

1st Grade Science

for Utah SEEd Standards

1st Grade

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Utah State Board of Education OER

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We especially wish to thank the amazing Utah science teachers whose collaborative efforts made the book possible. Thank you for your commitment to science education and Utah students!

Students as Scientists

What does science look and feel like?

If you're reading this book, either as a student or a teacher, you're going to be digging into the "practice" of science. Probably, someone, somewhere, has made you think about this before, and so you've probably already had a chance to imagine the possibilities. Who do you picture doing science? What do they look like? What are they doing?

Often when we ask people to imagine this, they draw or describe people with lab coats, people with crazy hair, beakers and flasks of weird looking liquids that are bubbling and frothing. Maybe there's even an explosion. Let's be honest: Some scientists do look like this, or they look like other stereotypes: people readied with their pocket protectors and calculators, figuring out how to launch a rocket into orbit. Or maybe what comes to mind is a list of steps that you might have to check off for your science fair project to be judged; or, maybe a graph or data table with lots of numbers comes to mind.

So let's start over. When you imagine graphs and tables, lab coats and calculators, is that what you love? If this describes you, that's great. But if it doesn't, and that's probably true for many of us, then go ahead and dump that image of science. It's useless because it isn't you. Instead, picture yourself as a maker and doer of science. The fact is, we need scientists and citizens like you, whoever you are, because we need all of the ideas, perspectives, and creative thinkers. This includes you.

Scientists wander in the woods. They dig in the dirt and chip at rocks. They peer through microscopes. They read. They play with tubes and pipes in the aisles of a hardware store to see what kinds of sounds they can make with them. They daydream and imagine. They count and measure and predict. They stare at the rock faces in the mountains and imagine how those came to be. They dance. They draw and write and write and write some more.

Scientists — and this includes all of us who do, use, apply, or think about science — don't fit a certain stereotype. What really sets us apart as humans is not just that we know and do things, but that we wonder and make sense of our world. We do this in many ways, through painting, religion, music, culture, poetry, and, most especially, science. Science isn't just a method or a collection of things we know. It's a uniquely human practice of wondering about and creating explanations for the natural world around us. This ranges from the most fundamental building blocks of all matter to the widest expanse of space that contains it all. If you've ever wondered "When did time start?", or "What is the

smallest thing?”, or even just “What is color?”, or so many other endless questions then you’re already thinking with a scientific mind. Of course you are; you’re human, after all.

But here is where we really have to be clear. Science isn’t just questions and explanations. Science is about a sense of wondering and the sense-making itself. We have to wonder and then really dig into the details of our surroundings. We have to get our hands dirty. Here’s a good example: two young scientists under the presence of the Courthouse Towers in Arches National Park. We can be sure that they spent some amount of time in awe of the giant sandstone walls, but here in this photo they’re enthralled with the sand that’s just been re-washed by recent rain. There’s this giant formation of sandstone looming above these kids in the desert, and they’re happily playing in the sand. This is ridiculous. Or is it?



How did that sand get there? Where did it come from? Did the sand come from the rock or does the rock come from sand? And how would you know? How do you tell this story?

Look. There's a puddle. How often is there a puddle in the desert? The sand is wet and fine; and it makes swirling, layered patterns on the solid stone. There are pits and pockets in the rock, like the one that these two scientists are sitting in, and the gritty sand and the cold water accumulate there. And then you might start to wonder: Does the sand fill in the hole to form more rock, or is the hole worn away because it became sand? And then you might wonder more about the giant formation in the background: It has the same colors as the sand, so has this been built up or is it being worn down? And if it's being built up by sand, how does it all get put together; and if it's being worn away then why does it make the patterns that we see in the rock? Why? How long? What next?

Just as there is science to be found in a puddle or a pit or a simple rock formation, there's science in a soap bubble, in a worm, in the spin of a dancer and in the structure of a bridge. But this thing we call "science" is only there if you're paying attention, asking questions, and imagining possibilities. You have to make the science by being the person who gathers information and evidence, who organizes and reasons with this, and who communicates it to others. Most of all, you get to wonder. Throughout all of the rest of this book and all of the rest of the science that you will ever do, wonder should be at the heart of it all. Whether you're a student or a teacher, this wonder is what will bring the sense-making of science to life and make it your own.

Adam Johnston
Weber State University

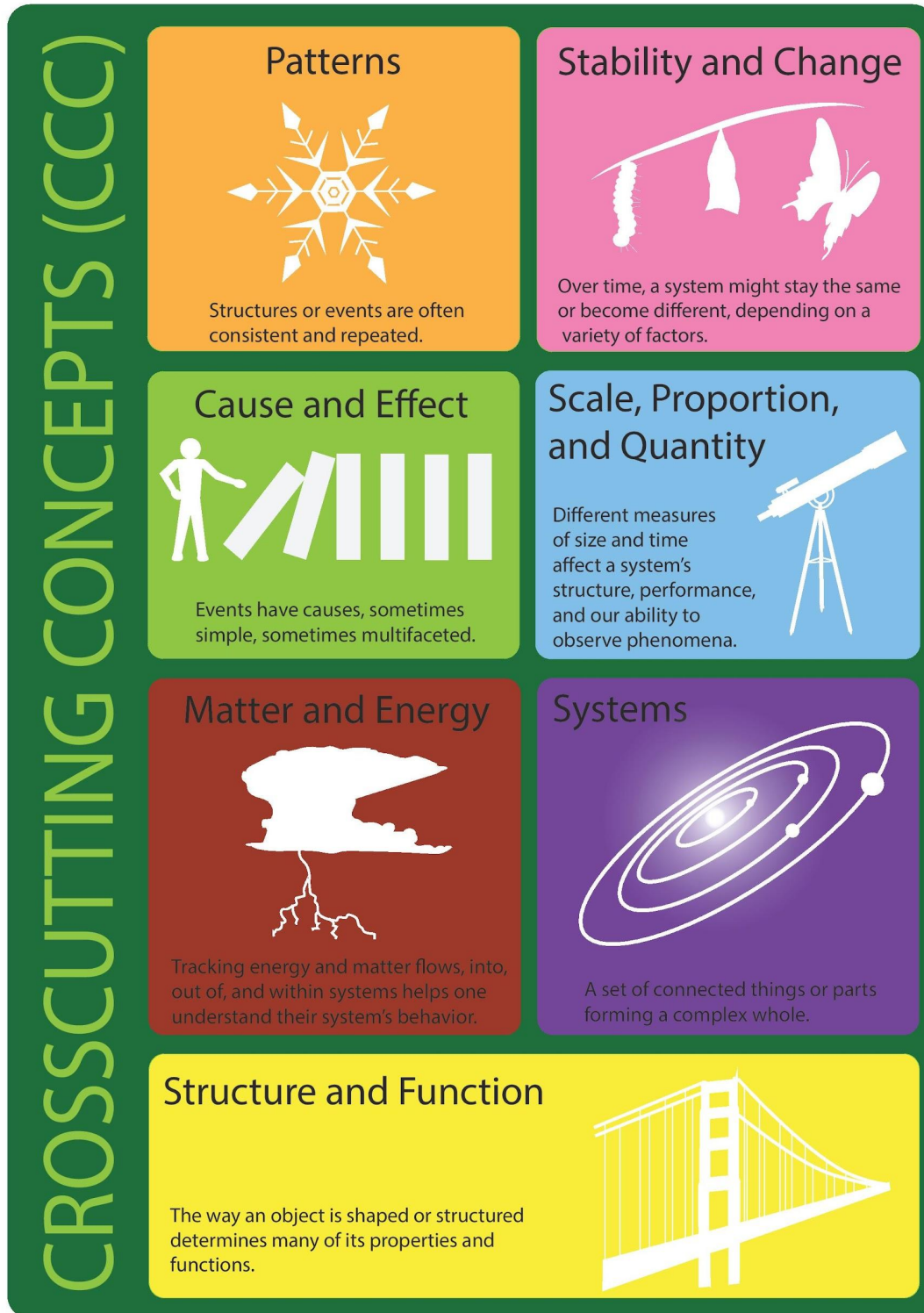
Science and Engineering Practices

Science and Engineering Practices are what scientists do to investigate and explore natural phenomena



Crosscutting Concepts

Crosscutting Concepts are the tools that scientists use to make sense of natural phenomena.



Created by Susan Larson

What is involved in Engineering Design?

Engineering is a creative process where each new version of a design is tested and then modified, based on what has been learned up to that point. This process includes a number of components:

1. Identifying the problem and defining criteria and constraints.
2. Generating ideas for how to solve the problem. Engineers use research, brainstorming, and collaboration with others to come up with ideas for solutions and designs.
3. Use criteria and constraints to evaluate possible design solutions to identify the one(s) that best address these parameters for the problem in context
4. Build and test the prototypes. Using data collected, the engineer analyzes how well prototypes meet the given criteria and constraints.
5. Suggest or make improvements to prototypes to optimize the design.

In the Science with Engineering Education (SEEd) Standards, specific engineering standards generally involve two types of tasks:

1. If the standard includes the idea of designing, then the design process will contain components of defining the problem (along with identifying the criteria and constraints), developing many possible solutions, and optimizing a solution (e.g., determining a best solution for the situation based on the criteria and constraints, testing the solution, refining the solution).
2. If the standard includes the idea of evaluating, then the design process will contain components of defining the problem (along with identifying the criteria and constraints) and optimizing a solution. The idea of developing many possible solutions is not included because various solutions will be provided. The idea of evaluating then means determining a best solution from the provided solutions for the situation based on meeting the criteria and constraints requirements.

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CHAPTER 1

Strand 1: Seasons and Space Patterns

Chapter Outline

- 1.1 Movement (1.1.1)
- 1.2 Time of Year (1.1.2)
- 1.3 Daylight Patterns (1.1.3)



*Four seasons in Japan by Masakazu Matsumoto,
<https://flic.kr/p/avmYzR>, CC-BY*

There are patterns in how the Sun, Moon, and Stars appear to move across the sky. These patterns look different depending on where you are on the earth and what time of year it is. The patterns we observe in winter look a little different than the patterns we observe in summer.

1.1 Movement (1.1.1)

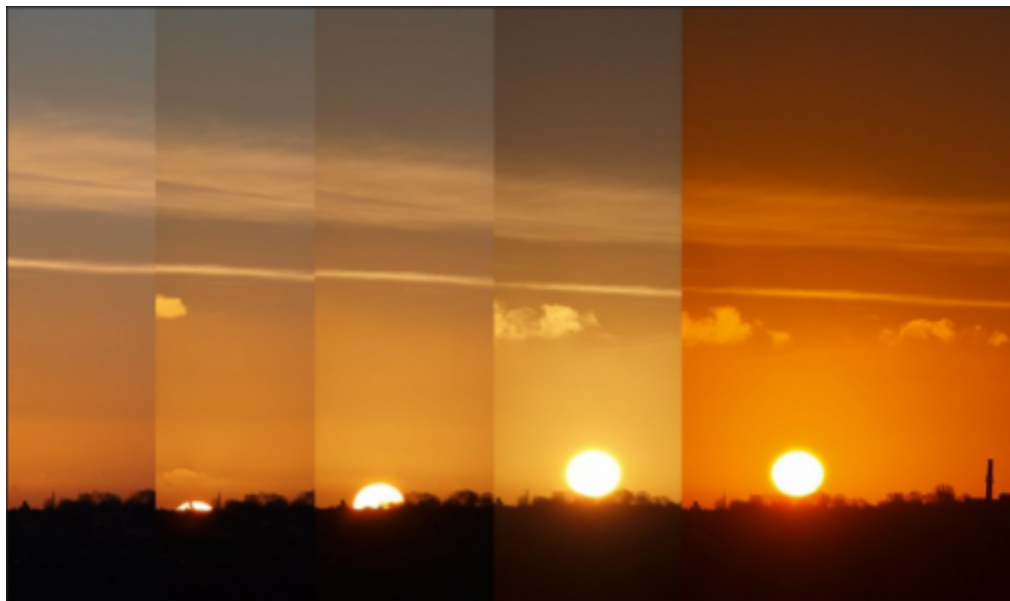
Phenomenon

Blanca took pictures of the sun from her front porch as she was getting ready in the morning. The first one was at 6:05 a.m. The second at 6:10 a.m. The third at 6:15 a.m. The fourth at 6:20 a.m. and the last at 6:25 a.m.



Image by juergen-pollé, pixabay.com, CC0

She put all the pictures together and thinks that the sun appears to be moving in the sky.



Movement of the Sun by Chloe Blanchfield, <https://flic.kr/p/9jhLrr>, CC-BY-NC-ND

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

Is there a pattern that Blanca can observe in her pictures?

