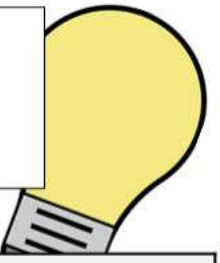
Workbook Preview

© Super Simple Sheets



Grade 4 Science – 2022 Curriculum

Light and Sound



	Curriculum Expectations	Pages That Cover the Expectations
C1.1	assess the impacts on society of devices that use the properties of light or sound, or both	89-95, 99-106, 111-112, 165-166, 168-176, 178-179, 183
C1.2	assess the impacts on the environment of light energy and sound energy produced by various technologies, while taking different perspectives into account	111-112, 184-187
C2.1	identify a variety of natural and artificial light sources	26 – 34, 111-112
C2.2	d o	0
C2.3	d s r	-47, 0-72, 8
C2.4	describe properties of sound, including that sound travels through a medium as a wave and that sound can be absorbed or reflected and modified	113-117, 119-124, 133-139, 156-164
C2.5	explain how vibrations cause sound waves	118, 125-132, 135-150, 153-155
C2.6	describe how different objects and materials interact with light and sound energy	60-63, 118, 125-132, 177
C2.7	distinguish between sources of light that emit both light and heat and those that emit light but little heat	64-69
C2.8	identify sensory organs and devices that make use of the properties of light and sound	89, 165-176, 178-179, 183

Preview of 120 pages from this product that contains 267 pages total.

© Super Simple Sheets

Grade 4 Science Unit

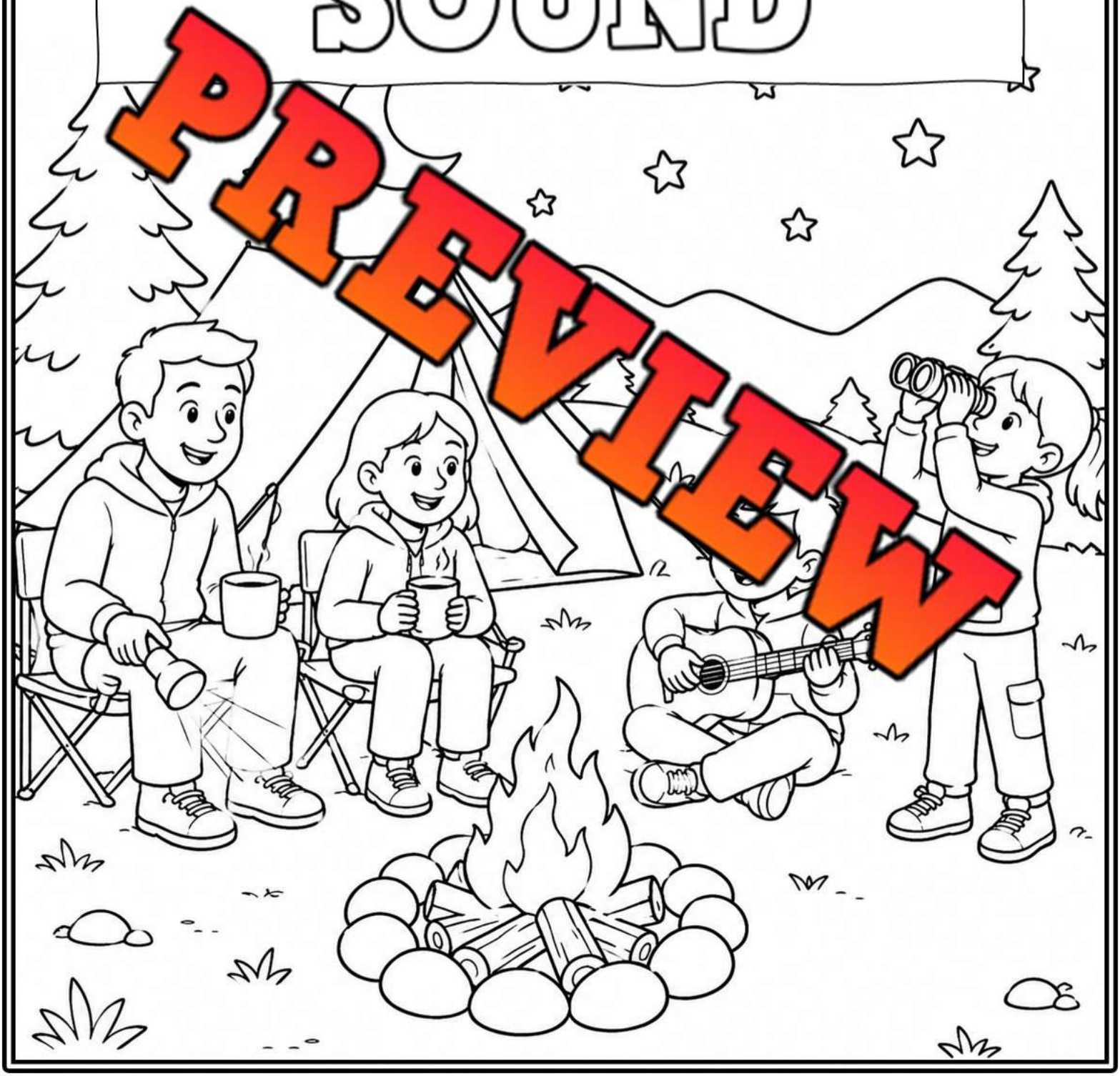
Strand A - STEM Investigation and Communication Skills

	Curriculum Expectations	Pages That Cover the Expectations
A1.1	use a scientific research process and associated skills to conduct investigations	110
A1.2	use a scientific experimentation process and associated skills to conduct investigations	73-75
A1.3	use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems	41-42, 48-49, 96-97, 151-152
A1.4	follow established health and safety procedures during science and technology investigations, including wearing appropriate protective equipment and clothing and safely using tools, instruments, and materials	41-42, 48-49, 73-75, 96-97, 151-152
A1.5	communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes	41-42, 48-49, 73-75, 96-97, 151-152
A2.1	write and execute code in investigations and when modelling concepts, with a focus on producing different types of output for a variety of purposes	107-109, 180-182, 188
A2.2	identify and describe impacts of coding and of emerging technologies on everyday life, including skilled trades	107, 109, 180-182
A3.1	describe practical applications of science and technology concepts in their home and community, and how these applications address real-world problems	98, 107, 109,]180-182
A3.2	investigate how science and technology can be used with other subject areas to address real-world problems	98, 107, 109,]180-182
A3.3	analyse contributions to science and technology from various communities	98

© Super Simple Sheets

NAME: _____

LIGHT AND SOUND



© Super Simple Sheets

Name: _____ 9

Curriculum Connection
C2.3

What is Energy?

What is Energy?

Energy is the ability to do work as it allows things to *move*, *grow*, or *change*. Energy can make things move. When we run or jump, we are using energy from the food we eat to move.

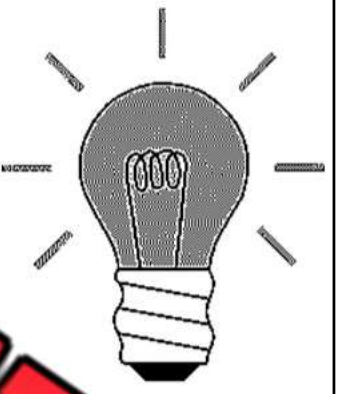
Ene[illegible]n also make things change. When we bake a cake using different ingredien[illegible]at energy from the oven changes the liquid batter into a fluffy cake.

[illegible] things grow, as we see with plants using the suns energy to develop. We a[illegible]ed [illegible] the food we eat as well! Everything living needs energy to survi[illegible]

PREVIEW

Different Forms of Energy

- **Light** is the only form of ener[illegible] that [illegible] our eyes. It is made of electro-magnetic radiati[illegible]t trave[illegible]st[illegible]ght path.

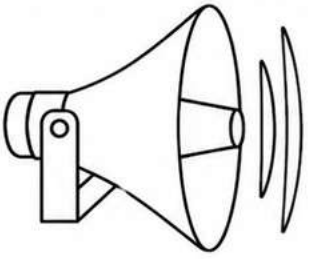


- **Heat** is also called thermal energy. It is the movemen[illegible]par[illegible]s call[illegible] molecules. The hotter a solid, liquid, or gas is, the faster the molecules move!



- **Food** is chemical energy that all plants and animals need to survive. Food energy is measured in calories. Our bodies tell us we need more energy by making us feel 'hungry'.

- **Sound** is a type of energy made by vibrations. When any object vibrates, it causes movement in the air particles. Our ears can detect these sound vibrations.



© Super Simple Sheets

Name: _____ 10

Curriculum Connection
C2.3

Questioning

What questions do you have after reading the information?

1)	
2)	

True or False

Circle whether the statement is true or false.

1) Light energy is the movement of vibrations in the air	True	False
2) Food energy is measured in calories	True	False
3) Energy allows things to grow and change	True	False
4) Without energy, we would have no light, food, or sound	True	False
5) Sound energy is also called thermal energy	True	False

Questions

Answer the questions below using evidence from the text.

1) Why do we need energy? What would life be like without energy?

2) How does energy make things grow, move, and change?

Grow	
Move	
Change	

PREVIEW

© Super Simple Sheets

Curriculum Connection
C2.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class.

Name: _____ | Mark

Circle the answer for each question.

1) Which form of energy allows us to see objects?	Light Energy	Sound Energy
2) Which form of energy is made by vibrations?	Heat Energy	Sound Energy
3) Which form of energy helps plants and animals survive?	Food Energy	Sound Energy
4) Which form of energy is also called thermal energy?	Heat Energy	Light Energy
5) Which form of energy travels in a straight path and can be seen with our eyes?	Light Energy	Food Energy

Name: _____ | Mark

Circle the answer for each question.

