
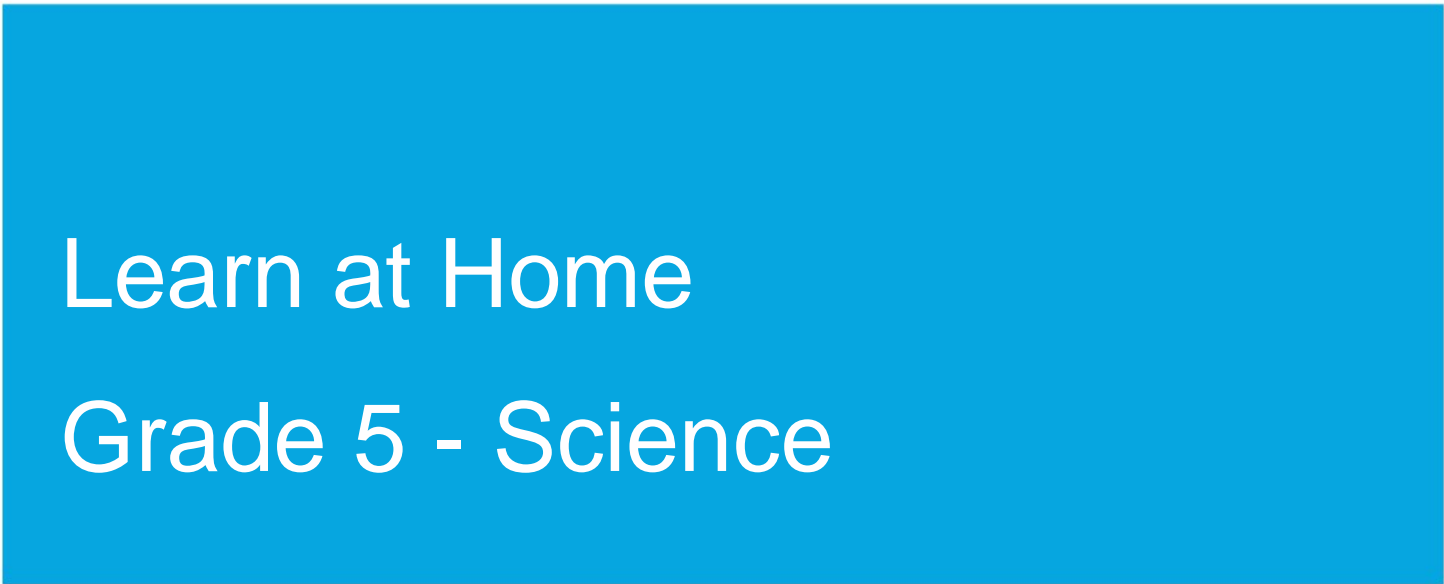


Learn at Home

Grade 5 - Science



Unit Overview

This series of online activities packet of resources is designed for students and their parents who wish to support in-school learning with activities that can be done independently and/or with a partner at home. The packet includes then activities that support the major scientific work of the 5th Grade with a particular focus on science content. These activities should each take 30-40 minutes (although some can be extended) and may be completed in any order.

How to use this guide

For each activity, you will find:

- information about both content and practice that the activity supports
- a description and/or instructions for the activity
- one or more focus or discussion questions that will help deepen the learning of the activity

Day 1 Science

Activity: Shaping the Earth's Surface

Task

Complete the online course on shaping the Earth's Surface. Join Oliver as he travels back in time to see what really happens during an Earthquake, Volcano, and Flood.

At the end of the activity, you should understand:

- Three major types of natural disasters that shape the Earth's Surface
- The properties of an earthquake, a volcano, and a flood
- Some characteristics of the life, geography and people of Japan, China, and Italy at the time of the natural disasters.