What do you think Blanca would have seen if she took another picture at 6:30 a.m.?

Where do you think the sun will appear in the sky if Blanca took lots of pictures throughout the day?

1.1.1 Movement

Obtain, evaluate, and communicate information about the movement of the Sun, Moon, and stars to describe predictable patterns. Examples of patterns could include how the Sun and Moon appear to rise in one part of the sky, move across the sky, and set; or how stars, other than the Sun, are visible at night but not during the day. **(ESS1.A)**



In this section, identify patterns in the movements of the Sun, Moon, and stars during the day and night.

Movement in the Sun, Moon, and Stars

Every morning the sky goes from dark to light. Or from night to day.



Image by susnpics, pixabay.com, CC0

The sun slowly appears to move higher into the sky providing the earth with more light. This is called sunrise.



Sunrise by jespahjoy, <https://flic.kr/p/7VkwK1>, CC-BY

Even if there are clouds or it is a stormy day the sun still rises and provides the light for the day.



Snowing in March by Ashton Emanuel, <https://flic.kr/p/m3VXiR>, CC-BY-NC-ND

The movement of the sun has a pattern. The sun rises in the east in the morning.

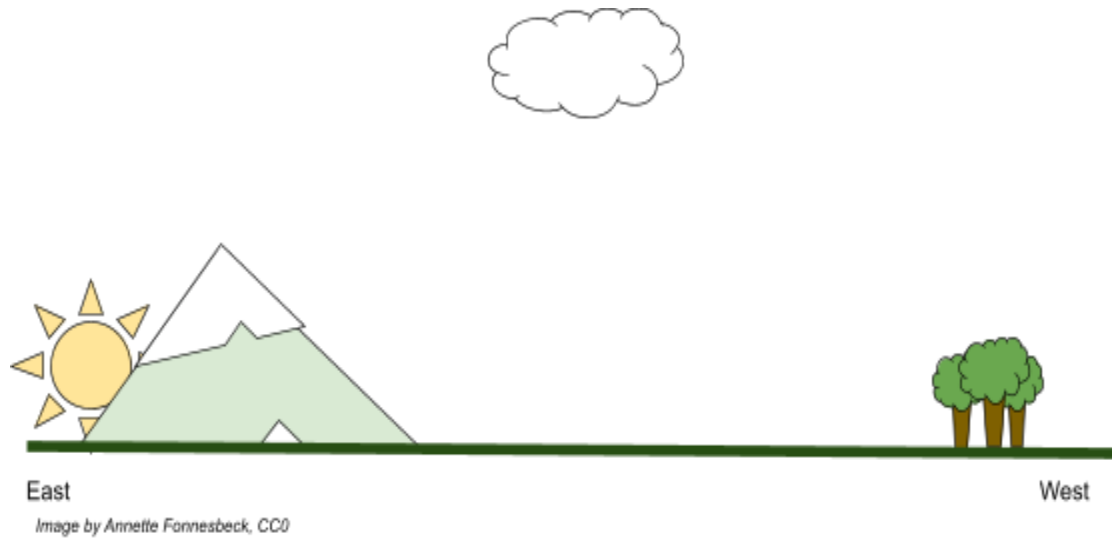
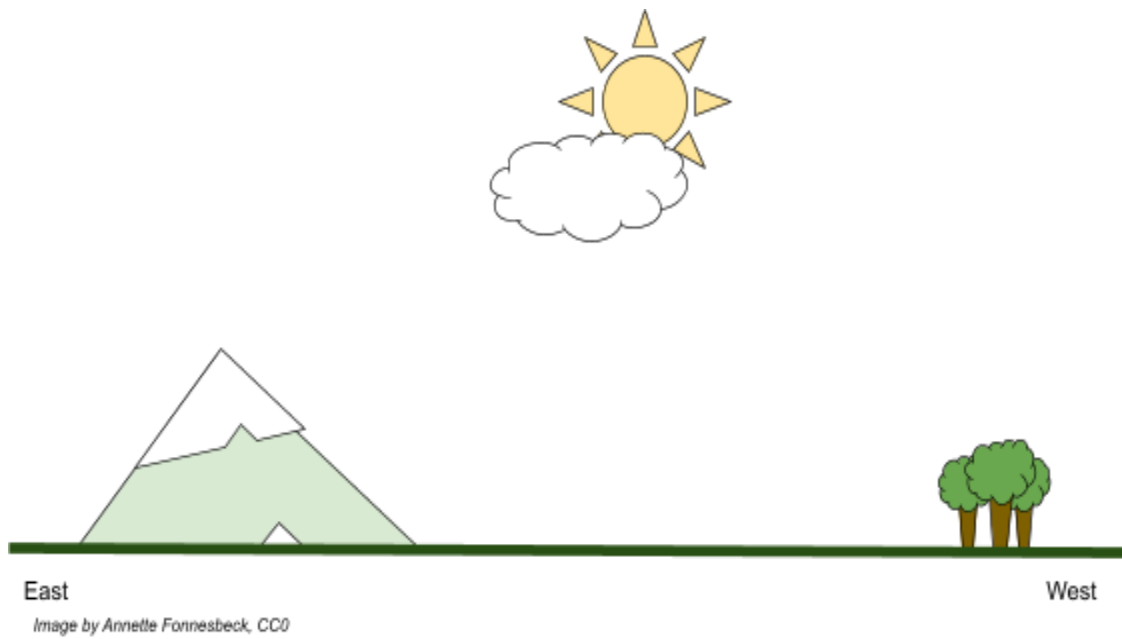


Image by Myriam Zilles (Myriams-Fotos), Pixabay.com, CC0

The sun then moves high in the sky during the middle of the day.



New Year's Day 2015 by Daniel Zimmerman, <https://flic.kr/p/qnAwk2>, CC-BY

Finally, the sun always goes down in the west.

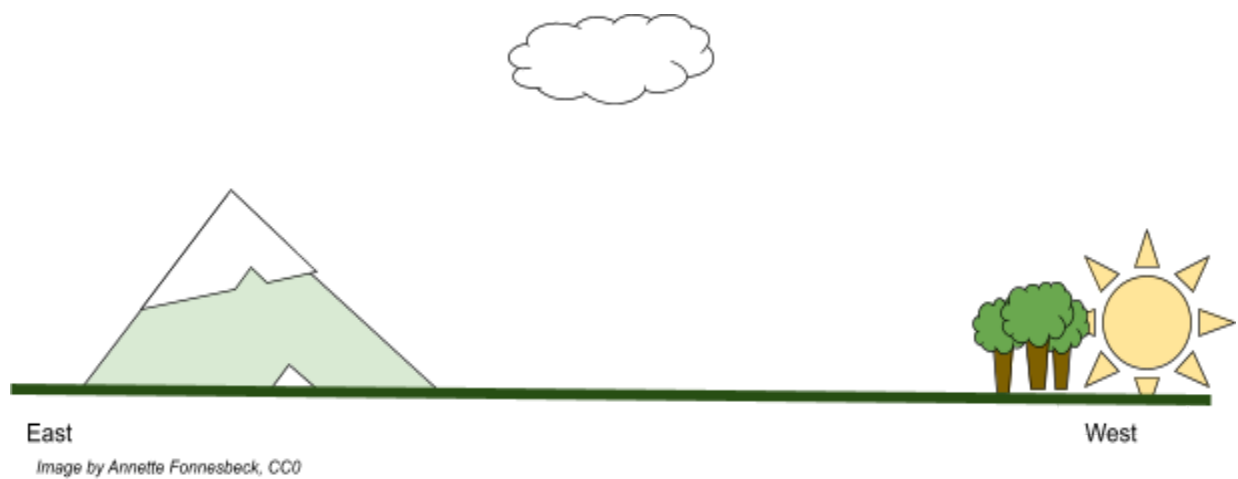


Image by karen1, pixabay.com, CC0

When the sun goes down, the day turns into night.
This time between day and night is called sunset.

When the sun has gone down and no longer can be

seen in the sky, it is called night. At night, we can see the stars.

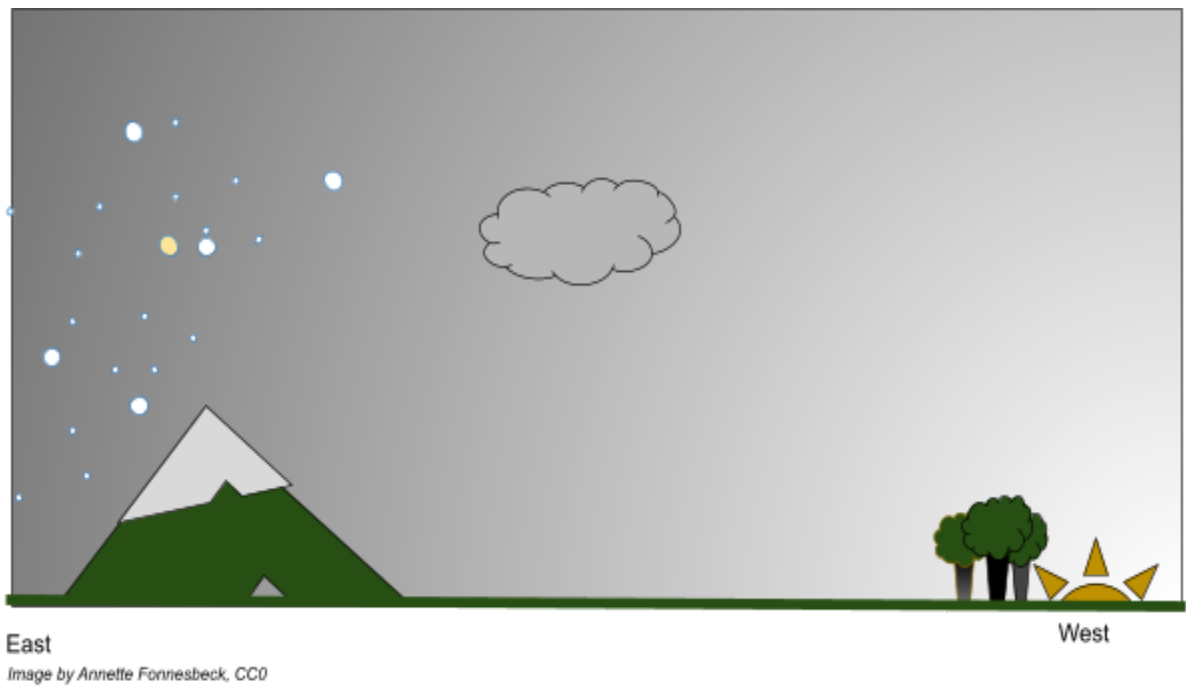


Image by Free-Photos, Pixabay.com, CC0

Stars appear to move across the sky too. They follow the same pattern as the sun.

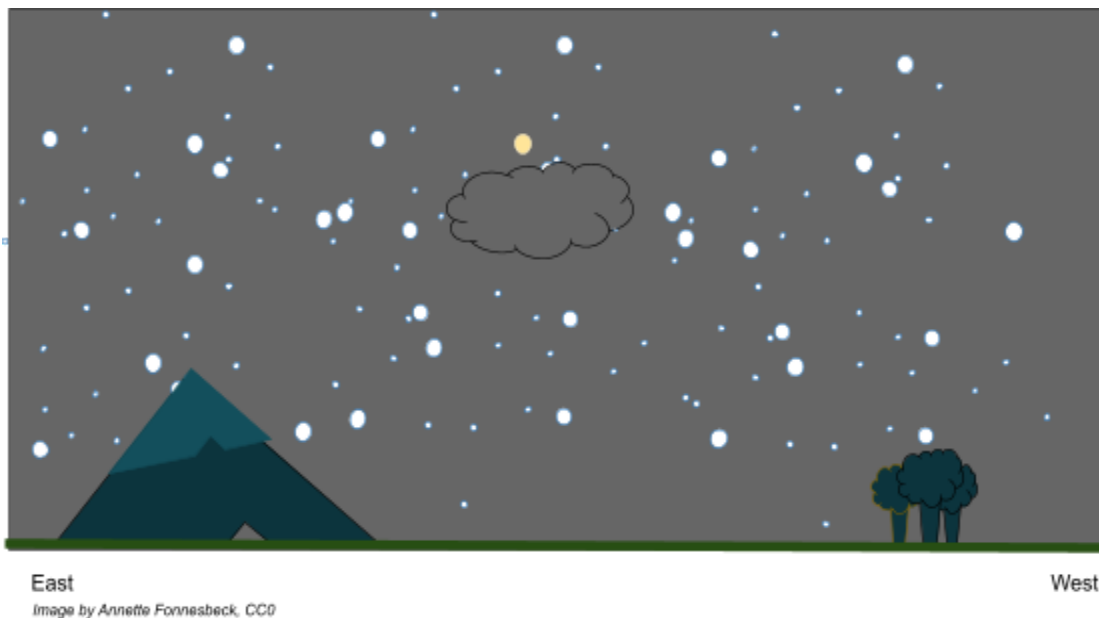
Can you remember what pattern the sun followed as it moved throughout the day?