1) Which form of energy allows us to see objects?	Light Energy	Sound Energy
2) Which form of energy is made by vibrations?	Heat Energy	Sound Energy
3) Which form of energy helps plants and animals survive?	Food Energy	Sound Energy
4) Which form of energy is also called thermal energy?	Heat Energy	Light Energy
5) Which form of energy travels in a straight path and can be seen with our eyes?	Light Energy	Food Energy

Name: _____ | Mark

Circle the answer for each question.

1) Which form of energy allows us to see objects?	Light Energy	Sound Energy
2) Which form of energy is made by vibrations?	Heat Energy	Sound Energy
3) Which form of energy helps plants and animals survive?	Food Energy	Sound Energy
4) Which form of energy is also called thermal energy?	Heat Energy	Light Energy
5) Which form of energy travels in a straight path and can be seen with our eyes?	Light Energy	Food Energy

PREVIEW

Name: _____ 12

Curriculum Connection
C2.3

Activity – Energy Forms Scavenger Hunt

Objective What are we learning about?

To help students identify and categorize different forms of energy found in their everyday school environment through a fun and engaging scavenger hunt.

Materials What will you need for the activity?

- Pe[illegible]or pen
- Scavenge[illegible]t [illegible]ecklist [illegible]ded by the teacher)
- Clipboard (optional)



Instructions How will you compl[illegible] activi[illegible]

1) Each student receives a scavenger hunt [illegible]list [illegible]various forms of energy to find, such as light, heat, sound, an[illegible]hanical.

2) Explain that students will walk around the school in small [illegible] and note where they observe these forms of energy.

3) Start the scavenger hunt. Allow students 30 minutes to explore and complete their checklists.

4) Students should write down the location and type of energy observed. For example, "Light - classroom bulbs," "Heat - cafeteria radiator."

5) Gather all students back in the classroom to discuss their findings.

PREVIEW

Name: _____ 13

Curriculum Connection
C2.3

Checklist | Energy Forms Scavenger Hunt Checklist

Energy Form	Where to Find	Check When Found
Light Energy	Classroom bulbs Hallway lights	☐
Heat Energy	Cafeteria radiator Electric heater	☐
Sound Energy	School bell Music room	☐
Mechanical Energy	Gym equipment Classroom fans	☐
Electrical Energy	Computers Projectors	☐

PREVIEW

© Super Simple Sheets

Name: _____ 14

Curriculum Connection
C2.3

Reflection Answer the questions below.

1) What was the most common form of energy you found during the scavenger hunt?

2) Did yo[illegible]any sources of energy that were surprising? Why?

3) How do different forms of energy [illegible]ct our [illegible]ironment?

4) Why is it important to understand different forms of energy?

PREVIEW

© Super Simple Sheets

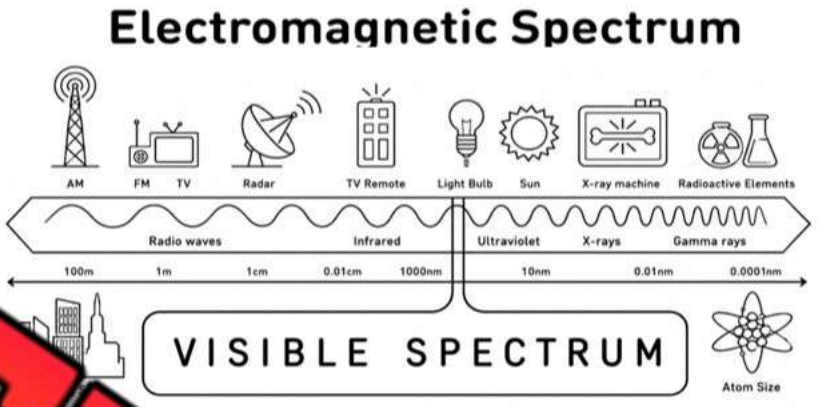
Name: _____ 19

Curriculum Connection
C2.3

Let There Be Light!

What is Light?

Light has no mass and is not considered matter. We can see it, but we can't feel it. **Light** is a kind of energy called, "electromagnetic radiation". It travels in straight lines, called light rays.



The light rays we see are only a small portion of the types of light that exist. Light rays are measured on the electromagnetic spectrum, however, human eyes only sees specific parts of the spectrum. Other animals' eyes can see other parts of the spectrum that we can't!

How Fast is Light?

Light travels SUPER fast – about 300,000 kilometres per second. This means light from the Sun takes about 8 minutes to go 149 million kilometres to the Earth. This may seem slow, but this shows you how far the Sun is from the Earth.

If you tried to drive to the Sun at 100km/h, it would take you 177 years to get there! Another cool fact is that in one second, light can go around the Earth 7 times!

You've seen how fast light travels when you turn on a light. You have probably noticed that you can't see the light waves moving. All you see is the room lit up as soon as you flip the switch.

Interesting Facts About Light

- Space does not have any light. We can see things in space because of light from the sun and stars bouncing off objects in space.
- Infrared light has a wavelength that is too long for the human eye to see
- Light that we see from the Sun actually left the Sun 8 minutes before we see it
- Sunlight is powerful! It can penetrate the oceans up to 80 metres deep! Beyond 80 metres, the oceans are dark.

PREVIEW

© Super Simple Sheets

Name: _____ 20

Curriculum Connection
C2.3

True or False Circle whether the statement is true or false.

1) Light travels at 300,000km per hour	True	False
2) It takes sunlight 8 minutes to travel from the Sun to the Earth	True	False
3) Sunlight can be seen up to 80 metres deep in the oceans	True	False
4) Space has light that can be seen in the form of stars and sunlight	True	False
5) Some animals/insects can see more types of light than we can see	True	False

Questions [illegible]er the questions below using evidence from the text.

1) Ho[illegible]t is ligh[illegible]n.

_____

_____

_____

2) What did you find most interesting [illegible]ight?

_____

_____

_____

Visualizing Draw what you were picturing while you were readin[illegible] picture.

	_____

PREVIEW

© Super Simple Sheets

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class.

Name: _____ Mark ____

Check only the true statements.

Statement	✓
Light travels in straight lines.	
Light is a type of matter.	
Humans can see all parts of the electromagnetic spectrum.	
Light from the Sun takes about 8 minutes to reach Earth.	
Infrared light can be seen easily by the human eye.	
Light can travel around the Earth about 7 times in one second.	
We can see objects in space because light reflects off them or comes from them.	
Light travels slower than a walking person.	

Name: _____ Mark ____

Check only the true statements.

Statement	✓
Light travels in straight lines.	
Light is a type of matter.	
Humans can see all parts of the electromagnetic spectrum.	
Light from the Sun takes about 8 minutes to reach Earth.	
Infrared light can be seen easily by the human eye.	
Light can travel around the Earth about 7 times in one second.	
We can see objects in space because light reflects off them or comes from them.	
Light travels slower than a walking person.	

Name: _____ Mark ____

Check only the true statements.

Statement	✓
Light travels in straight lines.	
Light is a type of matter.	
Humans can see all parts of the electromagnetic spectrum.	
Light from the Sun takes about 8 minutes to reach Earth.	
Infrared light can be seen easily by the human eye.	
Light can travel around the Earth about 7 times in one second.	
We can see objects in space because light reflects off them or comes from them.	
Light travels slower than a walking person.	

Name: _____ Mark ____

Check only the true statements.

Statement	✓
Light travels in straight lines.	
Light is a type of matter.	
Humans can see all parts of the electromagnetic spectrum.	
Light from the Sun takes about 8 minutes to reach Earth.	
Infrared light can be seen easily by the human eye.	
Light can travel around the Earth about 7 times in one second.	
We can see objects in space because light reflects off them or comes from them.	
Light travels slower than a walking person.	

PREVIEW

© Super Simple Sheets

Name: _____ 22

Curriculum Connection
C2.3

Memory Game: Light Terms

Objective

What are we learning about?

To enhance students' understanding and retention of key vocabulary related to light and its properties, while also fostering teamwork and memory skills.

Materials

What will you need for the activity?

- Me y gam rovided) with the terms on one se defin on another set.
- A flat surface like t he fl lay out the cards.



PREVIEW

Instructions

How will you complete the activi

1) Divide the class into groups of 3 or 4. Give ch s mory Game cards. (Provided)
2) Have each group lay all the cards face down in a gri n a h .
3) The students take turns flipping over two cards at a time, t ng a matching term and its definition.
4) If a student finds a match, they remove those cards from the grid and keep them.
5) If the cards do not match, they are turned back over, and the next student takes a turn.
6) The game continues until all the cards have been matched.
7) After the game, review the terms and definitions with the class.
8) Discuss why these terms are important to understand and how they relate to understanding light in various applications.

© Super Simple Sheets

Name: _____ 23

Curriculum Connection
C2.3

Cards | List of light-related terms

Light Related Term	Definition
Energy	The ability to do work or cause changes.
Reflect	To bounce light off an object.
Absorb	To take in light without reflecting it.
Transmit	To pass light through an object.
Artificial	Made by humans, not natural.

PREVIEW

© Super Simple Sheets

Name: _____ 24

Curriculum Connection
C2.3

Cards | List of light-related terms

Light Related Term	Definition
Light Beam	A stream of light traveling in a straight line.
Transparent	A material that allows all light to pass through clearly.
Translucent	A material that lets some light through, but not clearly.
Opaque	A material that does not let any light pass through.
Technological Development	The advancement and creation of new technologies.

PREVIEW

© Super Simple Sheets

Name: _____ 25

Curriculum Connection
C2.3

Cards | List of light-related terms

Light Related Term	Definition
Science	The study of the natural world through observation and experiments.
Brightness	How bright or shiny light appears.
Reflection	The reflection of light rays from a surface.
Illumination	The act of lighting up something or being lit up.
Spectrum	The range of different colours produced when light is spread out.