Link: [Click on https://en.e-learningforkids.org/science/lesson/shaping-the-earths-surface/](https://en.e-learningforkids.org/science/lesson/shaping-the-earths-surface/)

Vocabulary

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

- Natural Disasters** – any event or force of nature that has catastrophic consequences, such as avalanche, earthquake, flood, forest fire, hurricane, lightning, tornado, tsunami, and volcanic eruption
- Earthquake** – shaking of the ground caused by release of energy deep below the surface of the Earth
- Volcano** – violent storm with winds whirling around a small area of extremely low pressure that appears as a dark funnel-shaped cloud causing damage along its path
- Flood** - an event that happens when a body of water overflows onto land

In these activities, you will be asked to click on three sites. Each of these sites represents an event that shaped the Earth's Surface. Think about/discuss the answers to the questions for each of the events.

- Huang He River (1931)
 - a. People – What are some of the inventions of the Chinese civilization?
 - b. Life – Why do most Chinese families only have one child?
 - c. Geography – Why is the Huang He River also called the “Yellow River”?
 - d. How long did the flood of 1931 last?
 - e. Approximately how many people were killed in the flood of 1931?

- Pompeii (79 A.D.)
 - a. People – What attractions could be found in the town of Pompeii?
 - b. Life – Why was it easy to grow produce in the soil of Pompeii?
 - c. Geography – What is the closest large city near Pompeii?
 - d. What is the name of the nearby town that was destroyed by lava?
 - e. Why is Pompeii considered such an attractive tourist site?

- Kanto (1923)
 - a. People – How did the Japanese people view their Emperor?
 - b. Life – What was the most important export from Japan in 1923?
 - c. Geography – What is the term used to describe Japan?
 - d. What other two cities were devastated by the Kanto earthquake?
 - e. Many of the deaths were attributed to fire. Why was fire so common after this earthquake?

BONUS: To be able to get home, you must take the online quiz – Good Luck!

Day 2 Science

Activity: Mediterranean Sea – The Solar System

Task Setup a stage with Alexis and explore the solar system. Learn all there is about planets, stars and the earth.

Click on <https://en.e-learningforkids.org/science/lesson/mediterranean-sea-the-solar-system/>

At the end of this lesson, the student should be able to:

- Identify the objects of the solar system
- Identify the positions of planets in the solar system
- Compare ancient and modern beliefs about the Earth, the Sun and the Moon
- Recognize ancient astronomers and their beliefs

Vocabulary

Exercise 1 – Order of the planets.

In order to set the stage for our play about astronomers, Place the planets in the correct order as they orbit the sun.

Exercise 2 – Our Earth, Sun and Moon

The people in the choir in our play want to know more about the Earth, Sun and Moon. Answer the questions.

Exercise 3 – Ancient beliefs and today's knowledge

Help make sure that the scenery for the play is realistic. Help identify the ancient myths and what we know today.

Exercise 4 – The discoveries of astronomers

Since the play is going to be about astronomers, the scientists who studies the solar system and the facts we have about them need to be correct. Help choose which facts are true and which facts are true and which ones are false?

Day 3

Task

Read about Neil deGrasse Tyson, Being an Astronomer.

Click on

<https://www.amnh.org/explore/ology/astronomy/being-an-astronomer-neil-degrasse-tyson>

Answer the following questions

- ❖ What did Neil deGrasse Tyson remember about his first visit to the Hayden Planetarium?
- ❖ What did Neil deGrasse Tyson do when he wanted to learn about space?
- ❖ Did he go to space camp?
- ❖ How come Neil deGrasse Tyson never wanted to be an astronaut?
- ❖ What is the difference between an astrophysicist and an astronomer?
- ❖ How did Neil deGrasse Tyson career begin?
- ❖ When did Neil deGrasse Tyson get his first telescope?
- ❖ Why is Saturn Neil deGrasse Tyson favorite planet?
- ❖ How did Neil deGrasse Tyson meet other amateur astronomers?
- ❖ What's the hardest thing to explain about the universe?
- ❖ How are new technologies changing what we know about the universe?
- ❖ What would the world look like if we could invisible light such as radio waves?
- ❖ What does light tell us about the universe?
- ❖ How has the space program changes astrophysics?
- ❖ What questions does Neil deGrasse Tyson get asked most often?
- ❖ Are there many woman astrophysicists?

