7. Kara wants to buy a certain leather jacket, but she did not have enough money. The leather jacket went on sale and was reduced by $15.00, then by $13.50 more, and finally by an additional $12.15. Kara bought the jacket at the final sale price of $109.35. What was the original price?

8. James arrived for piano practice at 4:45 P.M. On the way from school, he stopped at the video store for 15 minutes and also made a call from the phone booth for 10 minutes. It usually takes 25 minutes to get from the school to the piano teacher's house. What time did James leave school?

9. Dave has 12 baseball cards left after trading cards. This is one third as many as he had yesterday, which is 8 less than the day before. How many cards did Dave have on the day before yesterday?

10. A fence is put around a dog run 10 feet wide and 20 feet long. Enough fencing is left over to also fence a square garden with an area of 25 square feet. If there is 3 feet left after the fencing is completed, how much fencing was available at the beginning?

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SKILL 35

Name _____ Date _____

Work Backward

Rupesh earned some money mowing lawns one month. He put half of his money into savings. With the rest, he spent $15 on a new CD, $6 to see a movie, and $3 on food. He still had $24 left in his pocket.

EXAMPLE *How much money did Rupesh earn mowing lawns?*

Work backward to answer this question. Undo each step.

Start with $24.	$24
Add the $3 spent on food.	$24 + $3 = $27
Add the $6 spent to see the movie.	$27 + $6 = $33
Add the $15 spent on the CD.	$33 + $15 = $48
Since Rupesh saved half of the money, multiply by 2.	$48 × 2 = $96

Rupesh made $96 mowing lawns.

EXERCISES *Solve by working backward.*

1. A number is added to 8, and the result is multiplied by 10. The final answer is 140. Find the number.

2. A number is divided by 8, and the result is added to 12. The final answer is 75. Find the number.

3. A number is decreased by 12. The result is multiplied by 5, and 30 is added to the new result. The final result is 200. What is the number?

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5. Take a number, divide it by 3, add 14, multiply by 7, and double the answer. The result is 252. What is the number?

APPLICATIONS

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Day 4 Science

Complete Activity 1 or 2 below:

Activity 1: *The Road to More Energy*

- Read the article below and answer the questions that follow.
- Para Espanol, prime aquí: http://schools.nyc.gov/Documents/teachandlearn/LearnatHome/ELL/8day4sp.pdf

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in today's activity.

- **aquifer** (noun): an underground bed or layer of earth, gravel, or porous stone that yields water
- **inexhaustible** (adjective): having no limit
- **latticework** (noun): work made up of crossed strips usually arranged in a diagonal pattern of open spaces
- **thermal** (adjective): having to do with heat

The Road to More Energy

SCHARWOUDE, Netherlands (Achieve3000, January 30, 2008). Have you ever burned your bare feet on a hot road? If so, you know that asphalt, the material used to pave roads, absorbs the sun's energy. Now, scientists have figured out a way to use that energy. A Dutch company is using the heat from roads and parking lots to heat homes and office buildings.

The company, Ooms Avenhorn Holding BV, came upon the thermal energy system almost by accident. It all started when Ooms decided to try to capture heat under roads to control road temperatures. Officials built a latticework of flexible pipes underneath where the roads would go, holding the pipes in place with a grid. They then covered the pipes with asphalt, which absorbed the sun's heat. As water in the pipes was heated, it was pumped deep under the ground into natural aquifers. There, it maintained a fairly constant temperature of 68 degrees Fahrenheit. When the roads froze in the winter, officials could pump the warm water to the surface. Officials could also store cold water, which got its temperature from the asphalt in the winter.

Ooms built this Road Energy System in order to reduce road maintenance and costs. By keeping road temperatures above freezing, the company reasoned, the surfaces would never become icy. Therefore, the roads would be safer and would never require anti-ice materials, like rock salt. In addition, by keeping roads and bridges from getting too hot or too cold, the company could prevent them from expanding and contracting, so they would be less likely to crack.

After developing this system, Ooms realized that it might have other uses.

"We found we were gathering more energy in summer than we needed, so we asked a building contractor what we [could] do with the extra energy," said Lex Van Zaane of Ooms. The answer was to use the same system to control the temperatures in buildings that were near the heated roads. The system could use stored hot water

from sun-heated asphalt in the winter to heat buildings; it could also use store cold water in the summer to cool buildings.

Heating and cooling systems like this were set up in various locations in the Netherlands, and they seem to be working well. Solar energy collected from a 200-yard stretch of road and a small parking lot helps heat a 70-unit four-story apartment building in the northern village of Avenhorn. In the city of Hoorn, a stretch of 36,000 square feet of pavement helps keep an industrial park of about 160,000 square feet warm in the winter. In addition, the runways of a Dutch air force base in the south supply heat for its hangar. All of this occurs under normally cloudy Dutch skies, with only a few days a year of truly scorching temperatures.

The Road Energy System is one of the more unusual ways that scientists and engineers are trying to harness the power of the sun. After all, it is the single most plentiful, reliable, accessible, and inexhaustible source of renewable energy, sending to earth more watts in one hour than the world can use in a whole year. It does not have the drawbacks of other renewable energy sources. Not every place is breezy enough for wind turbines; hydroelectricity, or electricity from the power of water, requires rivers and increasingly objectionable dams; biofuels, or energy from plants, take up land once used solely for food crops.

"But solar [energy is available] everywhere," said Patrick Mazza, an energy expert. Compared with other energy sources, "solar comes out as the one with the real heavy lift. It's the one we really need to get at," he said.

Despite its potential, solar power currently provides just 0.04 percent of global energy. Why? The technology required to use solar energy on a large scale has always been costly. Now, though, scientists are creating new materials that can capture the sun's energy in a more efficient way.

"The prospect of relying on the sun for all our power demands is finally becoming realistic," said one article in the magazine *New Scientist*.

The Associated Press contributed to this story.

Instructions: Select the correct answer.

Question 1: The best alternate headline for this article would be _____.

- ○ Hydroelectricity Made Near Rivers and Dams
- ○ Roads Can Require Winter Maintenance
- ○ Wind Turbines Need Breezy Conditions
- ○ Roads Can Harness the Sun's Energy

Question 2:
According to the article, why is solar power providing such a small percentage of the world's energy?

- ○ Normally the weather is cloudy and solar energy does not reach the ground.
- ○ The technology required to use solar energy on a large scale has been expensive.
- ○ Many other renewable energy sources work better and are more reliable than solar energy.
- ○ The technology required to harness large amounts of solar energy has not yet been developed.

Day 4 Science (continued)

Question 3:
Which of these is **most** important to include in a summary of this article?

- ○ A Dutch company is using heat from roads and parking lots to heat homes and office buildings.
- ○ By keeping roads and bridges from getting too hot or too cold, they are less likely to crack.
- ○ Solar energy does not have the drawbacks of some other renewable energy sources.
- ○ The runways of a Dutch air force base in the south supply heat for its hangar.