PREVIEW

Name: _____ 26

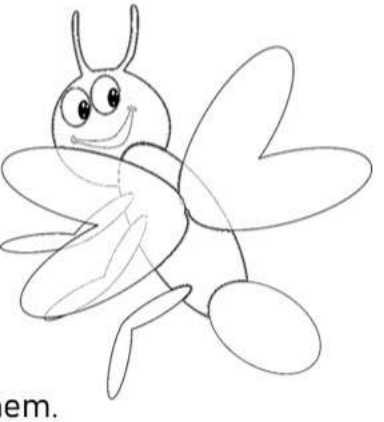
Curriculum Connection
C2.1

Light Sources – Natural Vs Artificial

What is Light?

Light is a type of energy that allows us to see the world around us. Without it, many of us would live in fear, because it is human nature to need light. That is why many children and even adults are afraid of the dark. Light comes from many different light sources, but we can categorize them into natural light sources and artificial light sources.





PREVIEW

What Are Natural Light Sources?

Natural light sources are light sources that produce light energy that come from our environment and are not man-made. The sun, stars, and fireflies are all examples of natural light sources because they occur naturally in our environment and do not produce them.

The sun provides us with the most powerful energy source in the world. The sun is a nuclear fireball spewing light energy in all directions. Even the light from the moon is actually just the sun's light reflecting off the moon. The moon is not a natural light source because it isn't a light source at all.

Artificial Light Sources

An **artificial light source** is any source of light that is created by humans. Artificial because it does not occur naturally in our environment, therefore, it is human-made light. Examples of artificial lights include: candles, fireworks, and light-bulbs.



Imagine living without artificial light. Having no light after the sun sets would be terrifying for many people and would also lower the functionality of our society. We rely on artificial light after dark in our businesses, at home, and on our streets. Having the ability to change the lighting around us has led to a much higher quality of life.

© Super Simple Sheets

Name: _____ 27

Curriculum Connection
C2.1

Questioning

What questions do you have after reading the information?

1) What is the difference between artificial and natural light sources?

2) What w[illegible]e be like for you if we didn't have artificial light? Explain.

PREVIEW

Making Connections

W[illegible]s th[illegible]emind you of?

True or False

Is the statement true or false? Circle the correct answer.

1) Fireflies are an example of an artificial light source.	True	False
2) Candles are an example of an artificial light source.	True	False
3) The sun is the largest producer of light on our planet.	True	False
4) Light is a type of energy that allows us to see the world around us.	True	False
5) It is human nature to need light to survive.	True	False

© Super Simple Sheets

Newspaper Article: Bioluminescence in Nature

Meet Earth's Recycling Team: Decomposers and Scavengers

Pub[illegible]te: January 8, 2026

Dee[illegible]an [illegible] the dark of night, so[illegible]e cre[illegible] glo[illegible] This magical glow i[illegible] biolu[illegible]e, and it's not just for s[illegible] up to find friends, while de[illegible] fish glow to hide from or find their next meal.

Dr. Emily Harkins, a marine biologist, shares, "Bioluminescence is used by many sea creatures as a survival tool. Some emit light to attract mates or prey, and others use it to scare off predators."

One amazing creature, the lantern fish, can glow from tiny lights all over its body. "The lantern fish uses its light to blend in with the faint sunlight from above, so predators below can't see its shadow," Dr. Harkins explains.

On land, children love to chase glowing fireflies during summer evenings. "Fireflies flash their lights to communicate and find the perfect partner," says Sam Chen, a firefly enthusiast. "Each species has a unique [illegible]shing pattern."

Did y[illegible] [illegible]here are [illegible] 2,000 species of bioluminescent organisms? That's a lot of natural glow! From jellyfish to fungi, nature has its own way of lighting up the world, proving that light isn't just from the sun or our lamps at home.



PREVIEW

Name: _____ 29

Curriculum Connection
C2.1

Questions

Answer the questions below.

1) What is bioluminescence?

2) Can you name any bioluminescent organisms other than fireflies and lantern fish?

PREVIEW

True or False

Is each statement true or false?

1) Bioluminescence is a type of darkness.	True	False
2) Fireflies glow to scare predators.	True	False
3) Light helps fireflies find partners.	True	False
4) Bioluminescence is used for attracting mates.	True	False
5) Over 200 species are bioluminescent.	True	False

Draw

Draw any bioluminescent organisms other than fireflies and lantern fish.

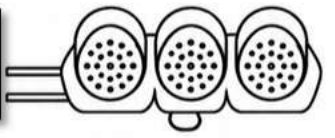
© Super Simple Sheets

Name: _____ 30

Curriculum Connection
C2.1

Light Sources – Natural Vs Artificial

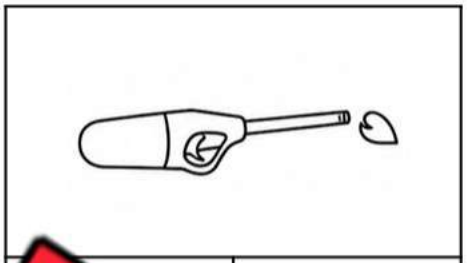
Natural light is light energy made without humans. Artificial light is made by us.



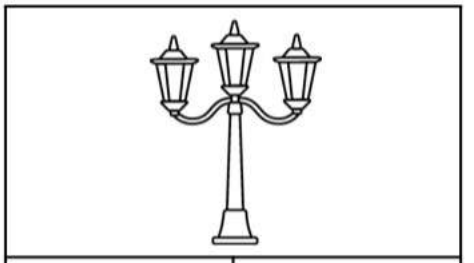
Natural or Artificial Circle whether the picture is natural or artificial light.



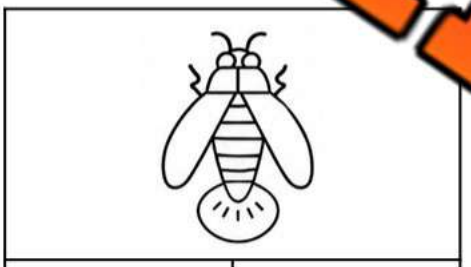
Natural | Artificial



Natural | Artificial



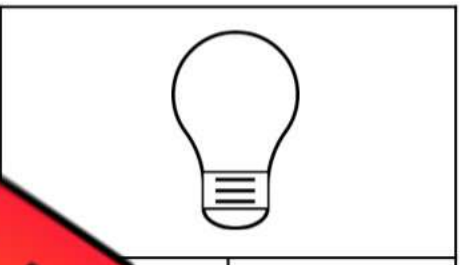
Natural | Artificial



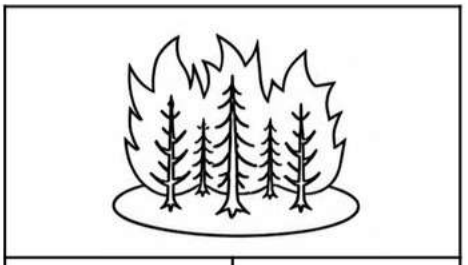
Natural | Artificial



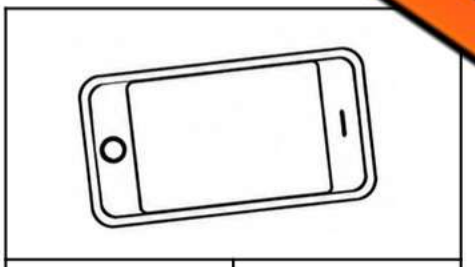
Natural | Artificial



Natural | Artificial



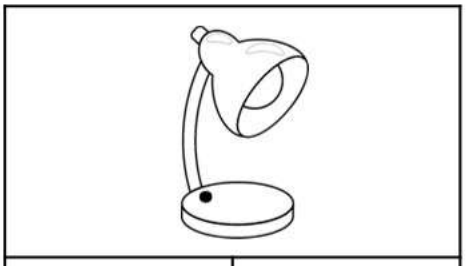
Natural | Artificial



Natural | Artificial



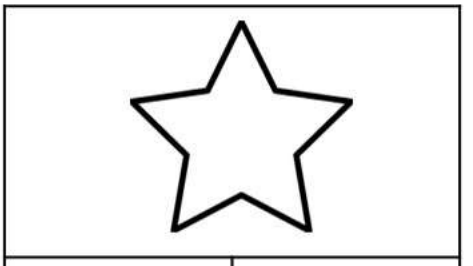
Natural | Artificial



Natural | Artificial



Natural | Artificial



Natural | Artificial

PREVIEW

© Super Simple Sheets

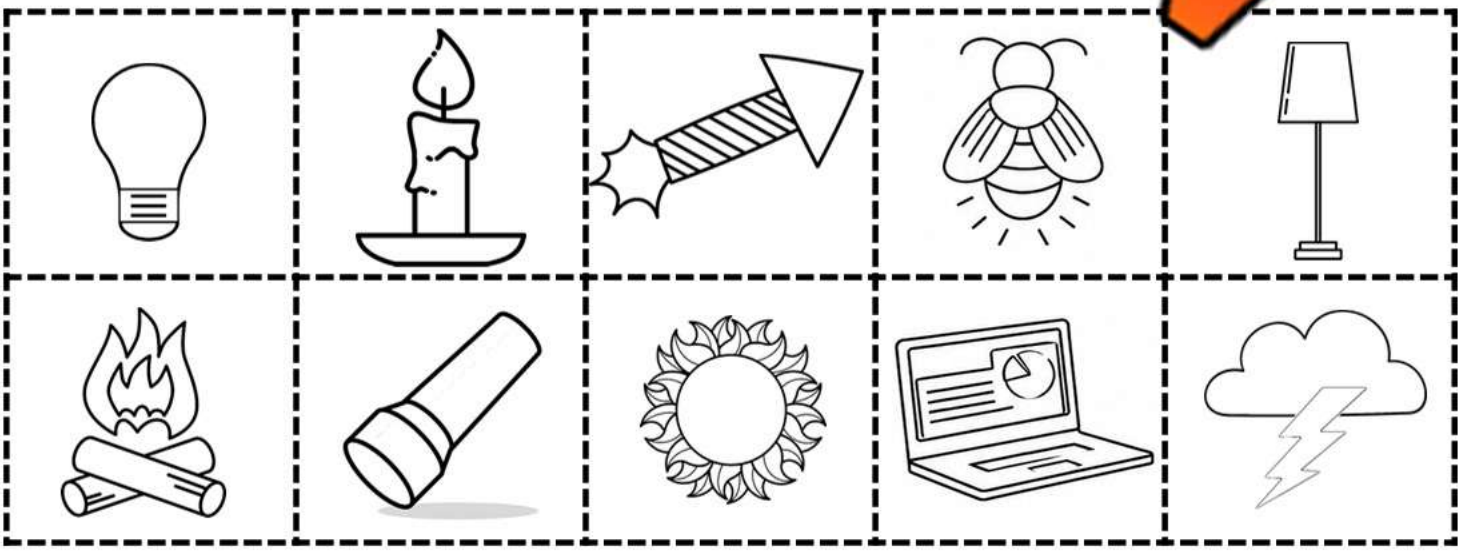
Name: _____ 31

Curriculum Connection
C2.1

Questions Cut and paste the light sources putting them in the right category.