Stars move from east to west in the same pattern as the sun. There are so many stars in the night sky it is sometimes hard to follow a star and see this pattern, but if you can pick out one star that looks different, or a group of stars that look different, you can watch the movement overnight.

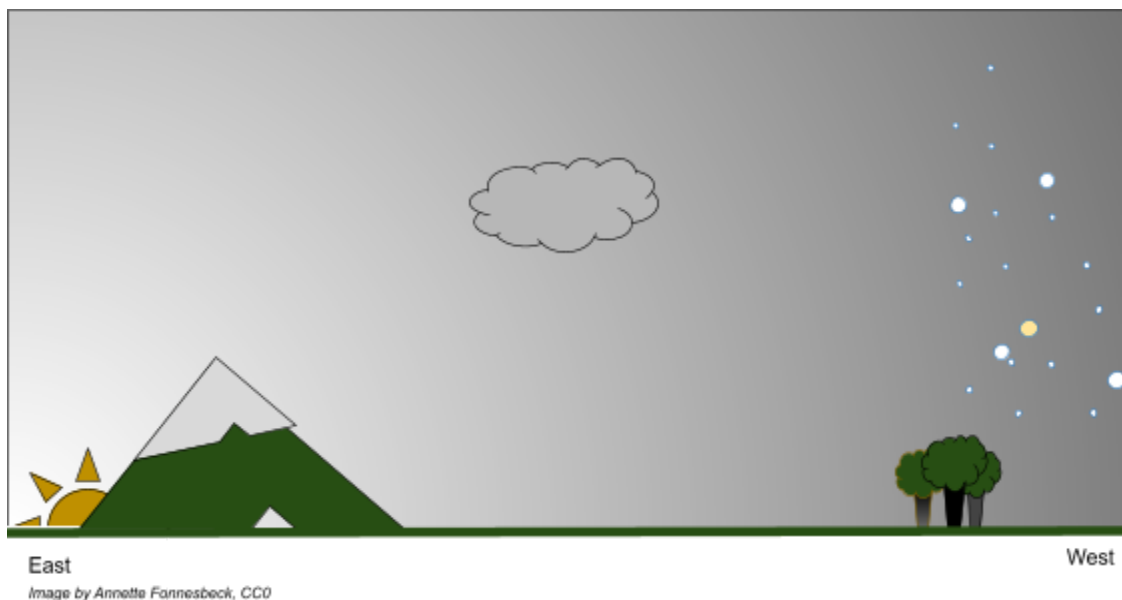


Is there a star that you might be able to follow through the pictures?

If you follow the yellow (or gray) star, you can see that it moved from lower in the east sky to higher in the middle of the sky. This happens slowly throughout the night.



When the night is almost over the yellow (or gray) star goes down in the west. You won't be able to see it during the day because the sun is too bright. Don't worry, you will be able to see it again in the east part of the sky when the sun sets and it is night time again.



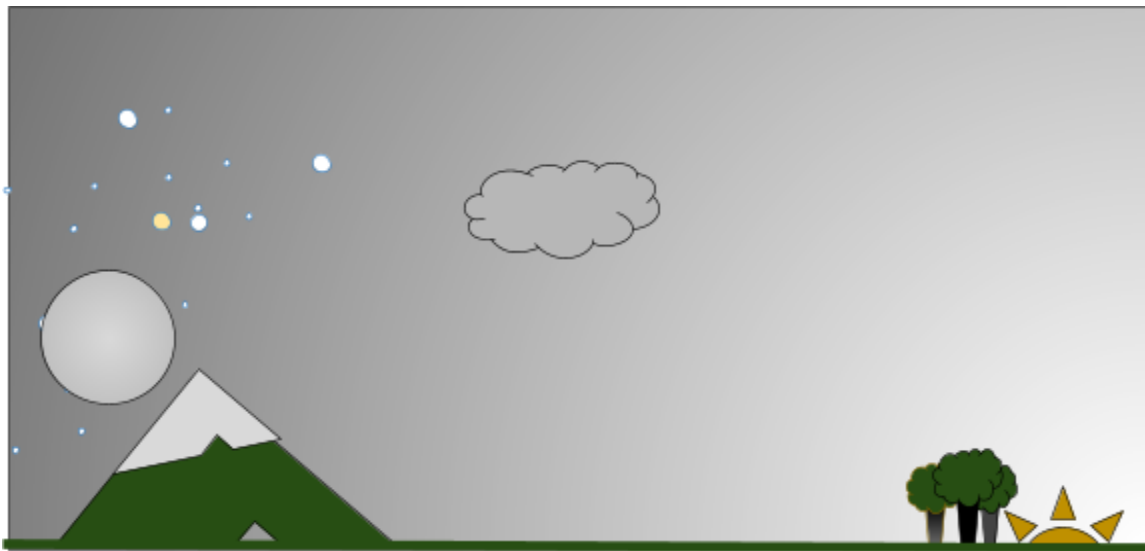
The stars are always there.

Sometimes at night we can also see the moon.



*Moon rise among the trees 24-01-2013 by PsJeremy,
<https://flic.kr/p/dPayni>, CC-BY*

The moon will also follow the same pattern as the sun and rise in the east and set in the west.



East

West

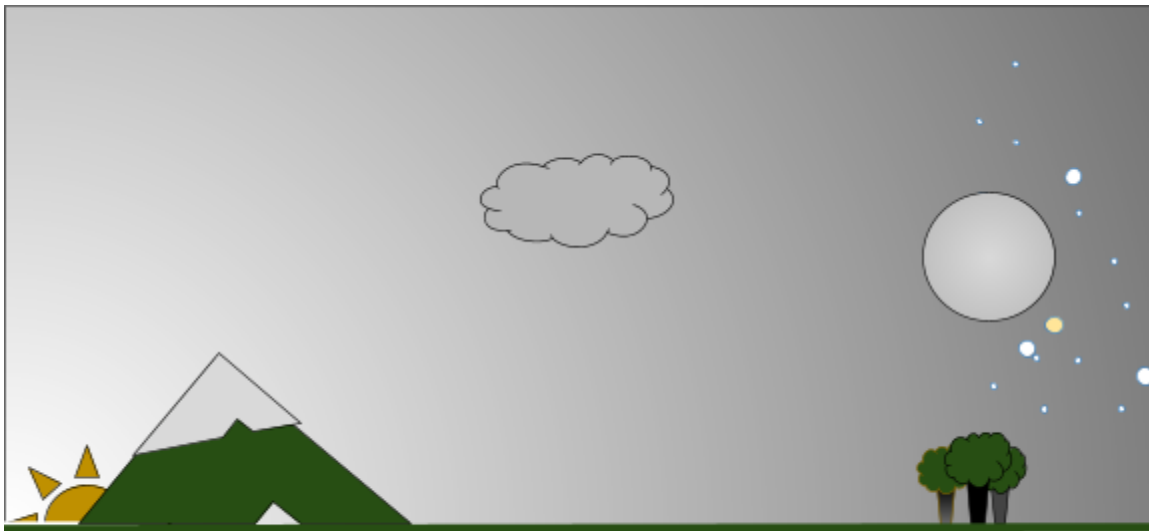
Image by Annette Fannesbeck, CC0



East

Image by Annette Fannesbeck, CC0

West



East

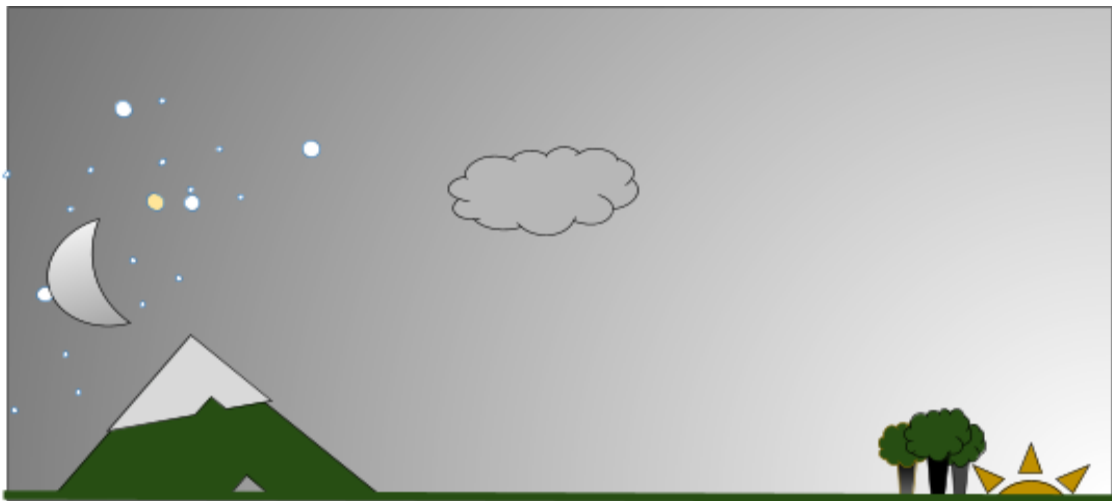
Image by Annette Fannesbeck, CC0

West

The moon sometimes appears to look differently. Sometimes it is a full circle and sometimes it is just a sliver of a circle. No matter how it looks it will always rise in the east and set in the west.



Pixabay.com, CC0



East

Image by Annette Fønnesbeck, CC0

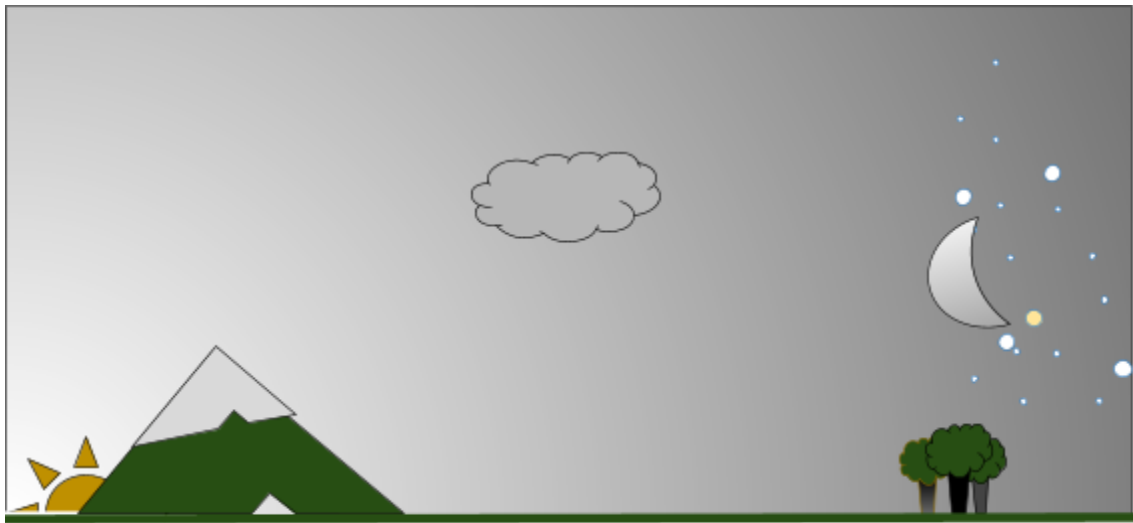
West



East

Image by Annette Fønnesbeck, CC0

West

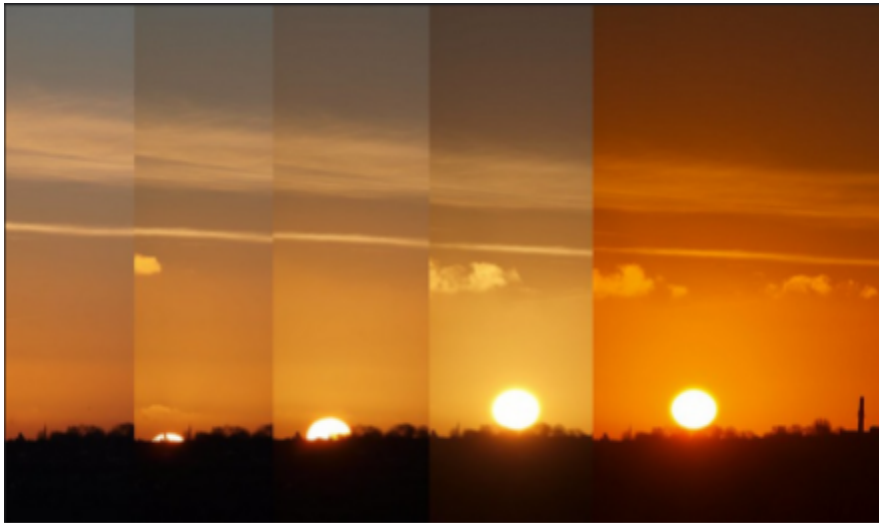


East

Image by Annette Fönnesebeck, CC0

West

Putting It Together



Movement of the Sun by Chloe Blanchfield, <https://flic.kr/p/9jhLrr>, CC-BY-NC-ND

In Blanca's pictures the sun appears to move.