- ❖ Neil deGrasse Tyson studies the structure of our galaxy, the Milky Way. What makes this hard to do?

Day 4 Science

Activity: Science – Antarctica Penguins – How Does the Moon Influence the Tide?

Task

You will be asked to click on five different activities and follow the prompts to complete the exercises.

At the end of the activity, you should understand:

- How the Moon affects the tides on Earth
- The effect of the Moon's gravitational pull on tides
- The effect of the Moons' distance from Earth on tides
- The different types of tides

Link: <https://en.e-learningforkids.org/science/lesson/antarctica-penguins-how-does-the-moon-influence-the-tide/>

Vocabulary

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

- Gravity-** The force that pulls objects towards each other
- Tides-** The rise and fall of the water in the ocean that is caused by the gravity of the moon.
- High Tides –** The rise of the sea level caused by the gravity of the moon
- Low Tides –** The fall of the sea level by the gravity of the moon.
- Moon –** A natural satellite that orbits a planet
- Full Moon –** The moon when it is visible as a fully illuminated disk
- New Moon –** The phase of the moon occurring when it passes between the earth and the sun
- Spring Tide –** occur during full and new moons
- Neap Tide –** occur during the first and last quarter moons

Click on Exercise 1 – Impact of the moon on the tides

- Answer a series of questions based on the cartoon diagrams to find out what causes high and low tides on the Earth. Challenge your family to answer the questions as well.

Click on Exercise 2 – The Moon's effect on tides

- Answer a series of questions based on the cartoon diagrams to find out what effect the moon has on high and low tides on the Earth. Challenge your family to answer the questions as well.

Click on Exercise 3 – Different types of tides

- Read the sentences about spring and neap tides based on the cartoon diagrams. Then answer the questions about spring tides and neap tides. Challenge your family to answer the questions as well.

Click on Exercise 4 – Types of Tides

- Drag and drop the correct picture into the box with the tide type statement in the cartoon pictures. Challenge your family to do this activity as well.

Focus Questions

1. What is the significance of the placement of the moon when determining the tides on the Earth? What do you think might happen with the tides on Earth if the moon did not exist? Why?

Day 5 Science

Activity: Earth Science - The Weather

Vocabulary

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

Drastic (noun) - extreme

Crystal (noun) – a solid piece of matter that has a regular arrangement of flat surfaces and angles between the surfaces

Vapor (noun) – a gas formed from a solid or liquid

Temperature (noun) – is a comparative objective measure of hot and cold.

Precipitation (noun) - rain, snow, sleet, or hail that falls to the ground.

Climate (noun) – is a measure of the average pattern of variation in temperature, humidity, atmospheric pressure, wind, precipitation, and other meteorological variables in a given region over long periods of time.

Directions

- Read the article below and answer the questions that follow.

Earth Science: The Weather

Weather is made up of several different components. In order to understand weather, you must understand air temperature, clouds, wind and precipitation (rain and snow). Weather is never exactly the same everywhere. It's always changing, and depending on what climate you live in, weather can change **drastically** from mile to mile.

In America we use the Fahrenheit scale to measure air temperature. When the Fahrenheit scale rises, it shows us that the temperature is hotter. When the scale goes down, that means the temperature went down, getting cooler.

Low-pressure systems are associated with clouds and precipitation, while high-pressure systems are normally associated with dry weather and mostly clear skies. Clouds are made up of millions of tiny ice **crystals**. Clouds high up in the sky are very cold, and look very fluffy. Lower clouds in warmer air look sharper. From clouds, we get rain and snow. Humidity is the measure of water **vapor** in the air. On a beautiful day, there is low humidity. On a foggy day there is high humidity. On a rainy day there is 100% humidity.

Question 1: According to the passage, what is a “component?”

1. A part
2. A type of cloud
3. A type of weather
4. Understanding

Question 2: The second paragraph describes:

1. Air pressure
2. Air temperature
3. Clouds
4. Humidity

Question 3: On a very foggy day, humidity would probably reach around:

1. 20%
2. 30%
3. 10%
4. 80%

Question 4: What is the main focus of this passage?