Natural Light	Artificial Light

PREVIEW



© Super Simple Sheets

Name: _____ 35

Curriculum Connection
C2.2

Emitting or Reflecting Light?

Emitting Light vs Reflecting Light

Light sources that create light for us to see are **light emitters.** Emitting light means they create light instead of just reflecting light from another source.

Have you ever seen a black light show at a bowling alley and noticed that if you're wearing a white shirt, you will stand out? This is because your white shirt is reflecting the light, which gives you an appearance of glowing. Your white shirt is the perfect example for reflecting the UV light in the black light.

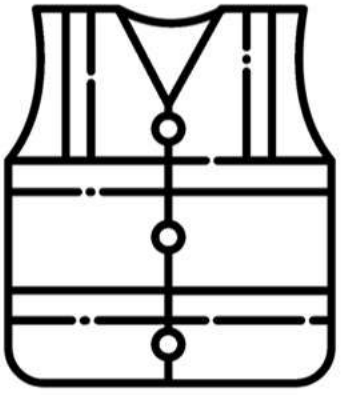
Examples of Light Emitters



The sun, stars, campfires, and light bulbs are all examples of light emitters because they are all sources of light. They all create light instead of reflecting it. They do not require any other light source to help create light.

Examples of Light Reflectors

The moon, safety reflecting vests, and mirrors are all examples of light reflectors. The moon is a light reflector that reflects light from the sun. That is why you can stare directly at the moon, but not the sun. Looking at the sun can cause blindness because it is also a powerful light emitter, but the moon won't cause you damage because it is not creating any light.



Safety reflecting vests usually come in bright colours because they reflect more light than darker colours. Dark colours tend to absorb more of the wavelengths from the sun, while white, yellow, orange, and light green colours reflect most of the wavelengths. Some minerals in rocks reflect more light than others.

Shiny Materials - Lustre



Lustre is a property of minerals that tells us how much of the mineral reflects light. Platinum is a mineral that has more lustre than any other mineral. Platinum is a very shiny metal that reflects a lot of light. It looks like it is glowing!

On the other hand, non-metallic minerals have hardly any lustre. They look dull or waxy instead of shiny. Examples of non-metallic minerals that have no lustre are earthy rocks found in the soil.

PREVIEW

© Super Simple Sheets

Name: _____ 36

Curriculum Connection
C2.2

True or False Circle whether the statement is true or false.

1) A light emitter is a light source that creates light.	True	False
2) A light emitter only reflects light and does not create it.	True	False
3) Stars, the sun, and light bulbs are light emitters.	True	False
4) The moon is a light emitter.	True	False
5) Light co re better light reflectors and dark colours absorb light.	True	False

Quest Write tion you have about the information in the text.

1)	
2)	

Questions Use information from the text to sup ans

1) What is the difference between a light emitter and a light re

2) What are some examples of light reflectors you see in your day-to-day life? Which colours are they?

PREVIEW

© Super Simple Sheets

Name: _____ 38

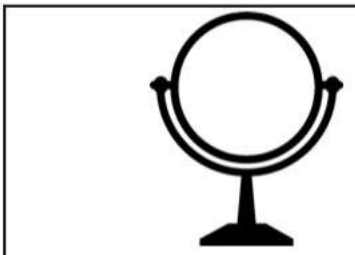
Curriculum Connection
C2.2

Emitting or Reflecting Light?

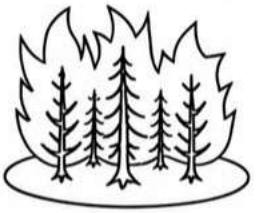
Which Type? Is the picture an example of a light emitter or light reflector?



Emitter	Reflector



Emitter	Reflector



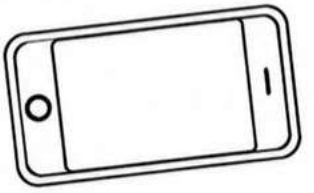
Emitter	Reflector



Emitter	Reflector



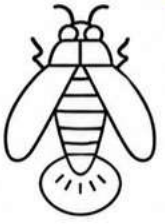
Emitter	Reflector



Emitter	Reflector



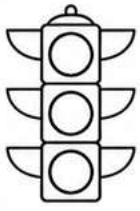
Emitter	Reflector



Emitter	Reflector



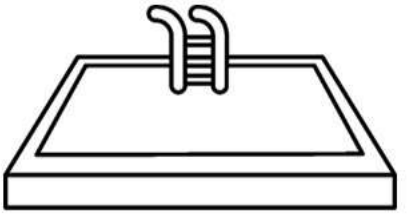
Emitter	Reflector



Emitter	Reflector



Emitter	Reflector



Emitter	Reflector

PREVIEW

© Super Simple Sheets

Name: _____

Curriculum Connection
C2.3

Properties of Light

Four Properties of Light

The properties of light explain how light works and provides us with important information about how we can use light for different purposes.

1. Light Travels in a Straight Path

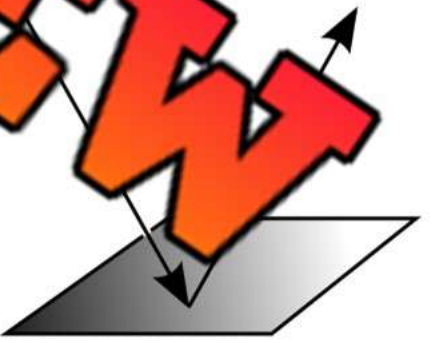


Once light [illegible]en produced, it will travel in a straight [illegible] hits something else. We can witn[illegible] [illegible]mining a shadow. An object bl[illegible]cks lig[illegible] can't reach the surface where [illegible] shad[illegible] could bend, it would go around the object.

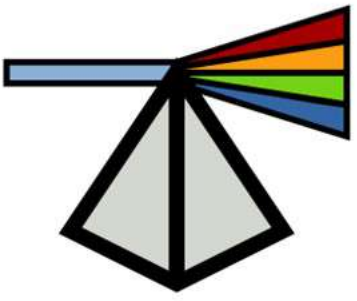
2. Light Can Be Absor[illegible]

When light hits an object, it [illegible]mes [illegible] which means it does not reflect the light. Wood is an example of mate[illegible]al th[illegible] instead of reflect light. When the light waves are absorbed by a mate[illegible] mean[illegible] in the light energy are captured by the matter in the object. Darker co[illegible] lighter colours reflect light.

3. Light Can Be Reflected



Light will reflect off some materials like the Earth. This is why the sky is blue, as the light from the Sun hits the Earth's surface and the blue light is reflected more than the other colours because it travels in shorter, smaller waves. The angle of the light hitting a material affects its ability to bounce off the material.



4. Light Can Be Refracted

When light hits an object, it can sometimes go through the object and bend at an angle. An example of this is when light hits a diamond or water. The light will go through the material and bend out of the other side.

PREVIEW

© Super Simple Sheets

Name: _____ 40

Curriculum Connection
C2.3

True or False

Circle whether the statement is true or false.

1) When light bounces off a material it means it is refracted.	True	False
2) The way light reflects off a surface depends on the angle at which it strikes the surface.	True	False
3) Light always travels in a straight path.	True	False
4) Light n[illegible] stops moving – it continues forever.	True	False
5) When [illegible] a diamond or water, it reflects off the surface.	True	False

Questi[illegible]

[illegible]er the questions below using evidence from the text.

1) Which colours a[illegible] light [illegible] flect it? When would you want to reflect light?

_____

_____

_____

2) What does it mean for light to be refracted? [illegible] have [illegible] in your life?

_____

_____

_____

PREVIEW

Visualizing

Draw what you were picturing while you were reading. Explain the picture.

_____

_____

_____

_____

_____

© Super Simple Sheets

Name: _____ 41

Curriculum Connection
A1.3, A1.4, A1.5

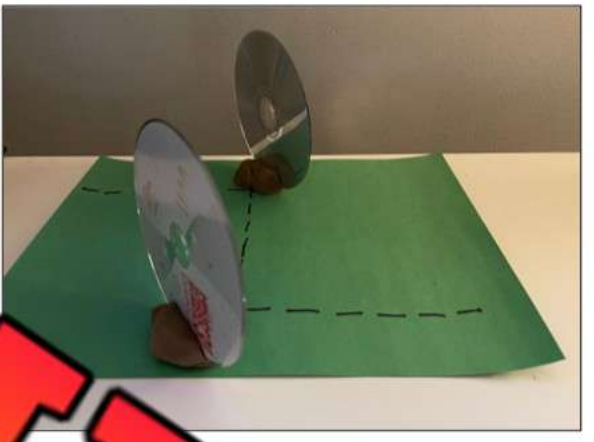
Experiment – Light Maze

Research Question | What are we learning more about?