Focus Questions

Does the sun move throughout the day?

What pattern do the sun, stars, and moon follow?

Final Task

Add to Bianca's set of pictures. Where would the sun be if she took a picture at 6:30 a.m., 5 minutes after her last picture? Draw the sun in the last box.



Movement of the Sun by Chloe Blanchfield, <https://flic.kr/p/9jhLrr>, CC-BY-NC-ND

1.2 Time of Year (1.1.2)

Phenomenon

Denzel noticed that sometimes during the year it is dark and sometimes it is light when he is waiting for the bus in the morning.



Image by ebpilgrim, Pixabay.com, CC0

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

Have you noticed something similar when you are waiting for the bus?

Is there a pattern to when Denzel waits in the dark and when he waits in the light for the bus in the morning?

1.1.2 Time of Year

Obtain, evaluate, and communicate information about the patterns observed at different times of the year to relate the amount of daylight to the time of year. Emphasize the variation in daylight patterns at different times of the day and different times of the year. Examples could include varying locations and regions throughout the state, country, and world.



In this section, identify the patterns of the amount of daylight observed at different times of year and if the patterns are the same everywhere.

Changing Amounts of Daylight

During the year the seasons change. There are different seasons in different parts of the world.

At the poles there are two seasons - Summer and Winter. The poles are on the opposite sides of the earth and are considered to be the coldest places on earth. At the north pole you will find polar bears and at the south pole you will find penguins.



Image by Annette Fornessbeck, CC0

At the equator, or the middle of the earth, there are also only two seasons - wet and dry.

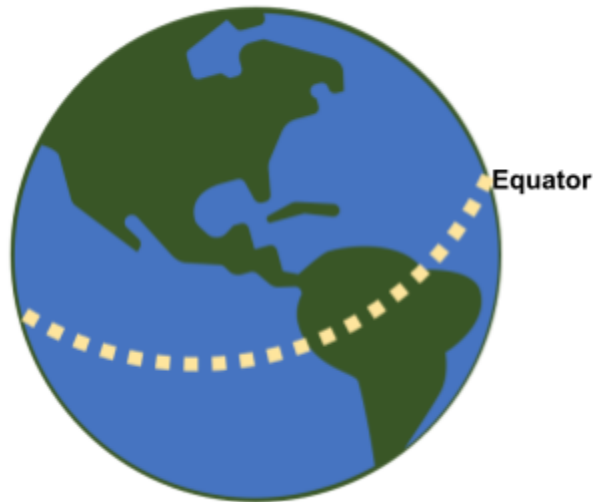


Image by Annette Fennesbeck, CC0

In between the Equator and the poles there are four seasons - winter, spring, summer, and fall.



The Four Seasons by George Hoden, PublicDomainPictures.net, CC0

In Utah, we are between the North Pole and Equator and we experience four seasons.



Image by Annette Fannesbeck, CC0

The seasons change because the amount of sunlight a location receives.

Can you see a pattern between the amount of daylight in the graph and the changes in Utah's seasons?

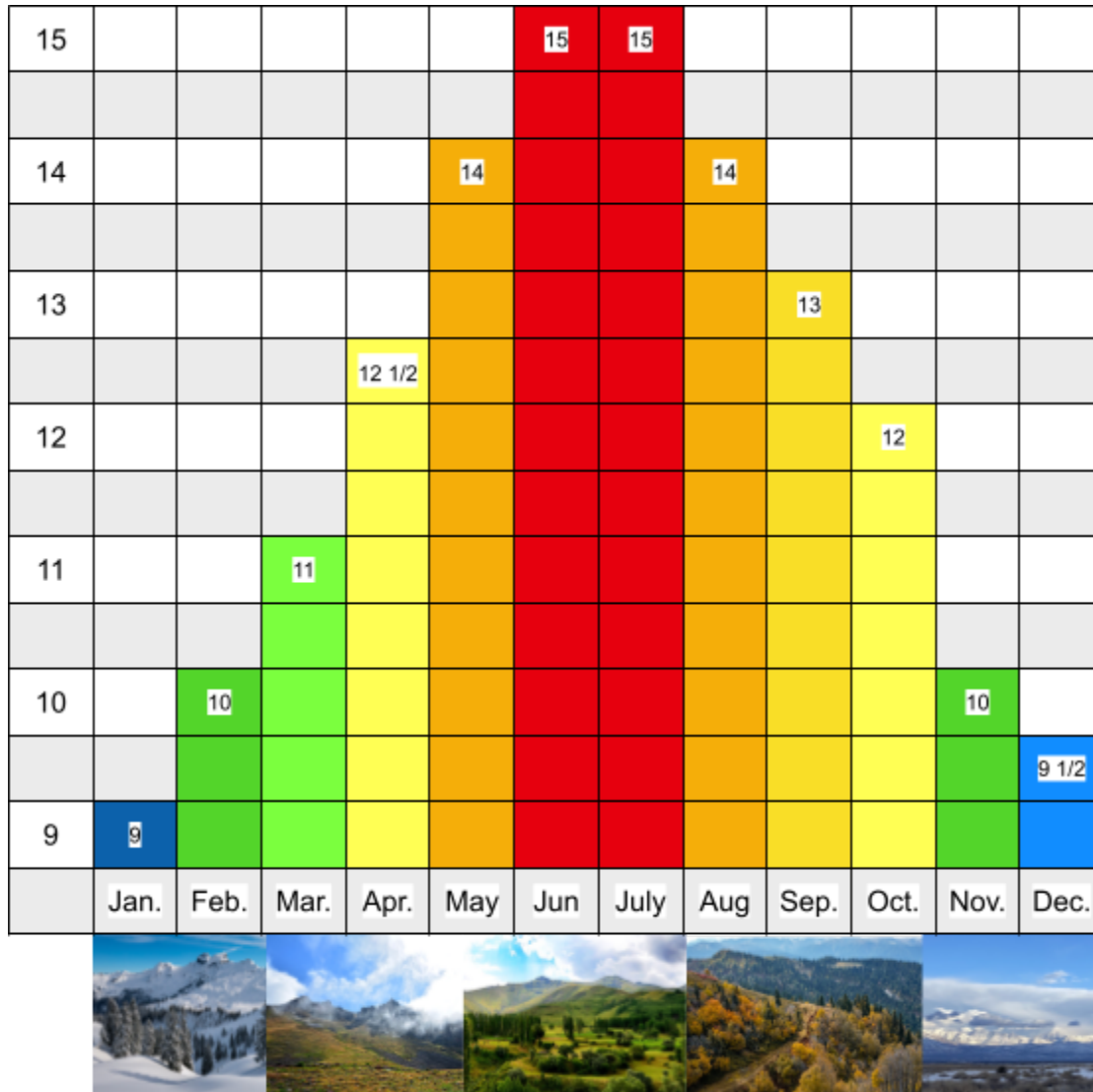


Chart by Natalie Spadafora, CC0; Images from Pixabay.com, CC0

In the summer, the days get longer and the nights get shorter. There is more daylight and the weather is warmer.



Image by StockSnap, Pixabay.com, CC0

In the winter, the days get shorter and the nights get longer. There is less daylight and the weather is colder.



Image by benralexander, Pixabay.com, CC0

Can you see a pattern between the amount of daylight in the graph and the changes in seasons in this graph?

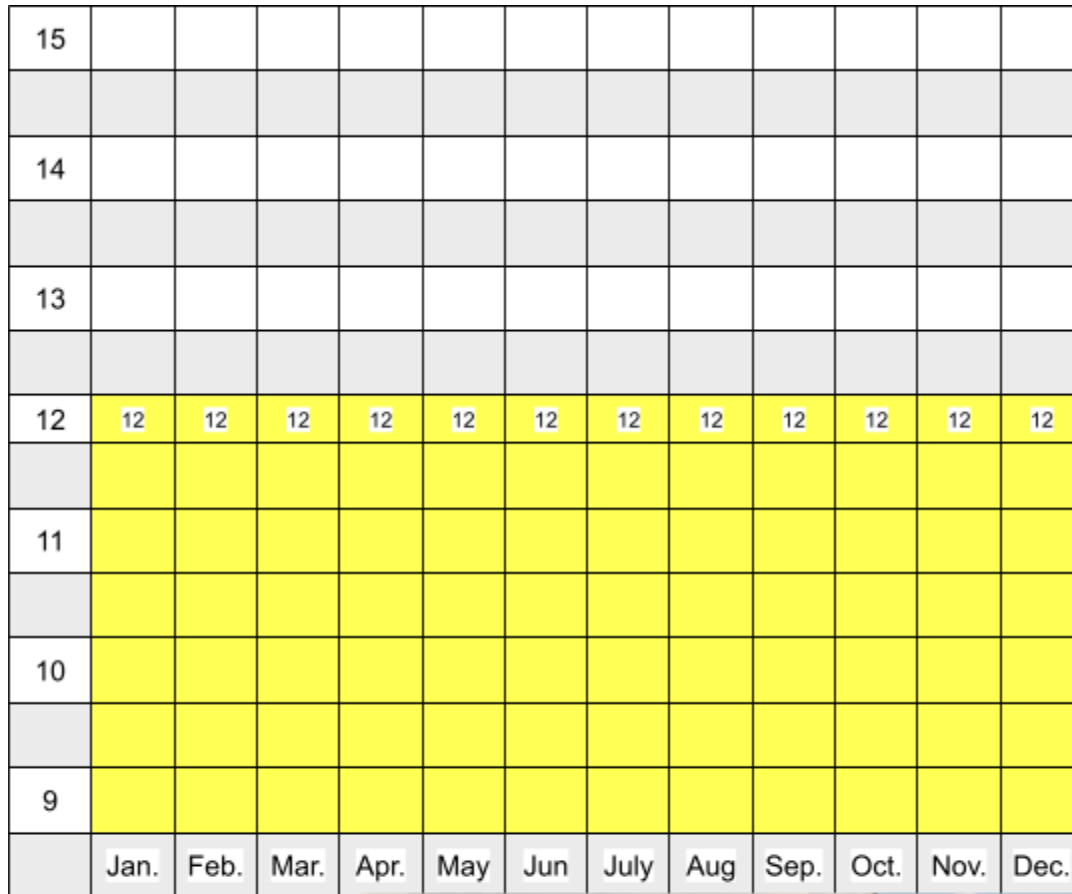


Chart by Natalie Spadafora, CC0; Images from Pixabay.com, CC0

At the equator, the daylight stays the same. The weather has almost equal times of rain and times when it is dry, but the temperature stays about the same.



Image by DEZALB, Pixabay.com, CC0

Putting It Together

Denzel noticed that sometimes during the year it is dark and sometimes it is light when he is waiting for the bus in the morning.



Image by ebpilgrim, Pixabay.com, CC0

Focus Questions

What would you tell Denzel to help him understand why sometimes he waits for the bus in the dark and other times he doesn't?

If Denzel is waiting for the bus and it is dark in the morning, what season do you think it is?

Final Task

Which kids would have had more daylight to play on the day their picture was taken? Circle their picture.



By cuncon, Pixabay.com, CC0



By dep377, Pixabay.com, CC0

1.3 Daylight Patterns (1.1.3)

Authentic Situation



Image by piviso, Pixabay.com, CC0

I was camping in the mountains and didn't have my watch. I needed to know approximately what time of day it was (morning, afternoon, or evening). I needed a way to measure where the sun was in the sky to help me guess the time.

Observations & Wonderings

What is the problem in this situation?

What are possible criteria (positive outcomes) to this situation?

What are constraints (limitations) with this situation?

Focus Questions

What patterns help us observe daylight?

What could you design to measure or track the pattern?