Question 4:
The article states:

> **"But solar [energy is available] everywhere," said Patrick Mazza, an energy expert. Compared with other energy sources, "solar comes out as the one with the real heavy lift. It's the one we really need to get at," he said. Despite its *potential*, solar power currently provides just 0.04 percent of global energy.**

Which would be the closest **synonym** for the word *potential*?

- ○ Latitude
- ○ Deceit
- ○ Capability
- ○ Breadth

Question 5:
Which of these is a statement of opinion?

- ○ The Road Energy System uses stored cold water in the summer to cool buildings.
- ○ The Road Energy System was developed in order to reduce road maintenance and costs.
- ○ The Road Energy System uses stored hot water from sun-heated asphalt to heat buildings.
- ○ The Road Energy System is the best way to harness solar energy that has ever been developed.

Question 6:
Based on the article, which is most likely to happen?

- ○ Ooms Avenhorn Holding BV will probably quit using the Road Energy System and start working with wind turbines.
- ○ The Road Energy System will probably soon be used in other countries besides the Netherlands.
- ○ Ooms Avenhorn Holding BV will probably want Dutch road crews to use anti-ice materials on the heated roads.
- ○ The Road Energy System will probably no longer be used to control the temperatures in buildings near the heated roads.

Day 4 Science (continued)

Question 7:
Which is the closest **synonym** for the word *inexhaustible*?

- ◯ Eligible
- ◯ Diluted
- ◯ Infinite
- ◯ Secure

Question 8:
This article is placed in a category of news called "Environment." In which other category would this article fit best?

- ◯ History
- ◯ Science Scene
- ◯ Across the U.S.
- ◯ Computer Connection

Thought Question

You have been asked to teach a group of students about the new Road Energy System. How would you explain how this solar-energy system works? How would you describe the benefits and drawbacks of this new technology?

Look back at the article for ideas. You can use your own ideas, too.

Write your answer below.

Day 4 Science (continued)

www.teenbiz3000.com

Activity 2: *Science Inquiry Project – Forces and Motion on Earth*

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in the activities today.

- **Fusion:** The joining together of light atomic nuclei to form a heavier nucleus.

Directions: This is day four of a four day assignment.

- Day 4: Revise and complete your six-page report on how each type of energy resource works and saves energy, money, and the environment (one page per energy resource). Try to use all vocabulary words in your report.

Source: This activity is from Glencoe NY Science, Grade 8 Unit 4: Forces and Motion on Earth
http://glencoe.mcgraw-hill.com/sites/0078778808/student_view0/unit4/unit_project_2.html

Day 5 Schedule

Subject	Minutes Per Day (At Least!)	Assignments	What Did I Learn Today?
English Language Arts	45	• Learn new vocabulary words from the Vocabulary List • Activity: Reading "I Care and I am Willing To Serve"	•
Mathematics	45	• Complete Lesson 9.1 Study Guide and Intervention	•
Science	90	Complete at least one of the following activities: • Activity 1: *Wanted: Wind Power Workers* (English or Spanish) • Activity 2: Complete *Humans In Their Environments* activity	•
Fitness and Health	30	• Exercise for 30 minutes. Choose from the Activity Calendars at the back of this booklet	•
Arts	30	• Choose one or two activities from the Arts Activities at the back of this booklet	•
TV Shows and Websites	30	• Choose TV shows and websites to further your learning at home	•

Day 5 English Language Arts

Vocabulary

Learn new vocabulary words from the Vocabulary List at the back of this booklet. Practice using these words in the activities below.

Activity: *Reading Poetry*

- Directions: Read the poem and complete the Poetry Reading Worksheet

I Care and I Am Willing to Serve (excerpt)
by Marian Wright Edelman

Find complete poem at https://tulane.edu/grads/speakers-marian-wright-edelman.cfm

Lord I cannot preach like Martin Lurther King, Jr.
or turn a poetic phrase like Maya Angelou
but I care and am willing to serve.

I do not have Fred Shuttlesworth's and Harriet
Tubman's courage or Franklin and Eleanor
Roosevelt's political skills
but I care and am willing to serve.

I cannot sing like Fannie Lou Hamer
or organize like Ella Baker and Bayard Rustin
but I care and am willing to serve.

.

Day 5 English Language Arts (continued)

Poetry Reading Worksheet

First, paraphrase the poem. Restate each sentence of the poem in your own words.
Second, identify the subject of the poem. Look for hints in the poem that tell you who the speaker is. This poem is about _____. I know that because _____ _____. Another reason why I know that is because _____ _____.

Poetry Reading Worksheet (continued)

Third, make as many inferences as you can about the speaker's interests, ideas, and feelings, based on evidence presented in the poem.

Complete one or all of the statements below.

- After reading the poem I can conclude that the speaker is interested in _____ _____. I know that because _____ _____.

  (Tell some things you may think the speaker might be interested in.)

- I think that the speaker may feel _____ _____.

  (Tell about speaker's feelings. Use descriptive words to tell about his/her feelings.)

  The reason I think that is because _____ _____.

Fourth, identify the theme, or main idea, of the poem.

- This poem tells about _____.

  The main idea in the poem is _____ _____.

Poetry Reading Worksheet (continued)

Fifth, jot down a literary technique or elements used in the poem, such as simile or personification.

Literary Technique 1

Examples from the poem:

-
-
-
-

Literary Technique 2

Examples from the poem:

-
-
-
-

Think about how these techniques and elements improve the poem and help communicate the poem's theme.

Day 5 Mathematics

Vocabulary

Learn the new math vocabulary words below. You will use these vocabulary words in the activities today.

- **Backtracking** : The process of using a flowchart to work backward, starting with the output and undoing each operation to find the input
- **Flowchart:** A diagram, using ovals and arrows, that shows the steps for going from an input to an output.

Activity 1: *Backtracking*

Please complete the following activities. Be sure to solve all problems and show all of your work.

- Lesson 9.1 Study Guide and Intervention: Backtracking

If you need Spanish activities to review the concept of probability, please follow the steps below.

- Step 1: Go to tutorial site: http://destination.nycenet.edu
- Step 2: Login with the following user ID and PW:
  - User: studentnyc
  - Password: student
- Step 3: Click on the Exploration Icon to access the tutorial
- Step 4: Scroll down to Mastering Skills & Concepts: Course V: Pre-Algebra – Spanish
- Step 5: Select the skill/concept to review.
  - Activity 5: 6.2.2 - Determining the Sample Space of an Experiment

Notebook Activity

In your notebook, describe what it means to "*square*" a number. Give 3 examples of squaring a number. How are square root and squaring a number related to each other.