1. Facts about weather
2. Facts about clouds
3. Precipitation
4. Humidity

Question 5: In the United States what is used to measure air temperature?

1. Celsius scale
2. Fahrenheit scale
3. Morse Scale
4. Barometric scale

Question 6: Use evidence from the text to explain why there would likely be low humidity when there is a high-pressure system in your area?

Question 7: Use details from the text to describe clouds.

Question 8: The question below is an incomplete sentence. Choose the word that best completes the sentence.

Humidity is the measure of water vapor in the air, _____ on a rainy day there is 100% humidity.

1. for
2. so
3. yet
4. but

Question 9: Answer the following questions based on the sentence below.

In the United States, people use the Fahrenheit scale to measure air temperature.

Who? _____

What? _____

Where? _____

Why? _____

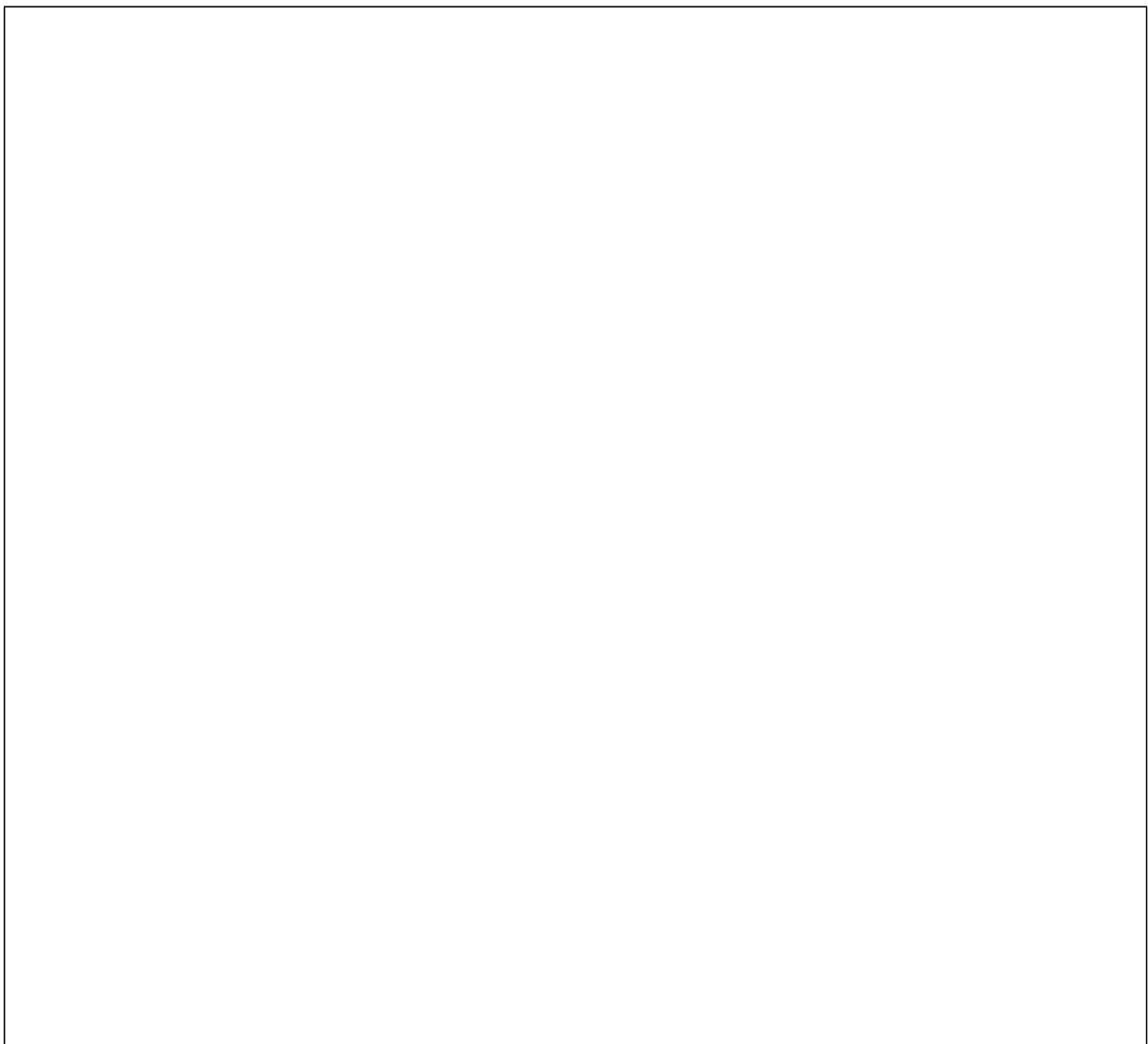
Question 10: Use the vocabulary word below in a sentence:

Vocabulary Word: vapor (noun): *a gas formed from a solid or liquid.*

What to do

Get a local newspaper and check the weather map. What symbols do you see? Draw all symbols in this space and explain what each symbol represents.

Write your answer in the box below.



Reading passage and exercises from <http://www.readworks.org>

Family Engagement Activity

Students and their families may conduct activities related to weather at home found here <http://www.sciencebuddies.org/science-fair-projects/search.shtml?v=pi&d=1,2&m=Readily&s=weather&p=1&x=matReadily,0,0>

The screenshot shows the Science Buddies website search results for the keyword "weather". The page features a navigation bar with categories like Project Ideas, Project Guide, Ask An Expert, Blog, Science Careers, Teachers, Parents, and Students. The search results are displayed in a grid format, showing several project ideas with their titles, difficulty levels, and brief descriptions. On the right side, there are search refinements for Areas of Science, Difficulty, Cost, Time, and Material Availability.

Showing results for "weather"

All Results 7 Project Ideas Project Resources Kits Fun Activities News Careers Other

Weather and Climate in Your Neighborhood
Science Fair Project Idea Beginner | MEDIUM |
Do you live in an area where the weather changes a lot from season to season throughout the year? Or do you live in a place where the weather stays pretty much the same all year long? How dynamic is the weather, and how does it compare to climate? In this experiment you can use the Internet to conduct your own investigation about how climate and weather in your local area change over time. [Read more](#)

+ More Details

How Does a Wind Meter Work?
Science Fair Project Idea Beginner | MEDIUM |
On a windy day it is hard to keep your hat on! The power of the wind can even be strong enough to power large wind turbines to make electricity! In this experiment, find out how you can make your own instrument to measure the speed and power of the wind. How does it work? [Read more](#)

+ More Details

Which Stars Can You Use for Navigation in Different Parts of the World?
Science Fair Project Idea Beginner | MEDIUM |
Do you ever wonder how pirates sailed the seven seas? The two most important things a pirate could have (besides a parrot and big hat) were a compass and an accurate watch. Ancient navigators didn't know about compasses, so how did they know where they were going? Could they have used the stars to know which way to go? [Read more](#)

+ More Details

Craters and Meteorites
Science Fair Project Idea Beginner | EASY |

Search Refinements

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Day 6 Science

Activity: Matter Is Everywhere!

Vocabulary

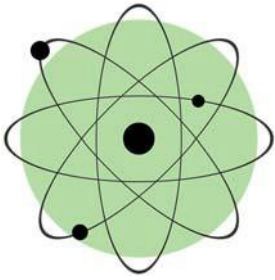
Learn the new vocabulary words below. You will use these vocabulary words in the activities today.