1.1.3 Daylight Patterns

Design a device that measures the varying patterns of daylight. *Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs.* Examples could include sundials for telling the time or tracking the movement of shadows throughout the day.



In this section, design a device that measures the varying patterns of daylight.

Shadows

When there is daylight, the sun is visible in the sky. This is because the sun is a source of light.



Image by Alexas_Fotos, Pixabay.com, CC0

All light travels in straight waves away from its source, we call these rays. When they travel from the sun we can call them sun rays. Sometimes we can see sun rays, but most of the time we don't.



Image by marcelkessler, Pixabay.com, CC0

As light travels to the earth's surface, some of the sun rays will be blocked and create shadows. Our bodies block light and we have a shadow.



<https://www.ck12.org/book/CK-12-First-Grade-Science/section/1.0/>

A tree blocks sunlight and creates a shadow.



By Simy27, pixabay.com, CC0

There are millions of other things that will block light and create a shadow. Can you think of some?



shadow by 613NN, <https://flic.kr/p/6HrAq8>, CC-BY-NC

Where a shadow appears depends on where the light is coming from. That is why shadows change directions during the day.



Happiness is... blue skies #2 by Rachel Kramer, <https://flic.kr/p/7Eajoz>, CC-BY

When the sun is rising, shadows will be long. When the sun is setting, shadows will be long.



Shadow by Kedra Miller, <https://flic.kr/p/apBaNW>, CC-BY-ND

If the Sun is above an object, the shadow will be short.



Image by Mylene2401, Pixabay.com, CC0

A shadow is always on the opposite side of the object from the light source.



Image by EvgeniT, Pixabay.com, CC0

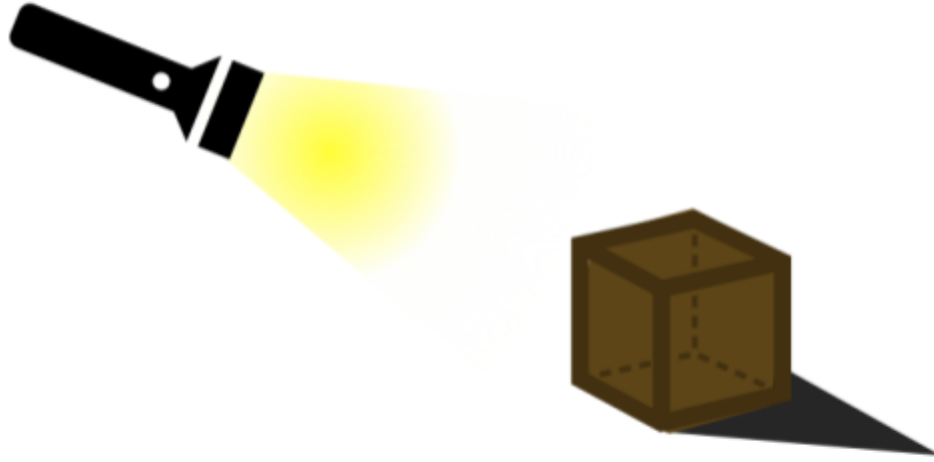


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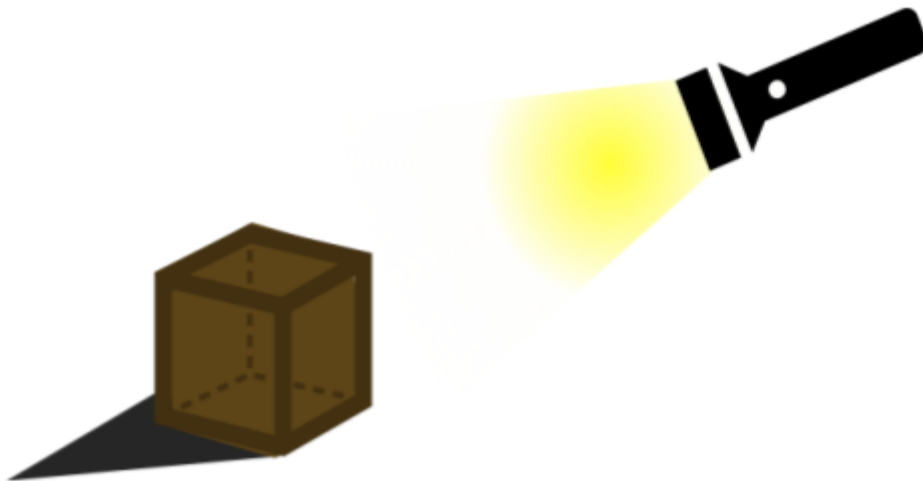


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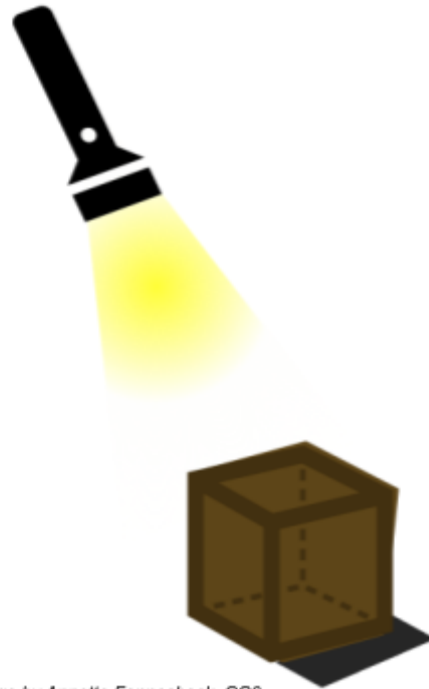


Image by Annette Fannesbeck, CC0

The sun moves from east to west throughout the day. This causes shadows to change depending on what time of day it is.

In the past, people used shadows to tell time. They measured the shadows as they moved throughout the day. Using patterns of daylight they were able to tell the time of day.



Image by Mark Caldicott (mcsc1995), Pixabay.com, CC0

If it was early in the morning, the shadow would be long and point to the west because the sun was in the east.

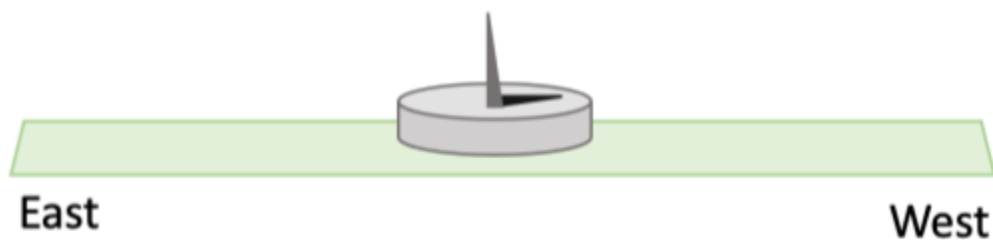


Image by Annette Fonnesbeck, CC0

If it was the middle of the day, the shadow would be short and be in the middle of the east and west side.

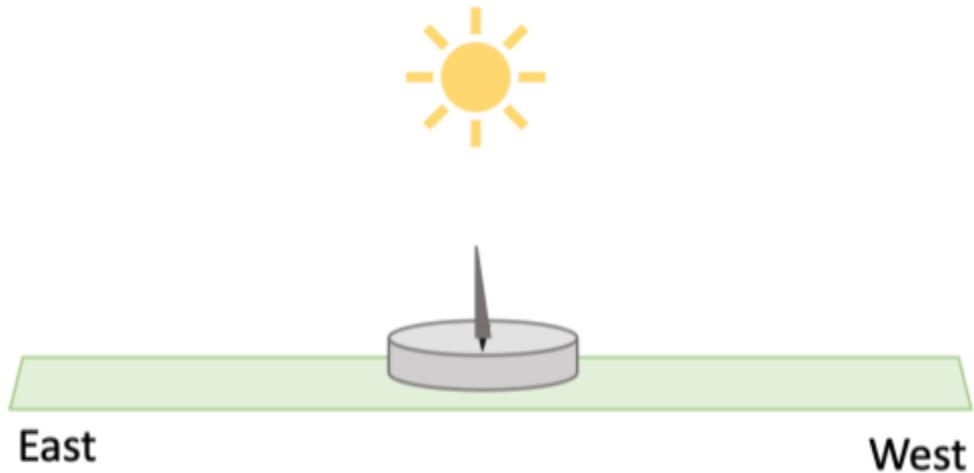


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If it was the end of the day, the shadow would be long and point to the east because the Sun was on the west.

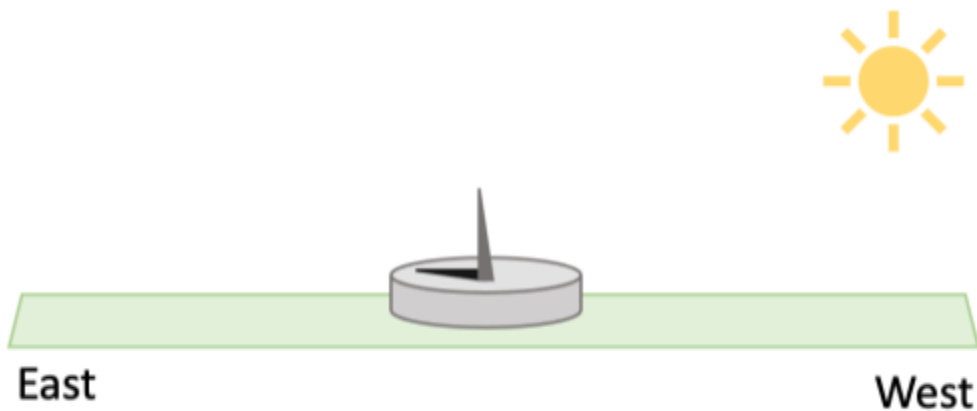


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Putting It Together



Image by piviso, Pixabay.com, CC0

George was camping in the mountains and didn't have a watch. He needed to know approximately what time of day it was (morning, afternoon, or evening). He needed a way to measure where the sun was in the sky to help him guess the time.

Focus Questions

How can knowing patterns in daylight help George?

What could you design to help George measure or track patterns to better tell time?

Final Task

Draw a picture of your design and explain how it works?

CHAPTER 2

Strand 2: The Needs of Living Things and Their Offspring

Chapter Outline

- 2.1 Sun and Water (1.2.1)
- 2.2 Surviving Locations (1.2.2)
- 2.3 Traits of Parents (1.2.3)
- 2.4 Survival Behaviors (1.2.4)



Image by homecare119, Pixabay.com, CC0

People, plants, and animals depend on their surroundings to get what they need, including food, water, shelter, and a safe temperature. Plants and animals have parts that allow them

to survive in different environments. Young plants and animals are alike, but not exactly the same as their parents. In many kinds of animals, parents and offspring behave in ways that help the offspring survive.

2.1 Sun and Water (1.2.1)

Phenomenon



Image by j bizzie, <https://flic.kr/p/c9XZ5d>, CC-BY

I moved my plant off of the shelf it was on so I could put my stuffed animal there. I sat it on the table. Two days later I noticed that the leaves were falling down and droopy.

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

What could be causing the plant to change?

Does a healthy plant have droopy leaves?

What could you do to investigate why the plant is changing?

1.2.1 Sun and Water

Plan and carry out an investigation to determine the effect of sunlight and water on plant growth. Emphasize investigations that test one variable at a time.



In this section, focus on what plants need to survive. What is the effect of these needs on their growth?

People, plants, and animals need things to survive.

Humans need food, water, and air.



Image by JillWellington, Pixabay.com CC0



Image by Gary G (GSquare), Pixabay.com, CC0

Plants
need sunlight, water, and nutrients.
Some plants need more sunlight and
water than other plants.

Look at the trees below. The tree that
gets more sunlight is healthier. It has
more leaves and they are green.



Image by JillWellington, Pixabay.com, CC0



Image by Annette Fannesbeck, CC0

Different plants need different amounts of sunlight and water but all plants need both to survive.

An iris needs a large amount of water and sunlight to survive. It will live and grow where it rains or where someone waters it often. It needs to be planted where the sun can shine on it for most of the day.



Image by MIKI-Studio, Pixabay.com, CC0

A cactus loves a bright, sunny place but it needs very little water to live. This helps it survive in the hot, dry desert.



Image by Pexels, Pixabay.com, CC0



Image by Nähe Bonn (Anelka), Pixabay.com, CC0

Pansies need a lot of sunlight. They need a small amount of water to survive. They live and grow best where there the sun can dry out the soil and shine on them. Too much water and shade will cause the pansy to stop growing and its leaves to change colors.

A Peace Lily needs very little light and moist soil. It needs to be watered once a week to keep the ground from drying out. It also needs shade to stop the sun from burning its leaves.