Additional Activity

Do you have more time? Complete the following activity

- Lesson 9.1 Skills Practice: Backtracking

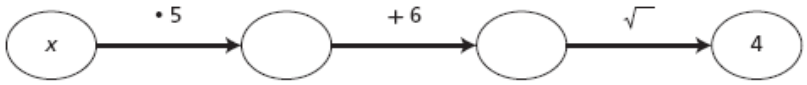
Name **Date**

Lesson 9.1 Study Guide and Intervention

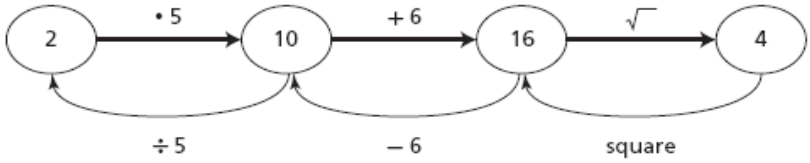
Backtracking

Example 1 **Use backtracking to solve the equation $\sqrt{5x + 6} = 4$.**

This is the flowchart.



Use backtracking as shown.

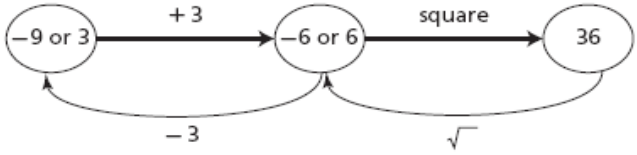


The solution is $x = 2$.

Example 2 **Solve $(a + 3)^2 = 36$ by backtracking.**

This is the flowchart.

Use backtracking as shown.



The solutions are $a = 3$ and $a = -9$.

Exercises

Solve each equation by backtracking.

1. $\frac{5}{x} = 2.5$
2. $\frac{(4 + a)}{3} = 5$
3. $\sqrt{2x + 10} = 4$
4. $\frac{6 - x}{4} = 2$
5. $(c - 7)^2 = 16$
6. $2(y + 3)^2 = 128$

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Name **Date**

Lesson 9.1 Skills Practice

Backtracking

Solve each equation by backtracking. Show the flowchart you use.

1. $\sqrt{5a-4} = 4$

2. $\sqrt{n} = 7$

Solve each equation by backtracking.

3. $\sqrt{\frac{p}{4-3}} = 8$

4. $\frac{6}{m} = 4$

5. $\frac{2}{4c+6} = 1$

6. $\sqrt{3-k} = 1.5$

7. $b^2 - 6 = 75$

8. $(t+4)^2 = 36$

9. $z^3 = 64$

10. $(4b-2)^2 - 7 = 18$

11. $(2-c)^3 = -8$

12. $(2x-4)^2 - 9 = 40$

13. $g^2 - 7 = 2$

14. $d^2 = 4$

15. $(6x-8)^2 = 0$

16. $3\sqrt{r+1} = 2$

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Day 5 Science

Complete Activity 1 or 2 below:

Activity 1: *Wanted: Wind Power Workers*

- Read the article below and answer the questions that follow.
- Para Espanol, prime aquí: http://schools.nyc.gov/Documents/teachandlearn/LearnatHome/ELL/8day5sp.pdf

Vocabulary
Learn the new vocabulary words below. You will use these vocabulary words in today's activity.

- **enhance** (verb): to improve or make better
- **virtually** (adjective): practically; just about

Wanted: Wind Power Workers

ESTHERVILLE, Iowa (Achieve3000, January 22, 2009). Wind turbine towers are popping up across the U.S. landscape at a rate of almost 10 per day. These towers are producing not only power but also the need for a large workforce of skilled technicians to maintain and repair the energy-generating structures. The development of the wind industry, and the many jobs it has created, has many community colleges scrambling to institute wind technology training programs.

Last year, as power companies responded to the push for more "green" energy (energy that is designed to be better for the planet), 3,200 new wind turbines were installed across the nation. According to the American Wind Energy Association (AWEA), the total number of towers has reached more than 25,000. Every 10 turbines, said AWEA spokesperson Christine Real de Azua, generally require a two-person operation and maintenance team.

"You're looking at several hundred [new] jobs in just one year." However, Azua said, "these people need to come with training."

Community colleges in Iowa, North Dakota, and other states are jumping at the chance to provide that training. Iowa Lakes Community College, for example, recently started a wind tech training program. The program's leader, Al Zeitz, was originally hired to provide expertise for a wind turbine being installed to enable the college to reduce its energy costs. Zeitz soon realized that expertise like his was all too rare at a time when wind power was gaining popularity. "The natural question was, 'Is there anybody doing any training?'" Zeitz said.

The training program Zeitz started now has a five-member staff and has grown from two classrooms to six. This year, only 15 students enrolled in the program. As many as 90, however, are expected to register this fall. Students will attend classes in everything from electrical fundamentals to computer networking.

Many other community colleges have expressed interest in entering this small niche field. Lake Region State College in Devils Lake, North Dakota, hopes to start one due to the increased demand for skilled wind energy technicians.

Day 5 Science (continued)

"We're sitting in the middle of… three large wind farms," said Doug Darling, Lake Region's vice president for instructional services. "They're telling us they need technicians." He emphasized that "these are good-paying jobs." Darling estimated the starting annual salary for a typical wind technician job at between $35,000 and $40,000.

Zeitz said that community colleges in Oregon, Minnesota, New Mexico, Wyoming, and Kansas are also establishing new wind technology programs. The American Association of Community Colleges does not know how many colleges around the country have instituted these programs, but according to spokesperson Norma Kent, such wind tech training is a natural fit for the two-year schools.

"Community colleges are known for responding to current needs in their community, or current opportunities in their communities," Kent said. "If there's a need out there, they're probably going to be the first to recognize it."

Companies are eager for community colleges to establish programs in the field. They are even willing to help. Steve Stengel is a spokesperson for Florida-based FPL Energy, which operates more than 7,600 wind turbines in 16 states. Stengel said it makes sense for his company to assist community colleges in developing or enhancing training programs.

"It is in our best interest to make sure that when those students leave that program, they are as well-trained as they can possibly be," Stengel said.

Developing relationships with colleges also gives FPL an advantage over other companies in recruiting workers. "The more we can expose ourselves to potential employees, the more likely they would choose us when looking for a career opportunity," Stengel said.

Competition among companies hoping to hire wind tech graduates could be intense. Zeitz has already observed students in his program receiving three or four job offers each as soon as they finish school.

For this reason, Iowa Lakes wind technology graduate Dwaine Higgins sees a bright future ahead of him. "The job outlook in the wind industry is virtually unlimited," he said.

The Associated Press contributed to this story.

Instructions: Select the correct answer.

Question 1:
According to the article, what is one reason why community colleges are interested in establishing wind technology programs?

- ○ Because the increased demand for wind energy technicians offers excellent job opportunities for their graduates
- ○ Because it gives them an advantage over other colleges working with energy companies to develop programs
- ○ Because students can attend classes in everything from electrical fundamentals to computer networking
- ○ Because students with expertise in wind turbine technology will enable the colleges to reduce their energy costs

Day 5 Science (continued)

Question 2:
The article states:

> **Developing relationships with colleges also gives FPL an advantage over other companies in *recruiting* workers.**

Which would be the closest **synonym** for the word *recruiting*?

- ○ Drafting
- ○ Drawling
- ○ Depriving
- ○ Deflecting

Question 3:
What is this article mainly about?