- Matter** (noun) – substance that occupies space and has mass, and is composed predominantly of atoms consisting of protons, neutrons, and electrons, that constitutes the observable universe, and that is interconvertible with energy
- Liquid** (noun) – a fluid that has no independent shape but has definite volume and does not expand indefinitely and that is only slightly compressible
- Gas** (noun) – a fluid that has neither independent shape nor volume but tends to expand indefinitely
- Solid** (noun) – a substance that does not flow perceptibly under moderate stress, has definite capacity for resisting forces (as compression or tension) which tend to deform it, and under ordinary conditions retains a definite size and shape
- Plasma** (noun) – a collection of charged particles containing about equal numbers of positive ions and electrons and exhibiting some properties of a gas but differing from a gas in being a good conductor of electricity and in being by a magnetic field
- Atoms** (noun) – the smallest particles of a substance that can exist by itself or be combined with other atoms to form a molecule
- Diffusion** (noun) – the process in which particles of liquids, solids, or gases intermingle as the result of their spontaneous movement caused by thermal agitation and in dissolved substances move from a region of higher to one of lower concentration
- Temperature** (noun) – a measurement that indicates how hot or cold something is
- Hardness** (noun) – the cohesion of the particles on the surface of a mineral as determined by its capacity to scratch

Directions

- Read the article below and answer the questions that follow.

Matter Is Everywhere!



Everything around us is made of matter—your clothes, the trees, even the water you drink! We divide matter into four major categories, which are called the four states of matter: liquid, gaseous, solid, and plasma. However, we will focus on the first three. Whatever the state of matter may be, all matter is made of tiny particles called atoms. These particles are too tiny to see with the naked eye; they're even too small to see with a regular microscope. If you line up a million atoms next to each other, they will be as thick as a single piece of human hair. So, we can only look at atoms through very powerful tools, one of them being the “scanning tunneling” microscope.

How Do We Know?

We can easily see liquids and solids around us, but most gases aren't visible. We can't see the air around us, but it is still made of atoms that constantly move around freely in space. How can we tell?

Take a balloon, for example. When we pump air into a balloon, it visibly inflates. That means that gaseous matter is filling the balloon and taking up space. The more air we blow into the balloon, the bigger it gets. Therefore, we can observe the way gas moves around space. In the same way, inflatable pool toys also fill with air so that they can float on water. When we fill the plastic shells with air, the toys take shape. Since air is lighter than water, the pool toys can rest on the water without sinking. And then we can enjoy a sunny day while floating in a pool!

Moving Atoms

Atoms are constantly moving. However, atoms move at different speeds within different states of matter. We have been able to determine that atoms move slower in solids than they do in liquids. That's because atoms in solids are tightly packed, and there is less space to move around freely. The atoms in gas move the fastest. Since the atoms move more freely in liquids and gases, they can undergo a process called diffusion. (Solids can diffuse as well, although it's a much longer process.) Diffusion is the movement of particles from a higher concentration to a lower concentration. That's why, when you spray perfume in a corner of a room, you will eventually smell it on the other side of the room. The atoms from the perfume diffuse through the air. Because of this diffusion, the perfume scent is spread.

Identification

We can identify materials according to a variety of properties. Scientists have determined several different measurements to help label materials. Some examples are temperature, hardness, color and length. Usually, these are used to measure solids, like rocks and minerals. However, temperature can be used to measure liquids as well. When geologists study rocks, they often use the Mohs scale of mineral hardness. This scale allows us to characterize the scratch resistance of various minerals. A diamond is described as hard because it is extremely difficult to scratch. Scientists can measure hardness with the Mohs scale and compare minerals to other minerals.

Scientists always use various methods to group materials together—that way, it's easier to study and compare them. That's another reason why we differentiate between liquids, gases, solids and plasmas!

Question 1: Everything around us is made of:

1. liquids
2. matter
3. plasma
4. gas

Question 2: Why does the author describe the balloon and inflatable pool toys filling up with air?

1. in order to explain that it is impossible to observe the way gas moves around space
2. in order to explain that air is not made of atoms that take up space
3. in order to explain that air is made of atoms that take up space even though air is invisible
4. in order to prove that these are fun objects to inflate

Question 3: Atoms move slower in solids than they do in liquids. Which evidence from the passage best supports this statement?