Image by Adriano Gadini, Pixabay.com, CC0

A scientist that studies plants is called a botanist. Botanists plan and carry out investigations to test what plants need to grow and survive.



DaemonNoire by Jennifer Cross at the Texas A&M University Herbarium, <https://commons.wikimedia.org/wiki/File:HerbPrepLG.jpg>, CC-BY-SA

Botanists test different amounts of sunlight and water plants get. They test one thing at a time.

They observe plants to determine the effect of different amounts of water and sunlight.

Botanists observe the structure, size, and color of a plant's leaves and roots.

Botanists have found that plants with smaller leaves need a lot of sunlight. Plants that have larger leaves will likely need more shade. The smaller leaf structure protects the plant from burning and the larger structure allows the plant to collect more sunlight.

Be a botanist. Look at the structure of the leaves.

How would you describe them? Are they big or small?



Image by ekta.varia, pxhere.com, CC0

Roots are an important structure of plants. They help the plant stay in the ground. A plant gets nutrients from the soil through its roots. The plant gets water from its roots too. Water from roots helps a plant to keep its leaves and flowers standing upright.

Be a botanist. Look at the structure of the roots.

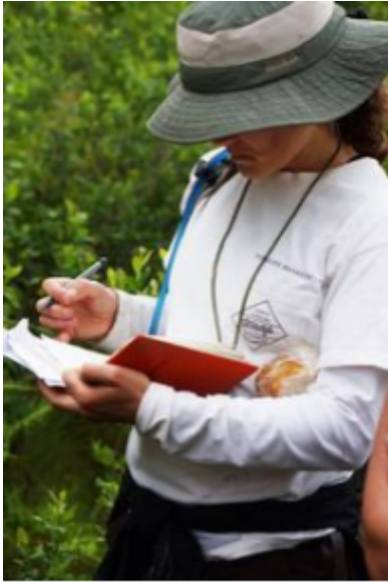
How would you describe them? Are they big or small?



Image by ekta.varia, pxhere.com, CC0

Botanists take good notes for evidence. They use their notes to help plants survive.

A botanist's notes include pictures and writing.



Gabrielle Graeter taking notes by U.S. Fish and Wildlife Service Southeast Region, <https://filec.kr/p/uyggWv>, CC-BY

They show what happens to a plant when they give it different amounts of water and sunlight.



Image by Frederick Edwin Church, Public Domain

Remember, different plants need different amounts of sunlight and water but all plants need both to survive.

Putting It Together

Let us revisit this phenomenon.



Image by j bizzie, <https://flic.kr/p/c9XZ5d>, CC-BY

I moved my plant off of the shelf it was on so I could put my stuffed animal there. I sat it on the table. Two days later I noticed that the leaves were falling down and droopy.

Focus Questions

How does a plant's leaves and roots help it survive?

What could be causing this plant to droop?

How could we test to provide evidence that your answer is correct?

Final Task

Draw a picture to show how you would conduct an investigation of the effect of light and water on this plant. Remember that botanists test one thing at a time. Include at least one sentence to tell what is happening in your picture.

2.2 Surviving Locations

Phenomenon



Image by Free-Photos, Pixabay.com, CC0

My family and I watched a movie about desert animals. It showed a coyote, rabbit and squirrel. They were eating and playing during

the nighttime and asleep in the daylight.



Image by Skeeze, Pixabay.com, CC0



Image by Tom Ferguson, Pixabay.com, CC0



Image by Skeeze, Pixabay.com, CC0

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

What is the desert like?

Are there patterns we see between the body parts of these animals?

Why might these animals be awake at night in the desert?

1.2.2 Surviving Locations

Construct an explanation by observing patterns of external features of living things that survive in different locations. Emphasize how plants and nonhuman animals, found in specific surroundings, share similar physical characteristics. Examples could include that plants living in dry areas are more likely to have thick outer coatings that hold in water, animals living in cold locations have longer and thicker fur, or most desert animals are awake at night.



In this section, look for patterns that help plants and animals survive in their environment.

Plants and animals have features or parts that help them survive in their environment. Some of these features help them to get food, stay protected, move around, and maintain a safe temperature.

Animal Features

Dogs are some of the most loved animals. Many people have them as pets. They have features to help them move, eat, and stay at a safe temperature.



Image by Claudia (bella67), Pixabay.com, CC0



Image by Darlie Worton, CCO

A dog uses its legs to move. It has a long tongue to help it lap up water and sharp teeth to chew its food. Dogs will often pant or breathe heavily to stay cool. They have fur to keep them warm.



Contemplative Pup by Normanack, <https://ilic.kr/p/6X35Vw>, CC-BY



Jamie in the Snow by Normanack, <https://ilic.kr/p/4hPXou>, CC-BY

A polar bear lives in the Arctic where it is very cold. The polar bear's fur also helps keep it safe by camouflaging. That means it helps the polar bear to hide or blend in with the white snow.



Image by User 358611, Pixabay.com, CC0

Both Polar bears and Brown bears have thick fur and a layer of fat to help protect them from the cold environments they live in.



Image by Robert Balog (bergadder), Pixabay.com, CC0

Bears have long, sharp claws used for getting food, digging, and walking in the snow. They like to catch and eat fish. Small bears use their claws to climb trees.



Image by User 12019, Pixabay.com, CC0

Birds have beaks that help them get food and gather items to build nests for shelter.



Image by Skeeze, Pixabay.com, CC0

A hummingbird eats small insects and nectar from flowers. Its long, pointed beak allows it to get deep inside a flower and suck out the nectar.

Most hummingbirds

live in forests, meadows, and grasslands where there are lots of flowers.

This bird is called an Oystercatcher. It has a long, flat beak that is good for grabbing things like insects, worms, grass and small twigs.



Image by Kobus van Leer, Pixabay.com, CC0

This parrot has a curved beak. It is useful for cracking and eating seeds and nuts. It also eats fruits and vegetables. Parrots live in warm places.



Image by congerdesign, Pixabay.com, CC0

Squirrels use their hands to hold their food. They usually live in wooded areas and like to be in trees where there are a lot of nuts, seeds and fruit for them to eat.



Image by PublicDomainPictures, Pixabay.com, CC0

A giraffe eats leaves and shrubs. Its long neck helps it to get food off of the tall trees in the Savannah where it lives.



Image by HowardWilks, Pixabay.com, CC0

A fish has fins to help it move in the water. Its body covering is made of slippery scales that help protect it and make it hard for other sea animals to catch it.



Image by Pexels, Pixabay.com, CC0



Image by Karsten Paulick, Pixabay.com, CC0

Both of these animals live near water.

The stork is using its beak to get twigs to build a nest high in the trees for shelter. Its long legs and pointy beak helps it to walk in the shallow water and catch fish to eat.



Image by Alexas_Fotos, Pixabay.com, CC0



Photo by bodellia, goodfreephotos.com, Public Domain

A beaver has teeth made for chewing wood. They can take down a tree using nothing but their teeth! Beavers make their shelters out of sticks, mud, and rocks.



Image by kolibri5, Pixabay.com, CC0

Chameleons live in the desert or rainforests. They are the masters of camouflage. When they live in the desert, they are brown. When they live in the rainforest, they are green. This helps them stay safe. Chameleons have a long, sticky tongue used for catching insects.

Some desert animals are cold blooded. Their skin is tough and scaly. This helps them to survive in the dry desert. Unlike people, they need the sun to keep their bodies at a safe, warm temperature. These reptiles include chameleons, iguanas and snakes.



Image by LoggaWiggler, Pixabay.com, CC0

In their desert environment, the daytime temperature is very hot. This is perfect for them to find a warm rock and soak up the heat. At nighttime, they rest because the desert temperature gets really cold.



Image by Alois_Wonaschuetz, Pixabay.com, CC0



Image by FotoRabe, Pixabay.com, CC0

There are so many different features that help animals live in their environment. Can you think of other animal features that help an animal to survive?

Plant Features

Plants also have features that help them.

Plants have leaves to absorb sunlight.



Image by Ilona (Couleur), Pixabay.com, CC0

A tree has bark to protect it from animals and weather.



Image by Peter H (Tama66), Pixabay.com, CC0

A cactus has needles to protect it from animals. It has thick outer covering to help hold water in and keep it from drying out.



Image by stanbalk, Pixabay.com, CC0



Image by Albert Dezetter (DEZALB), Pixabay.com, CC0



Image by Ulrike Leone (ulleo), Pixabay.com, CC0

Other plants that live in dry places have tough, waxy surfaces to hold in water too.



Image by tammcd, Pixabay.com, CC0



Image from Pixabay.com, CC0

Putting It Together



Image by Free-Photos, Pixabay.com, CC0

My family and I watched a movie about desert animals. It showed a coyote, rabbit and squirrel. They were eating and playing during the nighttime and asleep in the daylight.



Image by Tom Ferguson, Pixabay.com, CC0



Image by Skeeze, Pixabay.com, CC0



Image by Skeeze, Pixabay.com, CC0

Focus Questions

What patterns do you see in the features of these animals?

How would these patterns help these animals to survive?

Why would these animals be awake at night and rest during the day?

Final Task

Choose an animal from the pictures below and complete the sentence by circling the correct answers.



Images by ducken99 (left) and FotoRabe (right), pixabay.com, CC0

The snake/bunny will be asleep/awake during the **daytime** because it has fur/scales and needs to stay warm/cool to survive in the **desert**.

2.3 Traits of Parents (1.2.3)

Phenomenon



Image by Markus Spiske, Pixabay.com, CC0

We bought some carrots at the grocery store. I ate one and it tasted good. The next day, I took a bite of another one and it was bitter and yucky.

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

What patterns can you identify in the carrots above?

How are they the same?

How are they different?

1.2.3 Traits of Parents

Obtain, evaluate, and communicate information about the patterns of plants and nonhuman animals that are alike, but not exactly like, their parents. An example could include that most carrots are orange and shaped like a cone but may be different sizes or have differing tastes.



In the section, identify patterns in plants and animals that are alike, but not exactly like their parents.

Animal and Plant Groups

There are millions of different types of plants and animals! Some types of animals share the same features, but they are very different from each other.



Image by Surprising_Shots, Pixabay.com, CC0

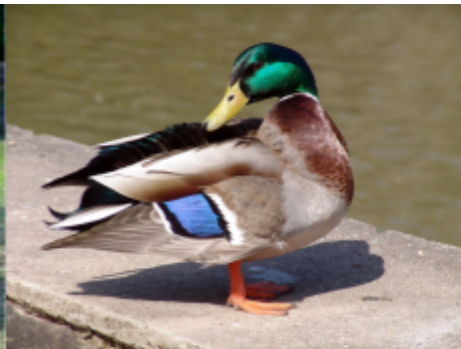


Image by AnnaER, Pixabay.com, CC0



Image by maxmann, Pixabay.com, CC0

For example, all birds have two legs, beaks, and feathers, but they are very different from each other.

All fish have fins, a backbone, and live in the water, but they are not all the same size or color.



Image by usefoto, Pixabay.com, CC0



Image by christels, Pixabay.com, CC0

All insects have three body parts, six legs, compound eyes, and antennae. There are over a million different types of insects in the world!



Images by TieuBaoTruong (left), Ralphs_Fotos (center), and petrshule (right) Pixabay.com, CC0

Inherited Traits

Plants and animals of the same type share some of the same features. However, they are very different! When plants and animals have babies, or offspring, they are more alike. Yet they still aren't exactly the same as their parents.

A chick looks like an adult chicken but not exactly.



Image by Phillip Kleindienst (onefox), Pixabay.com, CC0



Image by Hung Nguyen (vipburn), Pixabay.com, CC0

How are they the same?

How are they different?

A puppy looks like an adult dog but not exactly.



Image by Petra (Pezibear), Pixabay.com, CC0

Image by Free-Photos, Pixabay.com, CC0

How are they the same?

How are they different?

A lion cub looks like an adult lion but not exactly.



Image by Robert Greene, Pixabay.com, CC0



Image by Christine Sponchia, Pixabay.com, CC0

How are they the same?

How are they different?

A tadpole looks like an adult frog but not exactly.



Image by Kei Rothblack, Pixabay.com, CC0



Image by Couleur, pixabay.com, CC0

How are they the same?

How are they different?

Can you think of other animals whose offspring look similar but not exactly the same?

How are they the same?

How are they different?

Plants have offspring too. Like animals they are not exactly the same as their parents. This may include

size, shape, color, and taste.

A corn shoot looks like a full grown corn stalk but not exactly.