- ○ Colleges are rushing to train wind technicians to service the growing number of wind turbines nationwide.
- ○ Community colleges started wind technology programs after observing the success of the Iowa Lakes program.
- ○ Lake Region State College is perfectly situated for a wind technology program, as it is near three wind farms.
- ○ Colleges that develop relationships with energy companies hope to gain an advantage over competing colleges.

Question 4:
Which question is **not** answered by the article?

- ○ How many states currently have wind turbines installed?
- ○ How many wind turbines were installed nationwide last year?
- ○ How does FPL benefit by developing relationships with colleges?
- ○ How does Dwaine Higgins feel about getting a job in the wind industry?

Question 5:
Which of these is a statement of opinion?

- ○ The training program at Iowa Lakes shouldn't require six classrooms for 15 students.
- ○ The training program started by Al Zeitz now has a five-member staff.
- ○ The wind technology program that Iowa Lakes began had only 15 students this year.
- ○ The program leader was originally hired as a turbine expert for Iowa Lakes College.

Question 6:
Which is the closest **synonym** for the word *virtually*?

- ○ Nearly
- ○ Liberally
- ○ Logically
- ○ Notoriously

Day 5 Science (continued)

Question 7:
The article states:

> **Zeitz has already observed students in his program receiving three or four job offers each as soon as they finish school.**

The author's purpose for writing this passage was to _____.

- ◯ Emphasize that the job prospects for graduates of wind tech programs are excellent
- ◯ Explain why Zeitz considers himself the best person to lead a wind technology program
- ◯ Explain how companies are competing with one another by offering very high salaries
- ◯ Emphasize that companies should recruit technicians for jobs before they finish school

Question 8:
Which of these is **most** important to include in a summary of this article?

- ◯ Energy companies want to help community colleges establish tech training programs.
- ◯ One Florida-based energy company operates wind turbines in 16 states.
- ◯ Devils Lake, North Dakota, is where Lake Region State College is located.
- ◯ Dwaine Higgins is a graduate of a community college's tech training program.

Thought Question

Write a summary of today's article. As you write your summary, complete the following steps:

- **STEP 1**: Your first step is to understand the text. If you have not read the article carefully, do that now.
- **STEP 2:** Look back at the article and do the following:
    1. Pull out the topic sentences for each paragraph.
    2. Take out any details that are not necessary.
    3. Put the information into a single paragraph.
- **STEP 3:** Rethink your summary and the article.
- **STEP 4:** Check and double-check.

Write your answer below.

_____
_____
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_____

Day 5 Science (continued)

www.teenbiz3000.com

Activity 2: *Science Project: Humans in Their Environments*

Vocabulary

Learn the new vocabulary words below. You will use these vocabulary words in today's activity.

- **Recycle:** To collect and usually reprocess discarded materials for reuse often in another form.
- **Natural Resource**: Something, such as a forest, a mineral deposit, or fresh water, that is found in nature and is necessary or useful to humans.

Isn't it a pain to take out the garbage? Have you ever thought about the stuff you aren't throwing out? What actually is garbage made out of? Well, most of the stuff you throw out can be reused, recycled, or reduced. In this activity, you will identify different types of trash, some of the sources of this trash, how people dispose of their trash, and what happens to trash through time. Just think, by simply rethinking the concept of garbage, you could alleviate the burden of taking the trash out to your corner every week.

For this activity, you will need:

- One large piece of paper
- Several old magazines, paste, pencils, and scissors

Day 5 Science (continued)

Directions:

- Brainstorm different types of trash. As part of your research, read the pages from earth911 that follow, go to www.epa.gov/recyclecity/ and click on various buildings, or explore the additional websites listed below.
- Find types of trash in pictures in the magazines; create a concept map showing the origin of the trash in your everyday life, you dispose of the trash, what happens to the trash over time, the final fate of the trash.
- Present your concept map with a family member or friend

It will take about one hour to brainstorm the project and create the concept map. It will take an additional 30 minutes to one hour to display the concept map.

Additional Resources:

- www.earth911.org/master.asp?s=kids&a=kids/quiz/quiz.asp (An excerpt from this website is included in the following pages)
- www.epa.gov/recyclecity/
- www.napcor.com
- www.compostguide.com

Source: This activity is from Glencoe NY Science, Grade 8, Unit 2: Humans in their Environments
http://glencoe.mcgraw-hill.com/sites/0078778808/student_view0/unit2/unit_project_1.html

This story is part of Earth911's "Green Eight" series, where we showcase eight ways to green your life in various areas.

Just like the game of Telephone has taught us, information filtered through multiple sources starts to get a little less reliable. The same concept can be applied to environmentalism. Like any major trend, with mass awareness comes misconception.

For this reason we thought we would dedicate this eight ways to shedding some light on common environmental myths. Most come from simple mix ups or a lack of public education, so we think it should be pretty easy to help set the record straight.

1. Just throw it out, it's biodegradable!

We've heard people and companies brag about biodegradable materials since this whole green craze started. And though we love them, we don't love the misconceptions that surround them. The prime example – "I can just throw this bottle out, because it will break down." That would be true if we kept our landfills open to the elements such as light, air and water. This, however, is not the case. Throwing a biodegradable bottle into a landfill means it's not going to break down (at least in a time frame that counts). Landfills are meant to keep the elements out, and it is precisely these elements that need to be present in order for a material to successfully biodegrade.

Need some cold, hard evidence? I think we can all agree that food is the most biodegradable material out there. It can break down in an ice cold fridge, so a landfill, it seems, would be a perfect environment. Think again: A trash study project conducted by the University of Arizona found some interesting things during their years of trash digging in more than 20 landfills across North America, including "hundreds of undecomposed hot dogs, corn starch and lettuce dating back to the 1960s." Since produce doesn't come with a date, they used some of the still readable 2,425 newspapers they found to get the date of disposal.

FACT:

Now don't get us wrong, we love that packaging is becoming more aware and that biodegradable materials are more widely used. However, the way these products are disposed is the key when talking about waste reduction. Don't fret, there are alternatives.

Recycle it if possible. If not, see if composting is an option. Though your home composting system might work well for paper based products, bioplastics may need a more advanced system. Try your city's composting program or check out local stores or garden centers that utilize composting.

2. All paper should be recycled

Though we would be the first to promote recycling as a fantastic option, it isn't always the right thing to do. You can actually do some damage if you just throw everything into your recycling bin. Enter the pizza box. Though there are some obvious recycling bin no-no's, paper is usually a perfect participant in the recycling game.

So, why the warning? Unlike plastic or glass, where the recycling process includes heat, paper is broken down using water. And as the old adage clearly states, water and oil don't mix. That's right, throwing a used paper plate, napkin or stained pizza box in with the rest of the paper for recycling can actually do more harm than good. In fact, we're talking about 700 million dollars in contamination each year.

Since the paper is mixed in large vats, and inspection at a recycling plant can only catch so much, it just takes a few contaminates to add oil to the watery pulp, and in turn, render the entire batch useless.