Light travels in straight lines and it reflects on certain materials. Can we reflect light off multiple surfaces?

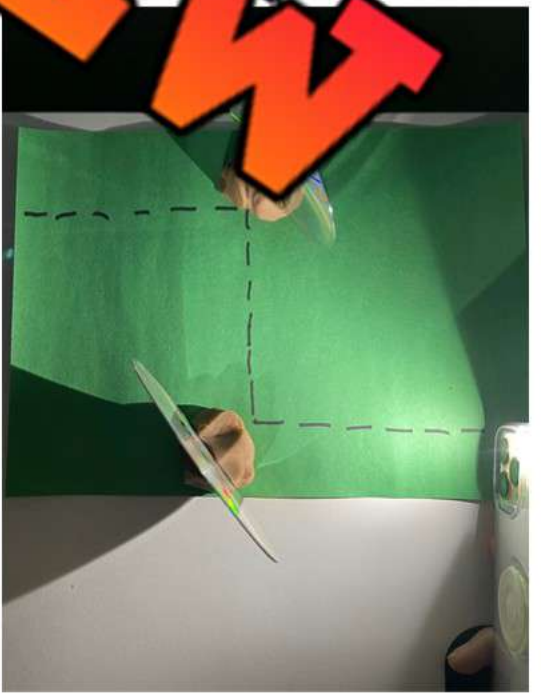
Materials | What do we need for our experiment?

- [illegible] more mi[illegible]s/DVDs or mat[illegible]ials th[illegible]ight well
- Play doug[illegible] to ho[illegible]rrors up
- Marker
- Paper to draw the maze
- A flashlight



Method | How do we complete the e[illegible]im[illegible]

1) Make a maze using the paper and markers. Make two turns if you have two mirrors and 3 turns if you have 3 mirrors
2) Make a ball of play dough for the mirror to sit in
3) Put the mirrors on the corners of the turns
4) Angle the mirrors so the light will reflect off one another
5) Turn off the lights so you can test your light maze. You might need to adjust the position of your mirrors in order for the light to travel through the maze.



PREVIEW

© Super Simple Sheets

Name: _____ 42

Curriculum Connection
A1.3, A1.4, A1.5

Observations | What happened?

What happened? Write down what you observed as you tested your mirrors.

Results | Answe ions below.

1) Does light bend n it r s? t bend when it reflects off a surface?

2) Even if you had trouble with your maze, exp wh l e light maze should work.

3) Draw a diagram of your light maze. Label the mirrors and the beams of light.

PREVIEW

Name: _____ 43

Curriculum Connection
C2.3

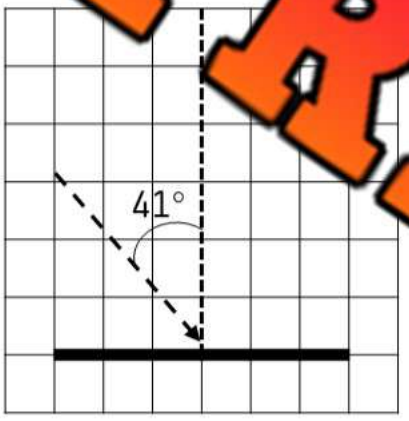
Measuring Reflected Light

How to Measure Reflected Light Rays
When measuring the angle of a reflected ray, you need to understand the Law of Reflection. The **Law of Reflection** states that the angle of reflection equals the angle of incidence— θr = θi. The **incidence ray** is the ray of light that reflects off a surface. The **reflected ray** is the ray of light that has reflected off the surface. Therefore, if you know the angle of the incidence ray, then you know the angle of the reflected ray.

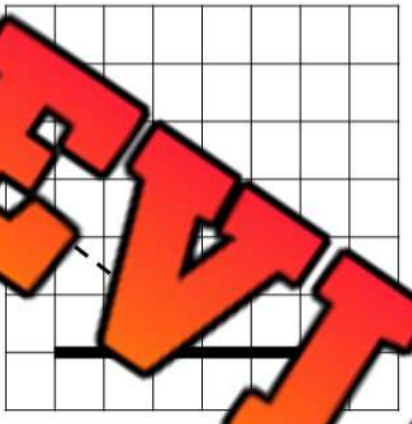
If you don't know the angle of incidence ray, then you can use the normal line, which is a line th[illegible]erpendicular to the surface.

Questio[illegible]tor to find the angle of incidence and reflection.

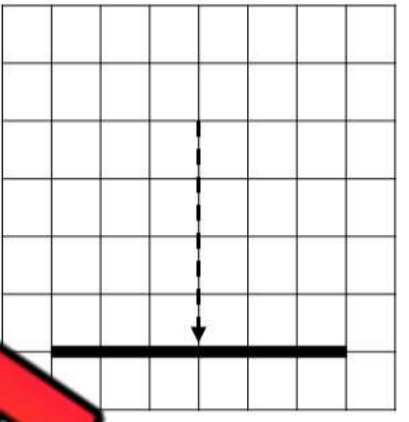
PREVIEW



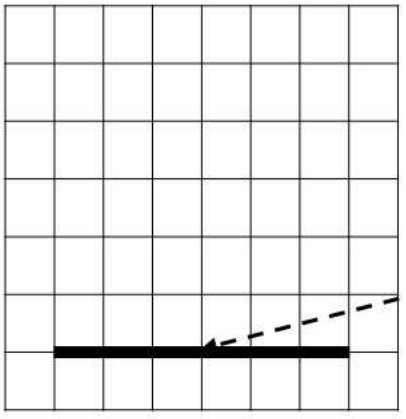
Angle of Incidence	Angle of Reflection



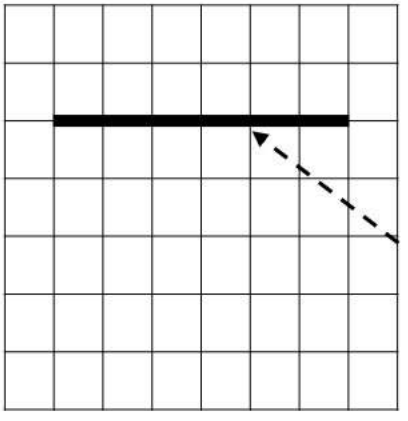
Angle of Incidence	Angle of Reflect[illegible]



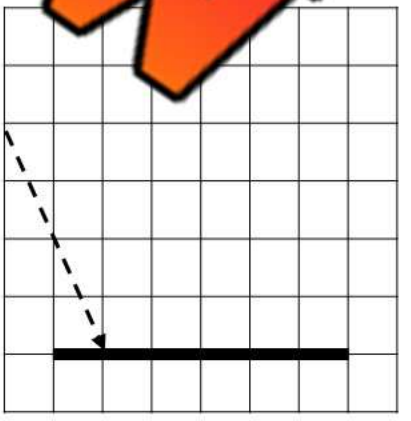
Angle of Incid[illegible]	Angle of Reflection



Angle of Incidence	Angle of Reflection



Angle of Incidence	Angle of Reflection



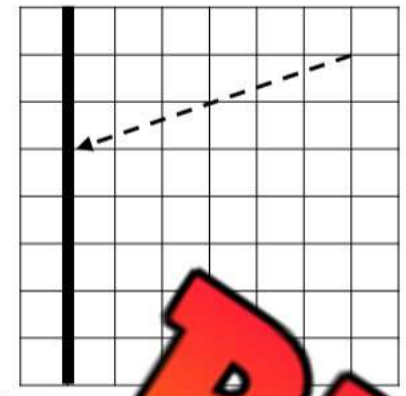
Angle of Incidence	Angle of Reflection

© Super Simple Sheets

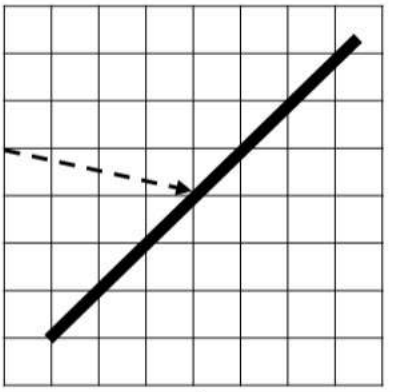
Name: _____ 44

Curriculum Connection
C2.3

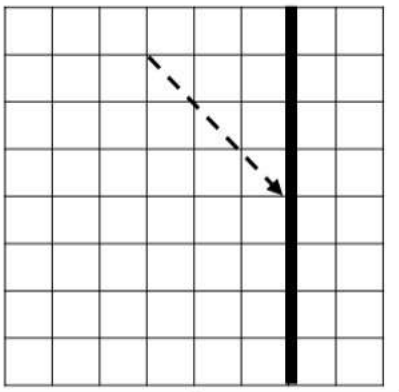
Questions Use a protractor to find the angle of incidence and reflection.