1. Solids, liquids, and gases can all undergo the process of diffusion.
2. Diffusion is the movement of particles from a higher concentration to a lower concentration.
3. The molecules in gas move the fastest.
4. Atoms in solids are more tightly packed than atoms in liquids, so there is less space to move around freely in solids.

Question 4: Based on the passage, the corner where a perfume is initially sprayed has

1. no concentration of perfume particles
2. the same concentration of perfume particles as the rest of the room
3. a lower concentration of perfume particles than the other corners of the room
4. a higher concentration of perfume particles than the other corners of the room

Question 5: What is this passage mainly about?

1. matter and the properties it has in certain states
2. the process of diffusion
3. the different measurement scientists use to label materials
4. the inflation of balloons and pool toys

Question 6: Read the following sentences from the passage: “Whatever the state of matter may be, all matter is made of tiny particles called atoms. These particles are too tiny to see with the naked eye; they’re even too small to see with a regular microscope. If you line up a million atoms next to each other, they will be as thick as a single piece of human hair.”

The author uses the example of “a single piece of human hair” to illustrate

1. how atoms can be seen with a regular microscope
2. how tiny atoms actually are
3. how hairy atoms actually are
4. how much they look like hair

Question 7: Choose the answer that best completes the sentence below.

Scientists group materials together _____ it is easier to compare and study them that way.

1. however
2. but
3. although
4. because

Question 8: Explain why atoms move at different speeds depending on whether they are in liquids or solids.

Question 9: What is diffusion?

Question 10: Explain, citing evidence from the article, whether smoke filling up a room is diffusion or not.

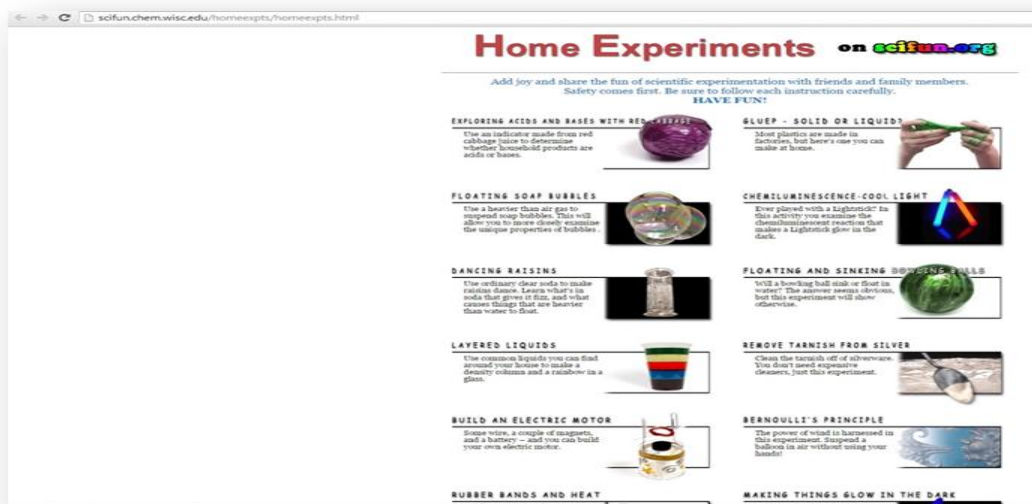
Reading and exercises from <http://www.readworks.org>

Family Engagement Suggested Activities

Students and families can explore matter by conducting a wide variety of activities found here

1. Fun Science Activities for you and your family – http://www.sciencebuddies.org/science-fair-projects/parent_resources.shtml#scienceactivities
Anytime can be the right time to explore science. These fun science activities take our favorite experiments and demonstrations and let you explore them at home! Materials are easy to find, most activities take an hour or less, and the science learning is limitless.
2. Home Experiments for the Whole Family - <http://scifun.chem.wisc.edu/homeexpts/homeexpts.html>

Enjoy a variety of explorations – from floating soap bubbles to making raisins dance. The activities found here are both entertaining and educational. Children and adults can learn about the nature of materials together.



Day 7 Science

Activity: Carb Boat- Plant Life Cycle

Task

Help Carla take care of her plants in her greenhouse.