FACT:

Though there are tons of paper types that can be recycled, make sure to follow the rules of your local recycling services for what works for you. Some can recycle envelopes with those peek-through windows, while others can't. Recycling is a game of knowledge, and knowing a little can get you a long way.

3. Organic food is *always* better for the planet

An organic banana from Chile that had to travel more than 5,000 miles to reach your table in Los Angeles, is not overall better than a conventional banana that was grown at a farm five miles from your home. It just doesn't add up. Though organic is a great attribute to look for when shopping for produce, it shouldn't be the only factor in consideration. Buying locally has a huge impact on a product's overall footprint.

FACT:

Though organic may be a great asset, if local options are abundant and you have to make a decision between the two, make sure to weigh the pros and cons of each. For instance, though organic is better for water systems, soil health and bio diversity, when talking about the health effects of organic, one can be less worried about fruits and vegetables whose skins or outer leaves aren't eaten.

For more delicate skins, the levels of pesticides that can be absorbed is much greater. In fact, according to studies by the U.S. Department of Agriculture (USDA), Consumer Reports and the Environmental Working Group, 97.3 percent of nectarines sampled were found to contain pesticides. The below list can help be used as a shopping guide:

When you should buy organic	When you can pass on organic
Celery	Papaya
Bell peppers	Pineapples
Potatoes	Asparagus
Spinach	Bananas
Apples	Kiwi
Cherries	Avocado
Grapes	Broccoli

Nectarines	Cauliflower
Peaches	Corn
Raspberries	Onions
Strawberries	Peas
Pears	Mangos

4. But the label said Eco!

Any time a trend or lifestyle gets popular, a lot of people try to get on the bandwagon. The good news is a lot of great ideas and products get created. The bad news, a lot of bad ones are too! This wouldn't be a big deal if consumers could easily tell the difference. Unfortunately lots of marketing can go into making sure you can't.

According to the Natural Products Association, which represents more than 10,000 natural product companies and retailers, Americans spent $7.5 billion in 2006 on personal care products that claimed to be all-natural but often were not.

Thankfully there are some major regulations in place for some of the products we rely on. Organic, for example, is a statement that is regulated by state and federal agencies.

According to Cathy Greene with the Economic Research Service/USDA , "Private organizations, mostly nonprofits, began developing certification standards in the early 1970's as a way to support organic farming and thwart fraud." For these reasons, most people feel confident in purchasing products labeled organic.

FACT:

This same consumer confidence can be found in other green products with the help of labeling. Below are a few of the ones to watch for:

Looking for seals such as these can help insure your product is truly green. Photo: GoodHousekeeping.com

- ENERGY STAR – This blue and white symbol can be found on products that have qualified as more energy efficient. To earn the ENERGY STAR, products must meet strict energy criteria that have been set in place by the U.S. Environmental Protection Agency or the U.S. Department of Energy. These products include refrigerators, dish washers and light bulbs.

- Forest Stewardship Council - The FSC has developed "a set of Principles and Criteria for forest management that are applicable to all FSC-certified forests throughout the world." These 10 principles and 50 plus criteria address multiple areas of forest management including indigenous rights, multiple benefits and environmental impacts. This tree-shaped logo can be found on products ranging from paper and printers to pulp mills.

- Good Housekeeping Green Seal – This label bares a strong resemblance to its famous counterpart with the distinction of it's color (green). The Green Good Housekeeping Seal will debut later this year, after the Good Housekeeping Research Institute and a consultancy firm complete development of product evaluation criteria. To be eligible for the green seal, a product must meet the criteria for the original seal of approval, as well as meet standards related to product composition, manufacturing and packaging.

- GREENGUARD Indoor Air Quality – These planet-toting logos can be found on building materials that are manufactured to help "improve indoor air." The GREENGUARD Environmental Institute (GEI) is a nonprofit organization that oversees the certification programs for building materials and indoor products. These logos let a consumer know that the products are regularly tested to meet chemical and particle emissions acceptable under IAQ pollutant guidelines and standards.

- Scientific Certification Systems - This independent company gives certification of environmental, sustainability, food quality and food purity claims for products across the globe. Their extensive network covers consumer goods such as produce, fisheries, forestry, eco-products and floral.

5. Adjusting my thermostat wastes energy

Many people come from the school of thought that maintaining a temperature uses less energy than dropping the thermostat while gone and adjusting when you return. It isn't that crazy of a notion. In fact, we can recall some similar theories around florescent lights and computers. In order to find the truth, we went to the people that know it best.

FACT:

According to the American Council for an Energy Efficient Economy, it is better to turn down the thermostat while not in the the house. In fact, "If you are out for a good stretch of time (say 8 hours or so), this temperature 'set-back' will save more energy than it will take to bring your home back to the desired temperature. (Note: If you have a heat pump, make sure you have a heat pump thermostat designed for your heat pump, and that it has been properly programmed." There, it's settled!

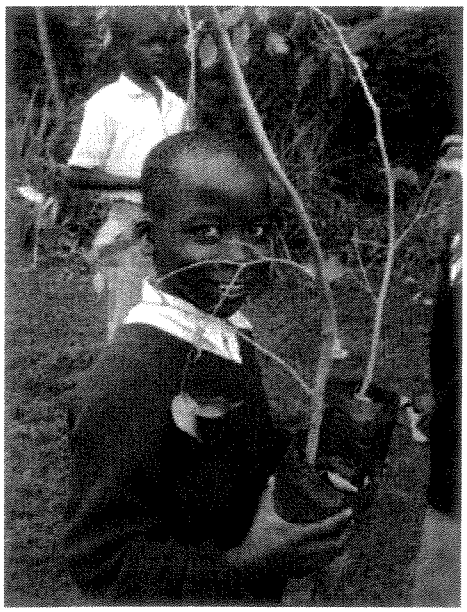
6. I have to spend a lot of money to *go green*

If you have ever checked out the price of a hybrid, or taken a stroll through a natural market, you know that green can add some extra numbers to most price tags. Sure as more people enter the market, prices get more competitive and eventually drop. In the meantime, don't let those higher priced items dictate your level of commitment. Buying certain products is not the only way to green your act.

FACT:

In one of our recent 8 Ways, we explored the concept that some green acts actually save you money. Take for instance the simple task of buying in bulk. A *Real Simple* Magazine experiment in 2003 found that purchasing 15 common items at a warehouse store in bulk as opposed to the supermarket saved $58.74 in Illinois and $109.72 in New York (including a membership fee), and the major reason for the price discrepancy were the supermarket prices per state. It's safe to assume that doing a majority of your shopping in bulk would save **over $200 on supplies** and **$20 per year on gas,** regardless of where you live.

It doesn't have to stop there. Tons of everyday tasks can take the planet into consideration while not costing a thing. Even building materials can be more cost effective when sustainability is kept in mind.



Organizations like Floresta help to promote agroforestry, reforestation and soil conservation in rural areas. Photo: Floresta.org

7. I'll just plant a tree - that'll fix it!

Most everyone will agree that planting trees is an all around win. Not only does it help the environment by cooling the air, reducing air pollutants and absorbing sunlight, but they are also a beautiful addition to any area.