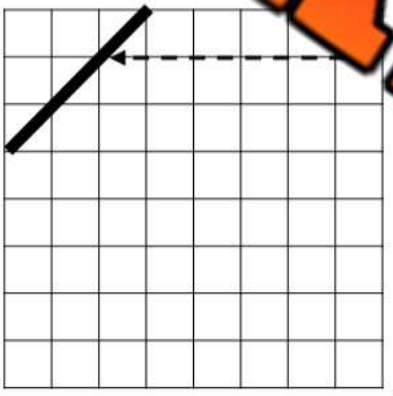
∠ of I	∠ of R



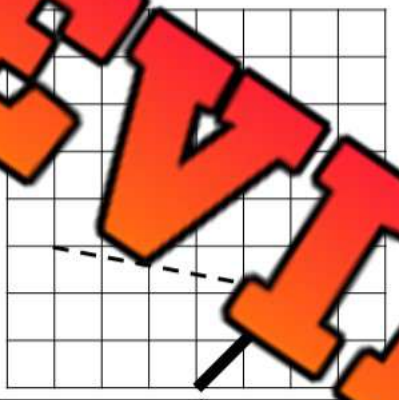
∠ of I	∠ of R



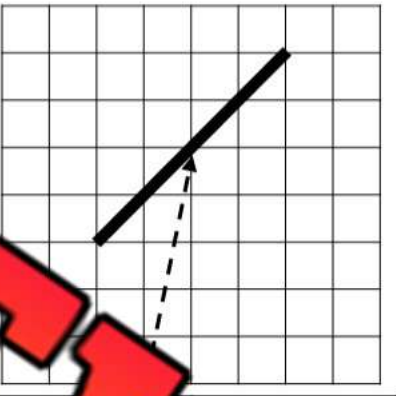
∠ of I	∠ of R



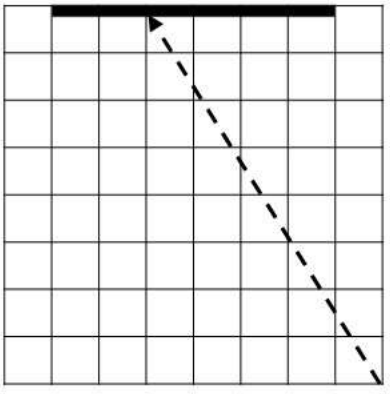
∠ of I	∠ of R



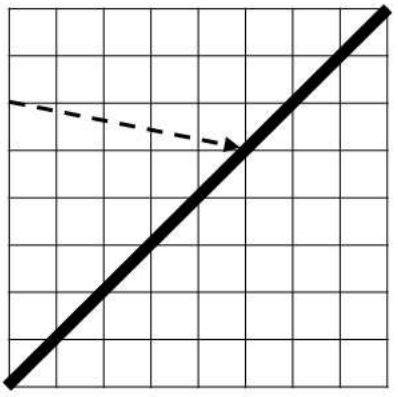
∠ of I	∠ of R



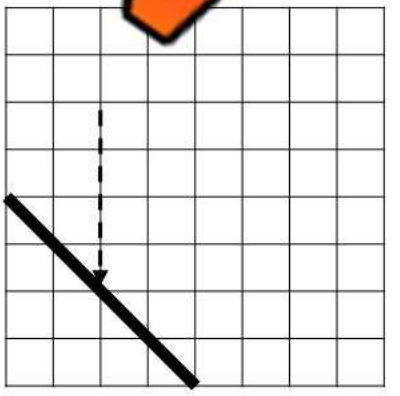
∠ of I	∠ of R



∠ of I	∠ of R



∠ of I	∠ of R



∠ of I	∠ of R

PREVIEW

© Super Simple Sheets

Name: _____ 45

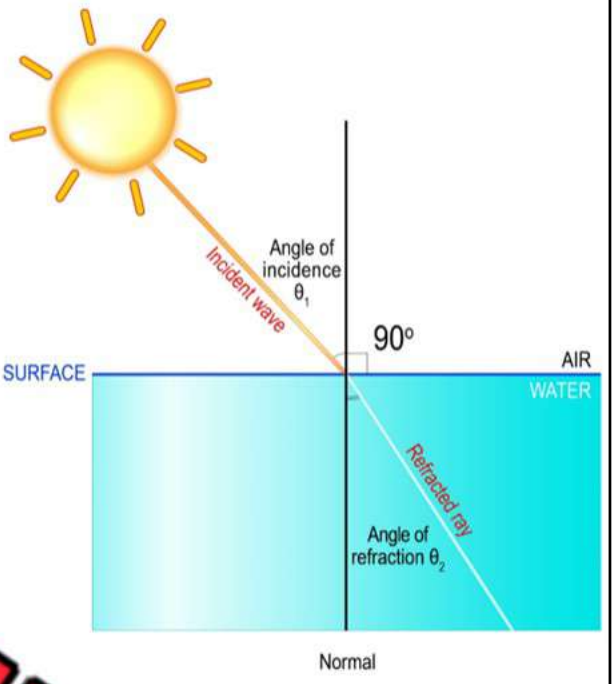
Curriculum Connection
C2.3

Light Refraction

Refraction of Light

Light refraction is the bending of light as it passes from one transparent substance into another. Light refracts whenever it travels at an angle into a new transparent substance because the light changes speed as it enters the new substance.

For example, light travels through air and into water, it slows down, which changes the angle or direction of the light ray.



In the diagram, the incident ray is travelling straight through the air. When it hits the transparent (clear) water, it slows down, changing the direction or angle of the ray. The new path of the ray is the refracted ray.

PREVIEW

The amount of bending depends on:

1) Change of speed – Depending on the speed that light travels through the substances, the bending will be stronger if the light must slow down a lot of speed.
2) Angle of incident ray – If the light enters the new substance at a steep angle, the amount of refraction will be stronger. If the light hits the new substance straight on, there will be no refraction, even though the light will slow down or speed up.

Refractive Index

The table below shows the speed of light in each substance. A higher refractive index means the light will slow down and change direction more as it enters the new substance.

Substance	Refractive Index	Speed of Light in Substance
Air	1.00	300
Water	1.33	226
Glass	1.5	200
Diamond	2.4	125

© Super Simple Sheets

Name: _____ 46

Curriculum Connection
C2.3

Questions

Answer the questions below using evidence from the text.

1) What is light refraction? What causes light to refract?

2) Describ... appens when light travels through air and into water. Use the inform... le in your answer.

PREVIEW

Making Connections

When have y... light...

True or False

Circle whether the statement is true or false.

1) A higher refractive index means the light slows down.	True	False
2) A higher refractive index means the light will change direction more.	True	False
3) When light travels through air into a diamond, it speeds up.	True	False
4) When light travels through a diamond into water, it speeds up.	True	False
5) Light will always bend when travelling from air into water.	True	False

© Super Simple Sheets

Curriculum Connection
C2.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class.

Name: _____ | Mark

Circle yes or no.

1) Does light bend when it enters water at an angle?	Yes	No
2) Does light refract when it enters a new substance straight on (90°)?	Yes	No
3) Does light change speed when it enters a different transparent substance?	Yes	No
4) Does refraction mean the bouncing of light?	Yes	No
5) Does light slow down when it travels from air into water?	Yes	No
6) Does a greater angle of entry usually cause more refraction?	Yes	No
7) Does light travel at the same speed in air and diamond?	Yes	No

Name: _____ | Mark

Circle yes or no.

1) Does light bend when it enters water at an angle?	Yes	No
2) Does light refract when it enters a new substance straight on (90°)?	Yes	No
3) Does light change speed when it enters a different transparent substance?	Yes	No
4) Does refraction mean the bouncing of light?	Yes	No
5) Does light slow down when it travels from air into water?	Yes	No
6) Does a greater angle of entry usually cause more refraction?	Yes	No
7) Does light travel at the same speed in air and diamond?	Yes	No

Name: _____ | Mark

Circle yes or no.

1) Does light bend when it enters water at an angle?	Yes	No
2) Does light refract when it enters a new substance straight on (90°)?	Yes	No
3) Does light change speed when it enters a different transparent substance?	Yes	No
4) Does refraction mean the bouncing of light?	Yes	No
5) Does light slow down when it travels from air into water?	Yes	No
6) Does a greater angle of entry usually cause more refraction?	Yes	No
7) Does light travel at the same speed in air and diamond?	Yes	No

PREVIEW

© Super Simple Sheets

Name: _____ 48

Curriculum Connection
A1.3, A1.4, A1.5

Experiment – Refracting Light

Research Question

What are we learning more about?

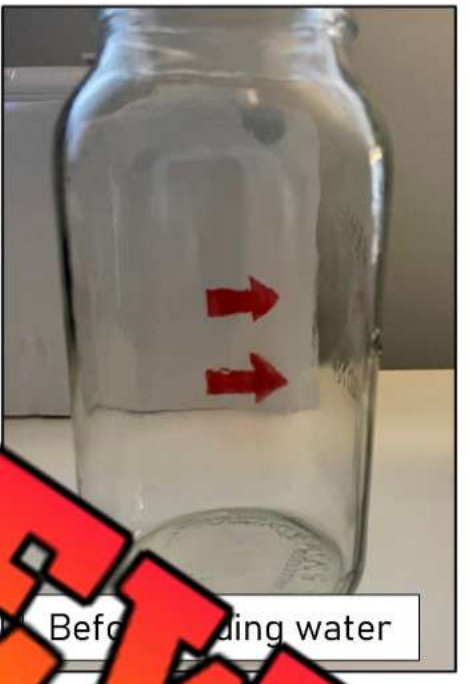
When light passes through a transparent (clear) material, it bends as it comes out the other side. The cause of refraction is because light travels at different speeds in different materials. What will happen to light as it passes through a glass jar with water in it

PREVIEW

Materials

What do we need for our experiment?

- Glass jar
- Water
- Paper with designs
- Measuring cup full of water – enough to almost fill the jar

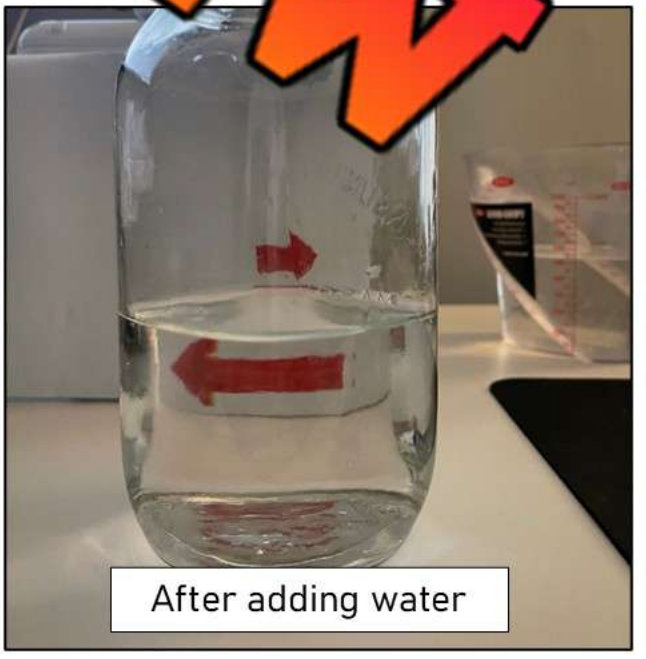


Before adding water

Method

How do we complete the experiment

1) Get your paper ready with the designs you want to see change. We used red arrows drawn in the same direction.
2) Stand the paper up by leaning it against a wall or a book.
3) Place the jar in front of the paper.
4) Slowly add the water to the jar. You might need to rotate the jar to show the effect.
5) Record your observation.