Click on <https://en.e-learningforkids.org/science/lesson/crab-boat-plant-life-cycle/>

At the end of this lesson, the student should be able to:

- Know why plants reproduce.
- Know the different types of plant reproduction
- Know spore and seed life cycle.

Exercise 1 – Why do plants reproduce?

Look at a few statements about plant reproduction and figure out which are true and which are false.

Exercise 2 – Seed or spore?

Put the plants in the right place.

Exercise 3 – Seed and spore life cycles

What do you know about various stages of plant life cycles? Can you help identify cycles? Can you help identify stages for both seeds and spores?

Exercise 4 – Some facts about plant reproduction

Help Carla give a report about plant reproduction to the upper grades at her school. It's a great honor. Carla is a little nervous! Help her review some of the facts about plant reproduction.

Day 8 Science

Activity: Kaap de Goede Hoop – Why do changes in state take place?

Task

Zander is on a camping trip. What to join him?

Click on <https://en.e-learningforkids.org/science/lesson/kaap-de-goede-hoop-why-do-changes-in-state-take-place/>

At the end of this lesson, the student should be able to:

- Identify the boiling and freezing points of water
- Differentiate between evaporation and condensation
- Identify the stages of the water cycle

Exercise 1 – Boiling or melting?

Find out at what temperature water boils. When does it melt?

Exercise 2 – What happens to the water?

What happens if you leave the pots on the campfire overnight. Can you help figure it out?

Exercise 3 – Heating up or cooling down?

Can you help zander figure out what happens in each situation?

Exercise 4 – The rain cycle.

It rained this afternoon. Have you ever wondered how rain is formed and why it falls from the sky? Zander has. He knows that the hot sun can evaporate water. When that happens the water vapor rises to the sky. There it cools and falls to the ground as rain. Do you think you can fill in the rain cycle for him?

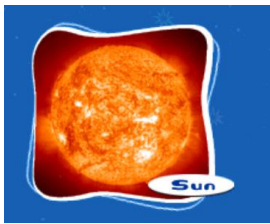
Day 9 Science

Activity: Solar System Scavenger Hunt

Task

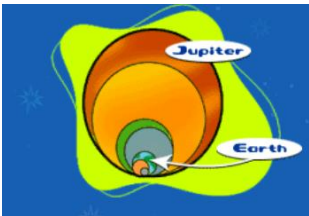
Size up the planets with a model scavenger hunt.

The Earth is a large, round ball. It just looks flat because you can only see a tiny part of it at one time. The Sun and the planets are also round because when they formed, gravity pulled all their parts as close to their centers as possible.



Though they're all round, planets are NOT all the same size. Mercury would be as big as an orange, and Jupiter would be the size of a small car.

To size up the planets for yourself, create a scale model of the solar system using objects from around your home!



Create a Scale Model of the Solar System

What if you could shrink the planets so they fit on a kitchen table in front of you? The table below shows how big they would be.

Use the chart below to make a scale model of the solar system. A scale model is a smaller or larger version of something. It lets you compare the sizes of objects you can't see up close, or that are too far apart to see together.

Start Hunting!

Look for objects around your home that fit the scaled-down sizes of the planets and the Sun. All you need is a ruler and your imagination!

Hint: Hunt all around the house: in the kitchen, the tool closet, the storage room. You can use anything from peppercorns to fruit to a basketball. Remember, everything should be round like the planets.



Planet	Scale Model in Inches
Mercury	$5/16$
Venus	$3/4$
Earth	$13/16$
Mars	$7/16$
Jupiter	9
Saturn	$7 \frac{1}{2}$
Uranus	$3 \frac{3}{16}$
Neptune	$3 \frac{1}{8}$
Pluto	$1/8$
Sun	87

Arrange your model!

- ❖ Can you put your "planets" in order by size? How about by distance from the sun?
- ❖ Test your knowledge of the planets using your scale model.
- ❖ See if your friends can pick out "Earth" from your collection!

This activity and images are provided courtesy of the American Museum of Natural History