The issue at hand is not so much about the what (planting) but the where (benefit). According to writer Maria Colenso, "recent scientific studies show those benefits depend on where those trees are planted. Plant in the wrong part of the world and you may be wasting time and money."

FACT:

Don't give up on the planting, just make sure you have a plan. If you are planting it locally, in a park or community center, then plant away! Those venues are a great place to add a little foliage and make a small difference.

If you are planning to donate to a company or support a cause, do a little research to make sure they are putting their resources to the best use. Here are some things to keep in mind:

- Forests that are located in the tropical belt that surrounds the equator have a large benefit on the planet.
- These forests absorb CO_2 (a process called carbon sequestering) which helps lower temperatures.
- Forests located outside of the this belt could have little or no impact on climate change.
- In fact, the farther away from the equator forests are, the more harm they can do.
- Known as the albedo effect, forests outside this belt are more likely to trap in heat, in turn, raising temperatures.

8. If I can't do it all, I might as well do nothing

We have all done it. The overwhelming number of factors involved with the *act of changing* can leave even the most steadfast individual discouraged and on the verge of giving up. It is usually around this time that a little voice pops in with the final blow, "what difference does it make anyway?"

Or perhaps you haven't felt this at all. You are filled with motivation and nothing stands in your way. Until…a co-worker pipes up over your reusable bag and Sigg bottle, giving you a piece of their mind. This usually includes something to the extent of, "you're just one person, and one person can't change the world."

Both statements have some merit, but, that doesn't make them true.

FACT:

When words don't come easily on a subject as huge as this, using the words of another can usually do the trick. So here it goes.

"Be the change you wish to see in the world."

This simple statement by M.K. Gandhi sums up why always trying is as important as actually doing. Though you may not see the results of your actions in one day, over time, all those actions add up.

Take for example our curbside recycling rate. In 1960, U.S. curbside recycling processed 5.6 million tons of waste. In 2006, we recycled 81.8 million tons, an **increase of over 1,300 percent**! Though not everyone who recycled an item between the 60s and today knew about it, they were part of a huge movement that helped change the way we approach waste disposal. What movement are you a part of?

Raquel Fagan

Raquel Fagan is Executive Editor of Earth911.com.

More articles by Raquel

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Vocabulary List: Grades 6-8

ELA	Science	Math	Social Studies	Non-Content Specific
argumentation	abiotic/nonliving factors	algebraic expression	adaptation	apply
author's purpose	acid rain	altitude	agrarian society	boundary
bibliography	adaptations	angle bisector	agricultural	calculate
biography	air mass	area	assembly line	categorize
caption	animal development	array	assimilate/ assimilation	classify
character trait	asexual reproduction	axis of symmetry	authoritarian rule	compare
climax	asthenosphere	base	bourgeoisie	create
descriptive language	atmosphere	base 10	capitalism	describe
dialect	atoms	capacity	checks and balances	determine
editorial	bacteria	congruence	citizenship	develop
elaboration	barometric pressure	constant ratio	civil disobedience	device
empathy	beneficial relationships	coordinate system	civil service	devise
episode	binary fission	cube number	civilization	different
etymology	biological communities	cube root	colonization	digest
explicit	biomes	data set	conservatism	disadvantage
exposition	biosphere	estimate	corruption	disappointment
fact	biotic/living factors	experiment	custom	discern
fact vs. opinion	blizzards	exponent	depression	dominant
figurative	boundaries	frequency	desegregation	dramatize
figurative language	buoyancy	geometric formula	discrimination	draw conclusions
foreshadow	carnivore	grid	disenfranchisement	efficient
foreshadowing	celestial objects	growth rate	dissent	employ
generalization	cell	height	economics	entertain
historical fiction	cell division	integer	economy	environment
homonym	cell growth	intersecting lines	ethnic origin	equation
homophone	cell parts	length	emigrate	estimate
hyperbole	chemical reactions	minimum	enclave	ethics
idiom	climate	nonlinear equation	ethnic identity	evaluate
imagery	cloning	ordered pairs	ethnic minority	excerpt
implicit	competition	outliers	ethnocentrism	exchange
inference	complex machine	parallel figures	evolution	exclusion
interpretation	compound microscope	parallelogram	fascism	explain
irony	compounds	perfect square	financial	explicit
issue	compressional	perimeter	goods	extend
metaphor	conduction	perpendicular	green card	external
meter	conductivity	plane	hierarchy	extract
monologue (internal)	conservation	polygon	hostility	factual
offense	continent	prism	illegal alien	failure
offense	contraction	proportion	immigrate	feat
omniscient	convection	quadrilateral	imperialism	form
onomatopoeia	convection currents	range	industrialist	format
opinion	convergent	rate	industry	formation
paraphrase	core	rational number	interpretation	formulate
passion	crust	rectangle	intervention	generalization
personification	density	rectangular prism	isolationism	generate
perspective	dichotomous key	right angle	labor	however
persuasion	displace	Roman numeral	laissez faire	hypothesis

ELA	Science	Math	Social Studies	Non-Content Specific
plagiarism	divergent	root	liberty	hypothesize
point of view	DNA	rotation symmetry	lynching	identify
position	drought	square	manufacture	illustrate
pro vs. con	dynamic equilibrium	surface area	mass production	impact
prologue	Earth's axis	three-dimensional figure	mixed economy	imprint
protagonist	eclipses	triangle	monarchy	indicate
quotation	effect of elevation	two-dimensional figure	monastery	infer
resolution	egg	vertex	monopoly	interdependence
rhythm	electromagnetic energy	volume	mosque	observe
sarcasm	elements	width	nation-state	oppose
satire	endangered species		nativism	opposing
simile	endocrine system		naturalization	outline
symbolism	energy		neutrality	paraphrase
sympathy	energy conservation		nobility	preceding
syntax	energy pyramid		nomadic people	predict
tension	environmental concerns		patriarchal society	prefix
theme	environmental toxins		peasantry	pressure
thesis	epicenter		persecution	procedure
tone	erosion		perspective	qualification
transition	evolution		philanthropy/philanthropist	quality
verb tense	expansion		political alliance	rank
vignette	extensional		political party	rationale
voice	external environment		public opinion	rationalize
	extinction		push-pull factor	realization
	fault		rationing	reasonable
	faults		refugee	refute
	field map		robber baron	reinforce
	fold		rural	relationship
	food chain		scarcity	relative
	food web		secession	release
	force		segregation	relevance
	fossil record		services	remain
	friction		social status	represent
	gametes		sovereign state	require
	genes		spoils system	requirement
	genetic engineering		stereotype	resolve
	genetic expression		stratification	respond
	global warming		strike	response
	gravity		tariffs	reveal
	hardness		tenement	revolution
	harmful relationships		terrorism	rival
	herbivore		transportation	root
	heredity		trust-busting	rotation
	homeostasis		tycoon	scan
	hormonal regulation		union	secondary
	human body systems		urban	section
	human impact		urbanization	select
	hydrosphere		visa	signal
	igneous		wage	significance