After adding water

© Super Simple Sheets

Name: _____ 49

Curriculum Connection
A1.3, A1.4, A1.5

Observations | What happened?

What happened? Write down what you observed as you added water.

Results | Answer the questions below.

1) What is refraction?

2) Why did the designs move as you added water?

3) When have you seen light refracted in your life? Explain.

PREVIEW

Name: _____ 50

Curriculum Connection
C2.3

Instruction	Start at the Start box and follow the pathway labels by choosing the word that correctly matches the light concept in each box. Continue tracing the correct path until you reach the Finish box without crossing into the wrong pathways.



PREVIEW

Name: _____ 51

Curriculum Connection
C2.3

White Light

White Light

Did you know that all the colours we can see come from white light? **White light** is defined as the complete mixture of all the wavelengths that are visible to us.



Thin[illegible]ut it, we can see many things in our environm[illegible]se of the natural light coming from [illegible] sunlight allow us to see differen[illegible]lours? [illegible] just white light. The reason is because that white light is made up of all [illegible]if[illegible]nt col[illegible]ed together.

PREVIEW

How Do We See Colour?

When the sunlight shines on a [illegible]o, th[illegible] part of the sunlight is reflected off the [illegible], while all the other colours are absorbed or soaked into the tomato, which is why we don't see them.



The same goes for a brown book. Light from sunlight or lightbulbs begins its journey as white, but is reflected in different colours.

So why is a tomato red and why is that book brown? It's because of the atoms inside each object. A tomato is red because when the light shines on the tomato's skin, the atoms inside the tomato get excited and produce photons.

Photons are a form of energy that our eyes can see as light. Our eyes are complex devices that figure out what colour different photons are. That is why some people see different colours and why some people can't see certain colours. It's because some people's eyes don't process certain photons the same way other people do.

© Super Simple Sheets

Name: _____ 52

Curriculum Connection
C2.3

True or False

Circle whether the statement is true or false.

1) All the colours we can see come from white light.	True	False
2) Sunlight comes in more than one colour, not just white.	True	False
3) We see colour because our eyes can see photons in objects.	True	False
4) Everyone sees colour the same way because our eyes all work the same.	True	False
5) All light[illegible]s emit light as white light, not coloured light.	True	False

Ques[illegible]

[illegible] questions below using evidence from the text.

1) What is whi[illegible]t?

2) Why is a tomato red and not blue?

PREVIEW

Summarize

Summarize the reading by writing the important information.

© Super Simple Sheets

Curriculum Connection
C2.3

Light Waves – Frequency, Wavelength, Amplitude

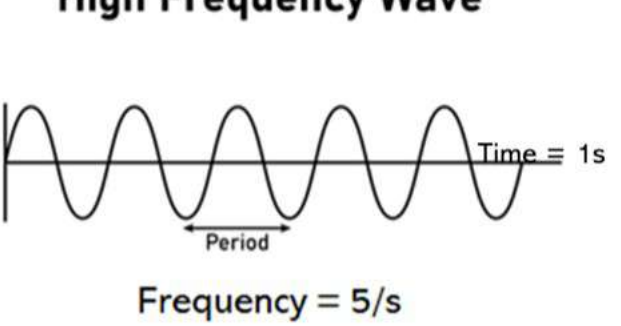
The Magic of Light: Frequency, Wavelength, and Amplitude

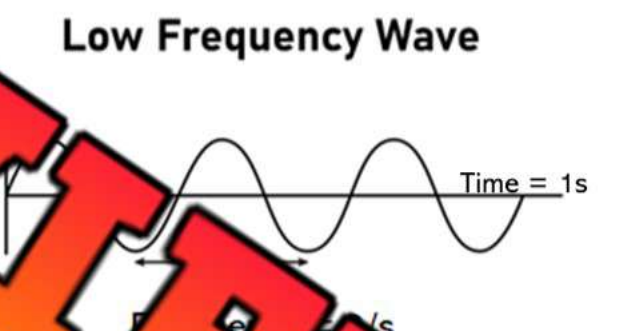
When we see light, we're really seeing a wave that can change in three ways: frequency, wavelength, and amplitude. These changes give us different colours, brightness, and intensity of light.

Frequency Magic

Think of f ncy like a pendulum swinging d forth. How many times i econd is its freq Light w the same thing, b very, v

The mor osc s, a light wave has cond r its frequency. High- qu t are shorter and have m gy. Lower-frequency light wave ton and have less energy.





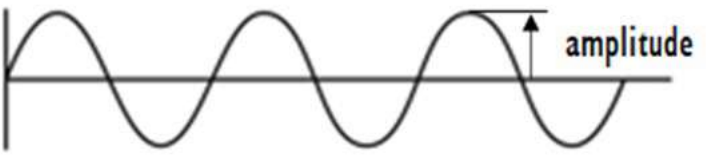
Wavelength Wonders

The wavelength of a light wave is like measuring the length of a slinky from one end to the other when it's stretched out. Wavelengt the ce between two points on the wave that are in the same place, like t ops bottoms (troughs).

We usually measure wavelength in nanometers, which are supe The colours we see range from about 400 nanometers (violet) to 700 na eters (red). So, the wavelength of a light wave tells us its colour!

Amazing Amplitude

Amplitude is about how tall a wave is. Imagine a calm sea; the waves aren't very tall. But in a storm, the waves are tall and strong! That's high amplitude.



The higher the amplitude, the more intense and bright the light wave is. It's like how a flashlight seems brighter when you're close to it because the light waves are more intense.

The amplitude is measured from the middle line to the crest.

PREVIEW

Name: _____ 54

Curriculum Connection
C2.3

True or False

Circle whether the statement is true or false.

1) If the frequency is high, the wavelength will be long.	True	False
2) A shorter wavelength means a higher frequency.	True	False
3) The frequency and wavelength of a light wave tells us about its brightness.	True	False
4) The amplitude of a light wave tells us how bright the colour will be.	True	False
5) The wav[illegible]th of a light wave tells us its colour.	True	False

Questi[illegible]

[illegible]questions below using evidence from the text

1) What does t[illegible], wa[illegible]th, and amplitude of a light wave tell us?

2) How are wavelength and frequency [illegible]?

PREVIEW

Define

What do the terms below mean?

Wavelength	
Frequency	
Amplitude	

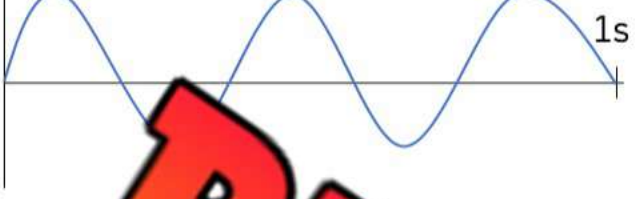
© Super Simple Sheets

Name: _____ 55

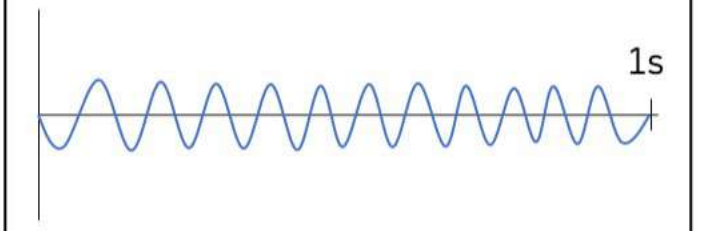
Curriculum Connection
C2.3

Frequency, Wavelength, and Amplitude

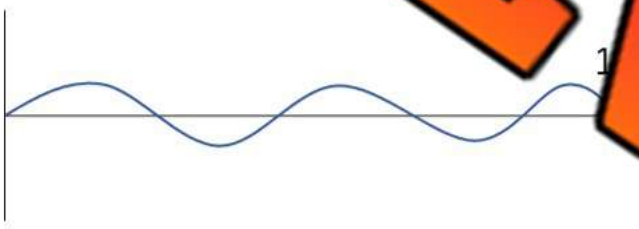
Describe Describe the frequency, wavelength, and amplitude of the light waves.