Corn by vistavision, <https://flic.kr/p/6wP2X4>, CC-BY-NC-ND



Image by Pexels, Pixabay.com, CC0



Image by Nicole Pankalla (Medienservice), Pixabay.com, CC0

How are they the same?

How are they different?

A bean sprout looks like a full grown bean plant but not exactly.



Image by annawaldl, Pixabay.com, CC0



Image from Pixabay.com, CC0

How are they the same?

How are they different?

Plants and animals look similar to their offspring but they are not exactly the same. All living things have their own unique features.

Putting It Together



Image by Markus Spiske, Pixabay.com, CC0

We bought some carrots at the grocery store. I ate one and it tasted good. The next day, I took a bite of another one and it was bitter and yucky.

Focus Questions

Do you see a pattern in the carrots above?

Is offspring exactly the same as its parent?

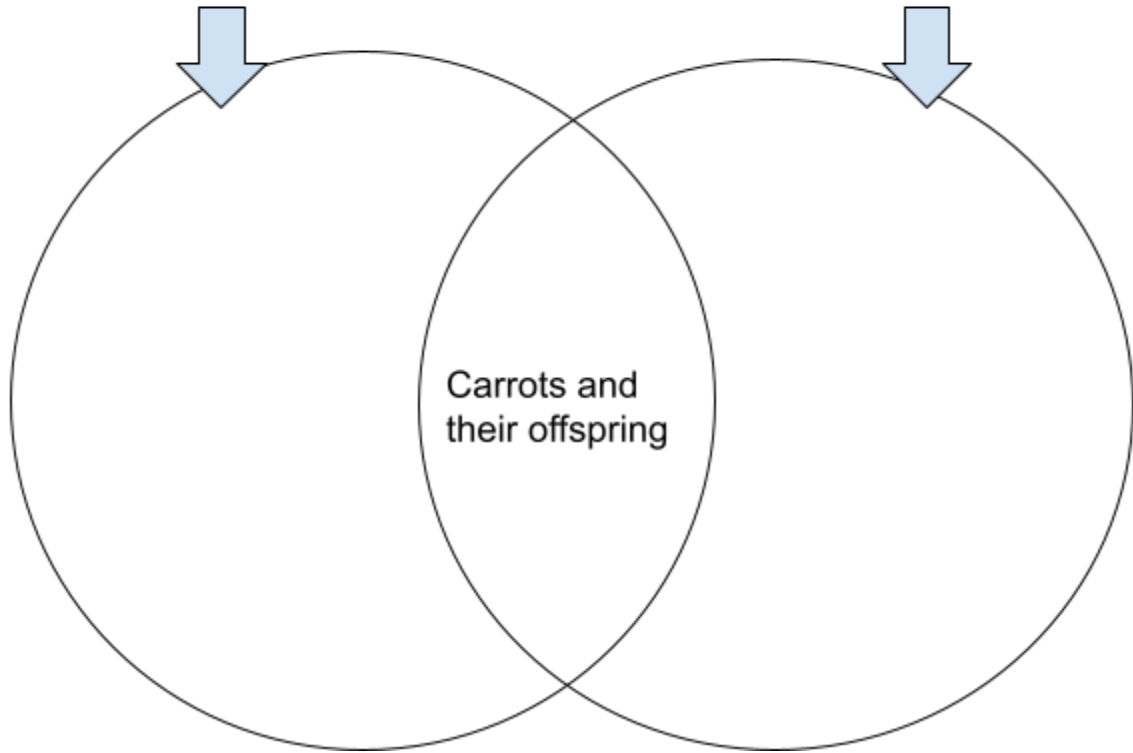
How might a plant's offspring be different from their parents?

Final Task

Complete the following venn diagram.

Write how are the carrots the same here.

Write how are the carrots are different here.



2.4 Survival Behaviors (1.2.4)

Phenomenon



Image by jcrane, pixabay.com, CC0

We are learning about penguins at school. My teacher said that some types of penguins build a nest of rocks, but they keep their baby eggs between their legs.

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

Why does this penguin build a nest of rocks?

How might a nest made of rocks help a penguin?

Why would a penguin keep its baby egg between their feet?

1.2.4 Survival Behaviors

Construct an explanation of the patterns in the behaviors of parents and offspring which help offspring to survive. Examples of behavioral patterns could include the signals that offspring make such as crying, chirping, and other vocalizations or the responses of the parents such as feeding, comforting, and protecting the offspring.



Look for patterns in the behaviors of animals that help the offspring survive.

Behaviors of Animals

Plants, animals and people behave in ways that protect their offspring. Even the babies do things to keep themselves safe.

Some dangers include other animals or predators, weather, getting lost and starving.

Here are some patterns of behavior that scientists have observed.

Birds build nests to protect their eggs and chicks. The nest protects them from other animals, bad weather and keeps them warm.



Image by Dean Ward, Unsplash.com, CC0



Image by Maurice Shaulker, unsplash.com, CC0

Sea Turtles bury their eggs to protect them from predators. Burying the eggs keeps their shells moist and helps them to stay at a safe temperature.



Image by Skeeze, pixabay.com, CC0



1st leatherback sea turtle nest by U.S. Fish and Wildlife Service Headquarters, <https://flic.kr/p/bAmcTt>, CC-BY

Elephants stand in circles around the young elephants. The babies are protected by other large elephants.



Image by cocoparisienne, pixabay.com, CC0

Kangaroos carry their young in their pouches on their stomachs. This keeps them close to their mother and makes it easier to travel.



Image by Ethan Brooke (seoulinspired), pixabay.com, CC0

Penguins sing a song that only their young know. Their stone nests keep their babies safe from the sinking wet ground where they live.



Gentoo Penguin with Chicks by Liam Quinn,
<https://flic.kr/p/ak21az>, CC-BY-SA

A female deer is called a doe. They will leave their fawns in tall grass to hide them from predators.



Image by smarko, pixabay.com, CC0



Image by Robert Jones (bones64), pixabay.com, CC0

Female sheep are called ewes and baby sheep are called lambs.

Ewes recognize their baby lambs by smell.



*Image by David Porter (pooch_eire),
pixabay.com, CC0*

Puppies whine to let their mom know they are hungry.



Mom and Her Puppies by born1945, <https://flic.kr/p/93qmGR>, CC-BY

Ducklings follow their mothers everywhere. They don't want to get lost!



Image by skeeze, pixabay.com, CC0

Human babies cry when they are hungry or hurt. This tells their parents that they need something.



Image by Joffi, pixabay.com, CC0

Plants even behave in ways that help their offspring survive. They will produce seeds when the weather is safe. This allows the seed to live and grow.

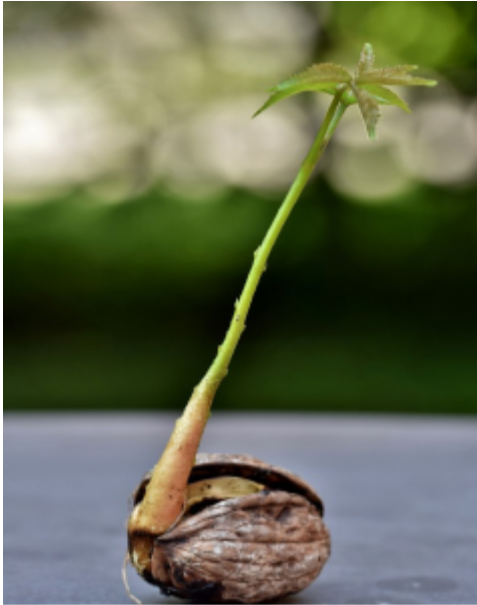


Image by Ralphs_Fotos, pixabay.com, CC0



Image by Konevi, pixabay.com, CC0

Putting It Together

Let's revisit the phenomenon.



Image by jcrane, pixabay.com, CC0

We are learning about penguins at school. My teacher said that some types of penguins build a nest of rocks, but they keep their baby eggs between their legs.

Focus Questions

What patterns of behavior in animals have you observed that helps them to survive?

What is the ground like where penguins live?

How does a nest of rocks protect a penguin?

What does the penguin do to protect its offspring?

Final Task

Write sentences or draw pictures to describe three ways parents or offspring behave to help offspring survive. When you are done, share your explanations with a partner.

CHAPTER 3

Strand 3: Light and Sound

Chapter Outline

3.1 Sound Vibrations (1.3.1)

3.2 Effects of Light (1.3.2)

3.3 Light Pathways (1.3.3)

3.4 Communication (1.3.4)



Image by Jill Wellington, pixabay.com, CC0

Sound can make matter like air, water and other things vibrate. Vibrating matter can make sound. Objects can only be seen when light is there to shine on them.

Some objects give off their own light. Some materials allow light to pass through them, others allow only some light to pass through them, and still others block light and create a dark shadow on the surface beyond them where the light cannot reach. Mirrors can be used to change the direction of light. People use a variety of devices that may include sound and light to communicate over long distances.

3.1 Sound Vibrations (1.3.1)

Phenomenon



Adapted from image by truthseeker08, pixabay.com, CC0



Image from OpenClipArt-Vectors, pixabay.com, CC0

Misha likes to do yoga poses. She hums while she exercises, making an “mmmmmmmmmm” sound. She tried to hum while exercising the other day. She had a stuffy nose and couldn’t make the sound.

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

What does your mouth look like when you make the sound of the letter “m”?

Can you breathe through your nose when it is stuffy?

1.3.1 Sound Vibrations

Plan and carry out an investigation to show the cause and effect relationship between sound and vibrating matter. Emphasize that vibrating matter can make sound and that sound can make matter vibrate.



In this section, learn how vibrations cause and effect sound.

Sound



Image by lookpic, pixabay.com, CC0

Put your hand on your throat.

What do you feel when you talk?

What do you feel when you are not talking?

When you talked did you feel a buzzy feeling? This feeling is a vibration. Vibration means to quickly move back and forth or up and down. People have vocal cords in their throats. When we speak or sing our vocal cords vibrate and we breathe air out. This is how we make sound.

When your vocal cords vibrate they create waves in the air. This is how some sounds are made.



The vibrations from your vocal cords make vibrations in the air. When the air waves travel to another person they hear the sound.

The vibrating air or sound goes to a person's ear and causes a part of our ears called the eardrum, to vibrate. This is how we hear.



Isn't it interesting how vibrations cause sound and sound causes vibrations?

When you stretch a rubber band out and then pluck it. It makes a sound! This is because when you pluck it, the rubberband moves back and forth really fast, or vibrates, and causes a sound.

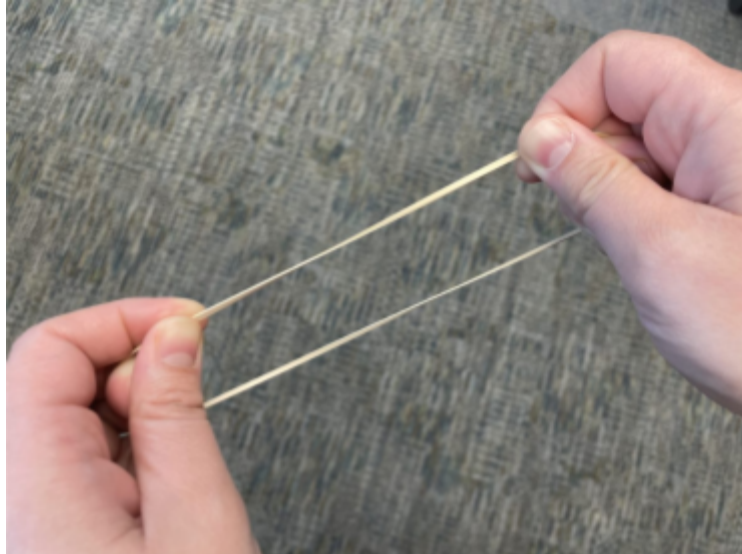


Image by Annette Fønnesbeck, CC0

An example of sound making vibrations is creating a tin can phone. When you talk into the can, the sound from your voice makes the string vibrate. The string transfers the vibration to the other can and makes the sound on the other side.



3D Tin Can Phones by Chris Potter, <https://flic.kr/p/dvylH1>, CC-BY



Image by RyanMcGuire, pixabay.com, CC0

Vibrations can travel through different kinds of matter. This can include air, water, the ground, and many other objects.

Some animals use other parts of their bodies to hear. However, they still need vibrations.



Image by polyfish, pixabay.com, CC0

Elephants make sounds that travel in waves underground for very long distances. Other elephants can hear the sounds or vibrations with their feet!

A grasshopper hears through parts on its tummy! They have small drum-like parts on their body under the wings. These parts vibrate from air waves, allowing the grasshopper to hear the sound.