ELA	Science	Math	Social Studies	Non-Content Specific
	immune system inertia infectious disease interdependence internal environment kinetic energy kingdoms latitude Law of Conservation of Energy light waves lithosphere locomotion longitude magnetism mantle matter Mendelian genetics metabolism metamorphic mixtures molecules molten motion multicellular multicellular organism mutations natural cycles natural resources Newton's First Law Newton's Second Law Newton's Third Law nutrients ocean basin oceanic omnivore organs overpopulation ozone depletion Pangaea parasites patterns of motion periodic table phases of matter phases of the moon photosynthesis plant development plants plate tectonics population growth potential energy			similarity skill sophisticated specify speculate spontaneous standard state statement stereotype structure study subsequent substitute successful suffix suggestion summarize support survey survive suspended symbol sympathetic system table text thesis timeline tradition transfer transformation type vague validity values variation Venn diagram viewpoint virtue

ELA	Science	Math	Social Studies	Non-Content Specific
	predator/prey relationship pressure probability Punnett square radiation recycle reflection refraction regulation relative humidity renewable sources of energy respiration Richter scale ring of fire rock classification rock cycle rotation seafloor seasonal variations sedimentary seismograph sexual reproduction simple machine solar system solubility solutions sound waves species sperm spreading streak thermoregulation tides tilt tissues topographic map topography transfer of heat transformation of energy trench unicellular unicellular organism unrenewable source of energy variation vegetative propagation vibration voltmeter water displacement weathering weather map			

Fitness and Health Activities

Participate in **30 or more minutes** of daily physical activity. Choose **at least three (3) activities** from the options below and the following calendars. There is something for everyone! Each one takes about 10 minutes. Increase your heart rate, improve flexibility, and build muscle strength!

If you have access to the Internet, you can track your physical activity by going to http://www.bam.gov/sub_physicalactivity/cal_index.asp, where you can create a customized physical activity calendar.

- Activity Calendar (in English and Spanish) – online at
  - http://www.aahperd.org/naspe/Toolbox/pdf_files/May09/Calendar_Sec_Eng.pdf (English)
  - http://www.aahperd.org/naspe/Toolbox/pdf_files/May09/Calendar_Sec_Span.pdf (Spanish)
- "10 at a Time" Activity Calendar – online at
  - http://www.aahperd.org/naspe/Toolbox/pdf_files/May09/Ten.pdf
- Small Space Energizers – online at
  - http://www.ncpublicschools.org/docs/curriculum/healthfulliving/resources/instructional/middleschoolenergizers/healthfuliving.pdf
- Muscle Strengthening Routine at Home – online only
  - http://cdc.gov/physicalactivity/everyone/videos/index.html
- Physical Activity Games – online only
  - http://www.kidnetic.com/Kore/

May 2009
Secondary Physical Activity Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	MilkPEP and the NBA teamed up to launch *Get Fit By Finals*, a new fitness and nutrition education initiative for teens. Visit www.MilkDelivers.org NOW to download a FREE *Get Fit* activation kit that includes a guide to implementing *Get Fit By Finals* in your school -- plus fitness and nutrition tips and tools from the NBA. **Log on by May 1 and tell us how you're getting your students fit and you could be eligible to WIN A GYM MAKEOVER FOR YOUR SCHOOL!** Also, check back to Web site weekly for new NBA player videos you can use in your classroom or gym to help motivate your students to get fit.				***1*** ***25 body squats w/ hands behind your head. Now 3 sets of as many push-ups as you can do.***	***2*** ***4 intervals, 15 min running, walk for 1 min between each interval.***
3 ***Get outside today with the family and go fly a kite!***	***4*** ***3 sets/15 reps bench press; 3 sets/ 15 reps tricep dips.***	***5*** ***Jump rope 2 min, fast walking 2 min, 12 minute run; repeat 3X.***	***6*** ***3 sets/15 reps body squats, then 3 sets/20 reps concentration curls.***	***7*** ***1 mile fitness run, sprint 50 yds, jog 50 yds- do this for 1 mile. Try again for a second fitness mile.***	***8*** ***3 sets /to tolerance, sitting overhead press. 3 sets/15 reps lying hamstring curl.***	***9*** ***4 sets/10 reps lying leg raises; 4 sets/10 reps lifting side plank.***
10 ***Go bowling today with friends or family. No lanes? Make pins from old 2 liter bottles filled w/sand or water.***	***11*** ***3 sets/12 reps inclined push-ups; 3 sets/15 reps tricep extensions.***	***12*** ***Yoga plank position- hold and raise each leg one at a time 10X. Repeat 2 more sets. 3 sets/12 reps toes to ceiling on bench.***	***13*** ***15 squat jumps with a ball extending overhead; 3 sets 15 reps one-arm row to both sides.***	***14*** ***2 min of ab work- basic crunches, crunches with legs up, twisting crunches. Repeat two more times.***	***15*** ***3 sets/15 reps stiff-legged dead lift; 3 sets/20 reps standing lateral raise.***	***16*** ***Speed play today: run, jog, run fast, walk, skip, run for a total of 40 min. Stretch afterward.***
17 ***Find 3 friends, go to the park and play 2 v. 2 volleyball.***	***18*** ***3 sets/12 reps declined push-ups; 3 sets/12 reps flyes.***	***19*** ***3 sets/20 reps knee tucks on a bench; 3 sets/15 reps reverse crunch.***	***20*** ***3 sets/20 reps bicep curl w/resistance; 3 sets/15 reps back extensions.***	***21*** ***Find a basketball and perform 4 sets of 25 crunches with the basketball held under your chin.***	***22*** ***Alternating walking lunges- 3 sets/20 reps; 4 sets/8 reps standing shoulder press.***	***23*** ***Ride a bicycle for one hr-pick a scenic route around town. Wear your helmet! No bike? One hr power walk/jog.***
24 ***Find a tennis court, play tennis for 30 minutes or hit against a wall.***	***25*** ***3 sets/10 reps wide arm push-ups; jump rope for 2 min in between each set.***	***26*** ***4 sets/10 reps twisting bench crunch; 10 min power walk in between each set.***	***27*** ***3 sets/15 reps superman; 3 sets/20 reps alternating bicep curls.***	***28*** ***How about some 3 on 3 basketball today?***	***29*** ***3 sets/20 reps calf raises off a step; 3 sets/ 15 reps seated overhead press.***	***30*** ***3 sets/15 reps single leg lift; 10 min. jog in between sets.***

May 2009
Ten At A Time Physical Activity Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Need help remembering exercises? Go to http://www.shapefit.com/training.html#8 for demos of exercises.	***Duplicated with permission from the National Association for Sport and Physical Education (NASPE). To assess whether your child is receiving a quality physical education program, visit www.naspeinfo.org/observePE for an observation assessment tool.***			*Each day lists one exercise that can be executed "10 at a time". Keep track of each set of 10 reps you accomplish throughout the day, or for cardio, ten minutes of the activity.*	***1 Squats w/ hands behind your head.***	***2 Power-walk 10 min.***
3 Tricep dips.	***4 Bench press.***	***5 Jump rope.***	***6 Concentration curls.***	***7 Lying hamstring curl.***	***8 Sitting overhead press.***	***9 Lying leg raise.***
10 Lifting side plank.	***11 Inclined push-ups.***	***12 Yoga plank position.***	***13 One-arm row to both sides.***	***14 Twisting crunches.***	***15 Stiff-legged dead lift.***	***16 Jump rope 10 min.***
17 Tricep extensions.	***18 Declined push-ups.***	***19 Knee tucks on a bench.***	***20 Bicep curl w/resistance.***	***21 Crunches with a basketball held under your chin.***	***22 Alternating walking lunges.***	***23 10 min power walk/jog.***
24 Toes to ceiling on bench.	***25 Wide arm push-ups.***	***26 Twisting bench crunch.***	***27 Superman.***	***28 Standing shoulder press.***	***29 Calf raises off a step.***	***30 Single leg lift.***

Arts Activities for Grades 6-8

A number of the activities listed reference specific works of art. If you are not familiar with them you may find them on the internet (even the performances). However, these are provided as examples, and you can substitute similar works of art with which you are familiar or to which you have access.

All Arts Activities taken from the *Blueprints for Teaching and Learning in the Arts: Grades PreK-12.*

DANCE

- Create a work using original movement material, devices to manipulate phrases, and a clear choreographic structure.
- Analyze how varying the use of force affects the way a movement feels, is perceived, and is interpreted.
- Maintain a dance journal, including dance research, dance resources and notation.
- Reflect upon personal criteria for evaluating dance, and share in discussion.
- Research the connections between two dance styles.
- Make a "family tree" of a dance form including major artists and dates of significant works.
- Research the period in which a choreographer was working or a dance form arose.
- Choose from a "grab bag of countries," and research the dances of the country chosen.
- Brainstorm the ways in which studying dance affects students' health.

MUSIC

- Listen to the folk song "Shenandoah," and write a private journal entry describing feelings evoked by the music.
- Share a recording or performance of a song from a particular culture that evokes a similar personal response.
- Compare at least two different settings of the same text in a choral work from online resources. Discuss specific similarities and differences in repertoire, such as: "Ave Maria" (Schubert, Byrd, others), "Still Nacht"/"Silent Night"(Gruber; German and English versions), "Anvil Chorus" (Verdi; Italian and English versions), "Toreador Song" (Bizet; French and English versions).
- Compare a jazz song performed by two different soloists— such as "Cherokee" (R. Noble) by Charlie Parker, Ella Fitzgerald, Wynton Marsalis, or others—listening for differences and similarities in "musical voice."
- Create a "Top 10 list" of favorite performers, repertoire representative of classical, world, jazz, and popular music styles and genres. Each item should be supported by a written explanation containing music vocabulary, where appropriate.
- Prepare a historical timeline reflecting world, national, state, or municipal events and their corresponding musical components.

THEATER

- Rehearse and perform a scene in front of others.
- Rehearse and perform the same scene in three distinct styles or genres such as situation comedy, reality show, soap opera, disaster movie)
- Research and portray a character, using at least one appropriate costume piece, prop, gesture, need and physical shape.
- Perform the written word in a reading or memorized presentation.
- Using original writing related to a specified theme, develop it into a monologue.

- Write a scene that has:
    - a plot comprising of a sequence of actions characters with clear intentions/wants
    - obstacles to characters' wants
    - character growth or transformation from overcoming an obstacle or resolving conflict
    - unified and consistent theme
    - written stage directions, including character descriptions and notes
    - clear and articulated choices about dramatic style, structure and convention
- Analyze a dramatic script for elements of structure, character development, conflict and plot.
- . Create a marketing poster for a show with an identifiable dominant image.
- Measure a room and create a ground plan including furniture and other elements from the room.
- Make a CD or audio tape to score a scene.

VISUAL ARTS

- Create a painting that demonstrates:
    - the rich use of a specific painting medium such as: watercolor, tempera or acrylic
    - awareness of light, value and contrast
    - strategies to depict the illusion of depth
    - use of prior observational sketches
- Create a pencil, conté, or pen and ink drawing that demonstrates:
    - perspective
    - observation of detail
    - scale of objects and figures
    - a wide range of values
    - a personal view
- Discuss techniques of perspective and scale, artist's choice in degree of detail, artist's message.
- Create a collage that demonstrates:
    - use of a variety of materials and textures
    - unity through color
    - balanced composition

Educational TV Shows

Channel	Show	Subject	Day	Time	Recommended Audience	Description
Discovery	How It's Made	Science, Engineering	Weekdays	9:00-10:00 AM	4-5, 6-8, 9-12	The show is a documentary program showing how common, everyday items (including food products like bubblegum, industrial products such as motors, musical instruments such as guitars, and sporting goods such as snowboards) are manufactured.
NYC TV - 25	Standard Deviants TV	ELA, Science, Mathematics	Weekdays	10:00 AM, 10:30 AM	6-8, 9-12	A fast-paced educational series for youngsters 12 and up, adapted from the "Standard Deviants" video series used in schools. The concept: break subjects (such as Shakespeare, astronomy and business law) down to their basic components and jazz them up with computer graphics, MTV-style production, and humor, which is supplied by the series' 12 young cohosts.
NYC TV - 25	Globe Trekker	Geography	Weekdays	1:00 PM	6-8, 9-12	Globe Trekker transports viewers to unforgettable destinations through its stunning photography, rhythmic indigenous music and spirit of adventure. In each episode, one vibrant young traveler ventures off-the-beaten path to soak up the local culture, sample the cuisine and revel in breathtaking vistas.
Animal Planet	Meerkat Manor	Nature	Weekdays	3:00 PM, 3:30 PM	6-8, 9-12	The series tells the story of the Whiskers, one of over a dozen families of meerkats in the Kalahari Desert being studied as part of the Kalahari Meerkat Project, a long-term field study into the ecological causes and evolutionary consequences of the cooperative nature of meerkats.

Channel	Show	Subject	Day	Time	Recommended Audience	Description
Discovery	Deadliest Catch	Nature	Weekdays	4:00 PM	6-8, 9-12	Deadliest Catch is a documentary television series that documents the events aboard fishing boats in the Bering Sea during the Alaskan king crab and Opilio crab fishing seasons. The Aleutian Islands port of Dutch Harbor (located in Unalaska, Alaska) is the base of operations for the fishing fleet. The show is named Deadliest Catch because the crew of these boats are at a high risk of injury or death.
Animal Planet	Growing Up	Nature	Weekday	4:00 PM	4-5, 6-8, 9-12	Each episode is an hour long and follows the life (usually the first year) of a wild animal growing up in captivity.
HBO OnDemand	Earth to Kids: A Guide to Products for a Healthy Planet	Science, Environmentalism	OnDemand	27 minutes	2-3, 4-5, 6-8	Making the Earth a better place to live is the focus of this special on reducing, reusing and recycling trash.