Image by Huskyherz, pixabay.com, CC0

Musical Instruments

Musical instruments use vibration to make sound. Many are played with certain types of strings. Some examples are a guitar, cello, banjo, and harp.

The boy is playing the guitar. The boy moves the strings of the guitar to make them vibrate. This makes vibrations in the air. The air waves create sounds. These sounds make music.



Image by Pexels, pixabay.com, CC0

Drums have a material stretched tightly on the top of them. When they are hit with a drumstick, the surface vibrates to make sounds.



Image by Couleur, pixabay.com, CC0

Some people make music with horns. They blow air through the horn to create vibrations and beautiful music.



Image by ReinhardThrainner, pixabay.com, CC0

Can you think of any other ways instruments make vibrations and make sound?

Putting It Together



Adapted from image by truthseeker08, pixabay.com, CC0



Image from OpenClipArt-Vectors, pixabay.com, CC0

Misha likes to do yoga poses. She hums while she exercises, making an “mmmmmmmmmm” sound. She tried to hum while exercising the other day. She had a stuffy nose and couldn’t make the sound.

Focus Questions

How does the “mmmmmm” sound happen?

Where does the air go when a person makes the “mmmmmm” sound?

What is happening to the air when Misha tries to hum with a stuffy nose?

How can we show how sound is made?

Final Task

The sound of the letter “M” isn’t the only letter sound that you cannot make with your nose plugged. Plan and carry out an investigation to tell what letters you can say with your nose plugged and which ones you cannot.

Fill in the following graphic organizer and complete the sentence at the bottom.

Can you say these letters with your nose plugged? Write the letter in the right column.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Yes

No

Explain your investigation by completing the sentences.

The letter sounds cannot be made because _____

_____.

Sound is made by _____.

When we hear something the vibrations in the air make our eardrum _____.

3.2 Effects of Light (1.3.2)

Phenomenon



Image by Anja (cocoparisienne), pixabay.com, CC0

My sister and I like to take walks during the nighttime in the city where we live. We went to visit my grandparents in the woods. When we went to take our nightly walk, we were surprised because we couldn't see where we were going and had to bring a flashlight.

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

Why do they need a flashlight in the woods and not in the city?

Where does light come from?

What do we need to see objects?

1.3.2 Effects of Light

Use a model to show the effect of light on objects. Emphasize that objects can be seen when light is available to illuminate them or if they give off their own light.



In this section, focus on the effect light has on objects and how it causes us to see.

How We See Things



Ck12.org, CC-BY-SA

I need light to see the world.

When something is illuminated it has light shining on it.

Objects need to be illuminated by a light to see them. Some objects create their own light. They are called light sources.

Most of the time, there is light from something and we are able to see. Without any light it would be pitch

black!

Light illuminates objects so I can see them. Without any light, we are unable to see anything.

No Light	 <p><small>Adapted from image by @dargawhynelly, pixabay.com, CC0, by Annette Fournier, CC0</small></p>
Some Light	 <p><small>Adapted from image by @dargawhynelly, pixabay.com, CC0, by Annette Fournier, CC0</small></p>
Lots of Light	 <p><small>Image by @dargawhynelly, pixabay.com, CC0</small></p>

What differences can you see when more light is added?

I can see the apple so there must be a light source illuminating the apple.



Image adapted from Summer Red _CMD1506093 copy
by Apple and Pear Australia Ltd,
<https://fic.kr/p/vJfDvW>, CC-BY

I can see the coins so there must be a light source illuminating the coins.



Image by günter (moritz320), pixabay.com, CC0

The street lights are a source of light and illuminate the road so we can see it at night.



Image by Jan W. (photographer2575), pixabay.com, CC0

The sun is a very bright light source and creates daylight. It is burning hot!



Image by PublicDomainPictures, pixabay.com, CC0

A fire is a light source. It is burning hot like the sun.



Images by Pexels (left) and janwardenbach (right), pixabay.com, CC0

Some people use candles as a light source when it is too dark to see.

Some light sources use light bulbs to create light.



Image by geralt, pixabay.com, CC0

A street light and lamp are both light sources. They create light so people can see.



The Sun Goes Down in London by flyheatherfly,
<https://flic.kr/p/4qhvin>, CC-BY



Just a Bit Shady... by Tony Fischer,
<https://flic.kr/p/64ZrqD>, CC-BY

A flashlight is also a light source. People often use them to show things they cannot see when there isn't enough light coming from other sources.



Image by BrickBard, pixabay.com, CC0

Some animals are light sources! They can make their own light.



Image by Janice Trayers (lieliand), pixabay.com, CC0

Jellyfish can make their own light. They are an underwater light source.

A firefly makes its own light. People can see them in dark areas like the woods or forests at nighttime. They cannot be seen at night in the city.



glow by Jessica Lucia, <https://flic.kr/p/9Uy6wi>, CC-BY-NC-ND

Unlike the woods, the city has a lot of light sources at night. Houses, streetlights, car lights, and businesses are often lit up at night in the city.



Image by LUM3N, pixabay.com, CC0

Putting It Together



Image by Anja (cocoparisienne), pixabay.com, CC0

My sister and I like to take walks during the nighttime in the city where we live. We went to visit my grandparents in the woods. When we went to take our nightly walk, we were surprised because we couldn't see where we were going and had to bring a flashlight.

Focus Questions

What types of light sources are there in the city?
How is the city different from the woods at night?
Why do people need to use flashlights?

Final Task

Create a model that has two parts. One nighttime walk in the woods and one in the city. You may create a poster, story, painting, or drawing. *Please label or identify the light sources and show or tell how and what you are able to see.*

3.3 Light Pathways (1.3.3)

Phenomenon



Mirror Ball Amsterdam by Ewan Topping, <https://flic.kr/p/rmE9o>, CC-BY

A mirror ball fills a room with sparkling light along the walls.

Observations & Wonderings

What are you observing about this phenomenon?

What are you wondering about this phenomenon?

Focus Questions

How does a mirror ball cause spots of light along the wall?

How could you plan and carry out an investigation to test your idea?

1.3.1 Light Pathways

Plan and carry out an investigation to determine the effect of materials in the path of a beam of light. Emphasize that light can travel through some materials, can be reflected off some materials, and some materials block light causing shadows. Examples of materials could include clear plastic, wax paper, cardboard, or a mirror.



As you read, determine how different materials affect rays of light.

How Materials Affect Light

A ray of light waves travels in a straight line.



Image by TheOtherKev, pixabay.com, CC0

It will keep moving until it reaches an object. The material an object is made of determines where the light rays go next.

If the material is clear the light will travel through.



1135/365 Bulb of inspiration by Maarten Takens,
<https://lic.kz/p/9RFRy5>, CC-BY-SA

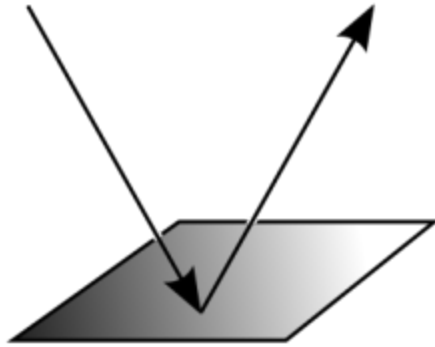
A glass window is clear and lets light through.



Image by PIRO4D, pixabay.com, CC0

Can you think of other materials that would let light through?

If an object is shiny it will reflect the light. Reflect means the light bounces off the object.



Light matter reflection by Klaus-Dieter Keller, CC-BY



Image by Annelle Forrester, CC0

A mirror, aluminum foil, and sequins can reflect light.



Mirror by eltpics, <https://flic.kr/p/ty80aa>, CC-BY-NC



Image by Skeeze, [pixabay.com](https://www.pixabay.com/), CC0

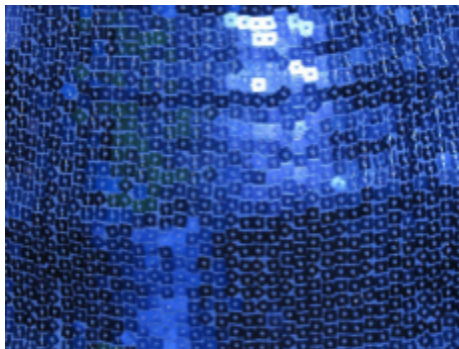


Image by Hans Braxmeier, [pixabay.com](https://www.pixabay.com/), CC0

Can you think of other materials that would reflect light?

If an object is solid, it will block light.

A door is solid.
A door blocks the light.

When light is blocked shadows appear.

Shadows appear when light cannot pass through an object.



<https://www.maxpixel.net/Door-Light-Corridor-2126910>, CC0



Shadows by henry..., <https://flic.kr/p/8t9YM4>, CC-BY-NC-ND

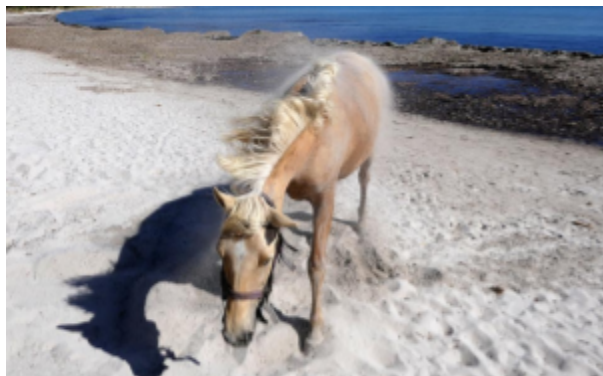


Image by ykaiavv, [pixabay.com](https://www.pixabay.com), CC0



Image by Johannes Plenio, [pixabay.com](https://www.pixabay.com), CC0



The Ultimate Car Of Sabah (North Borneo) by Jason Thien, <https://flic.kr/p/7zizge>, CC-BY

A tree, car, chair, and even you block light and create shadows.



Chair Shadow by Scott Meis, <https://flic.kr/p/amvxQQ>, CC-BY-ND



14/365 - 10/11/09 [365 Days @ 50mm] - Our next soccer star! by Shadayyy Photography, <https://flic.kr/p/76xR1g>, CC-BY

Can you think of other materials that would block light?

How could you test materials to see how they affect light?

Putting It Together



Mirror Ball Amsterdam by Ewan Topping, <https://flic.kr/p/rmE9o>, CC-BY

A mirror ball fills a room with sparkling light along the walls.

Focus Questions

How does a mirror ball cause spots of light along the wall?

How would changing the ball to a basketball affect the room?

If you wanted to test how an object affects light rays what would you do?

Final Task

Describe what you would make your door out of if you wanted more sunlight in your house?

3.4 Communication (1.3.4)

Authentic Situation



Image by Free-Photos, pixabay.com, CC0

Colton has been grounded. He would like to let his friend next door know. However, he can't use a cell phone or go outside.

Observations & Wonderings

What is the problem in this situation?

What are possible criteria (positive outcomes) to this situation?

What are constraints (limitations) with this situation?

Focus Questions

How could you design a structure with light or sound to help Colton communicate to his friend?

How would Colton's friend know that he was grounded?

1.3.4 Communication

Design a device in which the structure of the device uses light or sound to solve the problem of communicating over a distance. *Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs.* Examples of devices could include a light source to send signals, paper-cup-and-string telephones, or a pattern of drum beats.



As you read, focus on how different structures communicate information from a distance.

Devices Used for Communication

People use devices to communicate over long distances.

Light can help communicate with others. A stoplight communicates to drivers.



Image by John R Perry (jp25jp), pixabay.com, CC0

A green light means go. A red light means stop.

A yellow light means prepare to stop. All drivers need to know what each light means.

A lighthouse communicates to ships.

A lighthouse means there are rocks nearby.

Can you think of any other examples where lights communicate information?



Lighthouse at Pigeon Point before the fog by Waqas Mustafeez, <https://flic.kr/p/78jjwF>, CC-BY

Sound can help communicate with others.

A fire alarm communicates to people in a building. The alarm sound means we need to exit the building.



Image by Renee Gaudel, pixabay.com, CC0

A phone rings to communicate to its owner. A ringtone means someone is calling.



Image by Free-Photos, pixabay.com, CC0

Can you think of any other examples where sounds communicate information?

Putting It Together



Image by Free-Photos, pixabay.com, CC0

Colton has been grounded. He would like to let his friend next door know. However, he can't use a cell phone or go outside.

Focus Questions

How could you design a structure with light or sound to help Colton communicate to his friend?

How would Colton's friend know that he was grounded?

Final Task

Draw a picture of your design and describe how it would help Colton communicate with his friend.