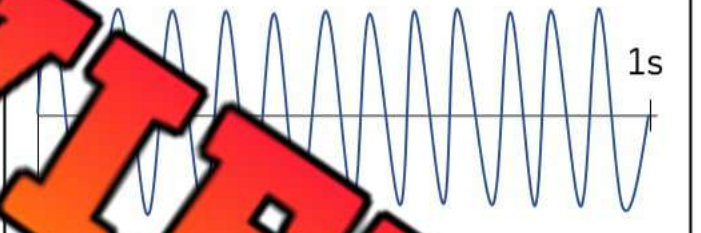
Fr cy (#)	nd one half)
Amplitude	Hi
Wavelength	L



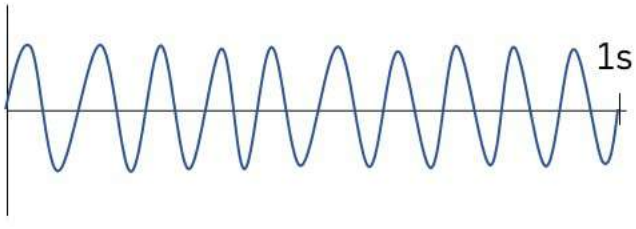
Frequency (#)	
Amplitude	
Wavelength	



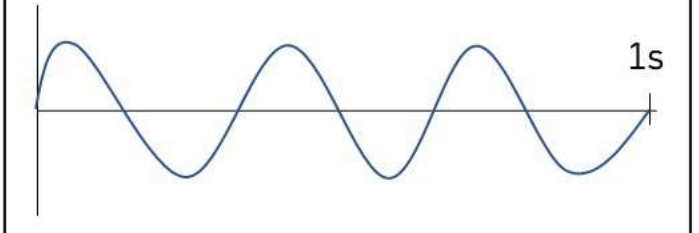
Frequency (#)	
Amplitude	
Wavelength	



Fre y (#)	
Amplitu	
Wavelength	



Frequency (#)	
Amplitude	
Wavelength	



Frequency (#)	
Amplitude	
Wavelength	

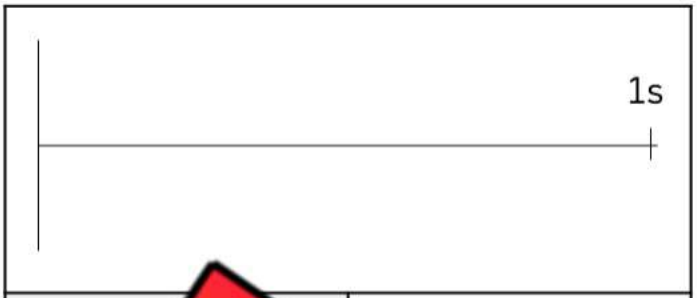
PREVIEW

© Super Simple Sheets

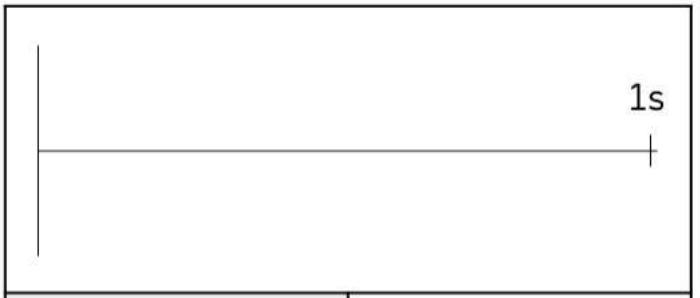
Name: _____ 56

Curriculum Connection
C2.3

Draw Draw the frequency, wavelength and amplitudes provided.



Frequen	3
A	Tall
Wav ngth	edium



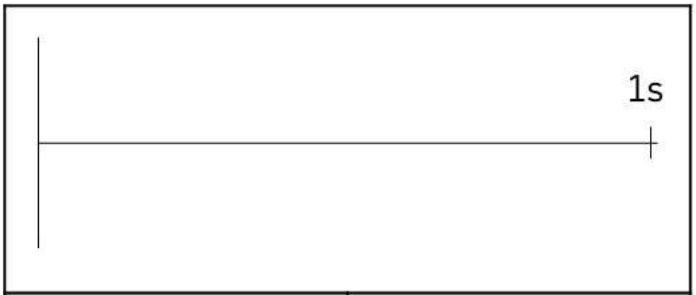
Frequency (#)	2
Amplitude	Short
Wavelength	Long



Frequency (#)	8
Amplitude	Short
Wavelength	Short



Freque #)	4
Am	Medium
Wavelen	



Frequency (#)	10
Amplitude	Tall
Wavelength	Short



Frequency (#)	2.5
Amplitude	Medium
Wavelength	Long

PREVIEW

© Super Simple Sheets

Name: _____ 60

Curriculum Connection
C2.3, C2.6

Light Interacting with Materials

Light Interacting with Materials



We have learned that light reflects off some materials and is absorbed by others. Sometimes light will even go through materials and bend so that the li ys go in a different direction. This is called r Depending on the material, light r be absorbed.

PREVIEW

Materials hat Re

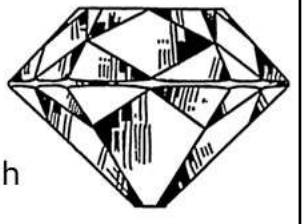
- Water – wate d refle stance, although some light is absorbed into the water. The shallow bo more light it will reflect. A pond will reflect much more light than an
- Mirrors – one of the best surfa s tha me mirrors are perfect, which means they reflec e light and do not absorb or refract any of it.



Materials that Absorb Light

- Dark clothing - dark colours absorb more energy from har ts w light colours. That means your black shirt will absorb more sunlight th ite shirt and you'll be a lot warmer!
- Metals – most metals absorb light well, especially darker metals. That is why metal is often hot on a warm day.

Materials that Refract Light



- Diamonds – diamonds are sparkly because of the way they refract and bend light. Experts can tell if a diamond is real based on how much light they refract.
- Glass – high quality windows use glass that allows almost all light to refract through it. Lower quality windows produce reflected light that causes a glare.

© Super Simple Sheets

Name: _____ 61

Curriculum Connection
C2.3, C2.6

Questions

Answer the question using information from the text.

1) How does light interact with materials?

2) Why is car that has been out in the sun warmer than a white car?

PREVIEW

Making Connections

Wh the mind you of?

True or False

Answer the questions below using evidence from the text.

1) Dark colours reflect more light than light colours.	True	False
2) Water can reflect and absorb light.	True	False
3) Lower quality glass windows reflect more light which causes glare.	True	False
4) Metals absorb light which often makes metals in the sun very hot.	True	False
5) Quality mirrors refract light and do not reflect or absorb any light.	True	False

© Super Simple Sheets

Name: _____ 64

Curriculum Connection
C2.7

Light and Heat

Sources of Light that Provide Heat

A source of light is something that creates light for our environment. Some sources of light also provide heat as well. The Sun is the most obvious example, as it has a surface temperature of over 10,000 degrees Fahrenheit.



Candles are another example of a source of light that also produces heat. Approximately one quarter of the energy created by the burning candle is given off as heat radiating from the flame in all directions. The remaining three quarters of energy is light energy that is emitted into the environment. This means that candles are an inefficient source of heat and a better source of light.

An incandescent light bulb produces heat, even though it has been designed to provide us with only light. The heat produced by lightbulbs make it an inefficient light source as the heat that comes from the bulb is wasted. They produce 90% of its energy as heat and only 10% as light.



Sources of Light that Provide No Heat

LED lights are the most efficient form of light because they produce much less heat than other light bulbs. In fact, they can be cool to touch even after operating for a long time. This means all the energy emitted from the bulb is in light form, without the wasted heat energy.

Fireflies produce light through a chemical reaction called chemiluminescence. For fireflies, 100% of the energy they produce goes into making light, and none go towards heat.



Another source of light that provides no heat are glow sticks. A glow stick works through a chemical reaction, much like with fireflies. This reaction causes a bi-product that is light without heat.

PREVIEW

© Super Simple Sheets

Name: _____ 65

Curriculum Connection
C2.7

True or False

Circle whether the statement is true or false.

1) Incandescent light bulbs are very energy efficient providing just light.	True	False
2) LED light bulbs are inefficient, providing too much heat.	True	False
3) The sun is over 100,000 degrees Fahrenheit.	True	False
4) Glow sticks work because of a chemical reaction.	True	False
5) Fireflies ide light and no heat.	True	False

Question

questions below using evidence from the text.

1) List so e sou tha roduce heat and some that do not.

2) Do you think it is good that some sou light at? Can the heat be unwanted sometimes? Explain.

PREVIEW

Visualizing

Draw what you were picturing while you were reading. Exp the picture.

© Super Simple Sheets

Name: _____ 66

Curriculum Connection
C2.7

Experiment – Energy Efficiency

Research Question

What are we learning about?

What does efficiency mean? How can one lightbulb be more efficient than another light bulb? How much heat do inefficient light bulbs produce? Do light bulbs that give more light produce more wasted heat?

Materials

What will you need for the experiment?

- ❑ Lamp
- ❑ Thermom
- ❑ 25-watt Incan nt b
- ❑ 100-watt Incand e
- ❑ 2 fluorescent bulbs uce l comparable to the incan nt b



Incandescent Bulb

Procedure

Complete the steps below to fini e ex nt.

1) Put a 25-watt incandescent light bulb into the lamp and turn it on.

2) Hold the thermometer about 5-10 cm above the bulb for one minute and record the temperature.

3) Turn off the lamp.

4) Let the bulb cool and then take it out.

5) Repeat the procedure above using the 100-watt incandescent bulb. Record the temperature.

6) Repeat the process above using the fluorescent bulbs. Record the temperatures for both bulbs.



Fluorescent Bulb

PREVIEW

Name: _____ 67

Curriculum Connection
C2.7

Observations | What happened?

Light Bulb	Temperature
Temperature with light off	
25-watt Incandescent Bulb	
100-watt Incandescent Bulb	
[illegible] Fluorescent Bulbs	
[illegible] orescent Bulbs	

Results | [illegible] low.

1) Which type of light made mo[illegible]at?

2) Does a light that produces more light make more heat? Exp[illegible]n

3) Which lightbulb is more efficient? Explain.

PREVIEW

© Super Simple Sheets

Name: _____ 68

Curriculum Connection
C2.7

Activity: Heat and Light Safety Role Play

Objective

What are we learning about?

To educate students about the importance of safety around light and heat through interactive role-playing.



Materials

What will you need for the activity?

- P[illegible]to simu[illegible]onments (sunglasses, blankets, toy campfire)
- Scenario [illegible]e ro[illegible]
- Safety gear (sun[illegible]s[illegible]
- Costume items to enhan[illegible]e-p[illegible]

PREVIEW

Instructions

How will you complete the acti[illegible]

1) Divide the students into small groups and a[illegible]group[illegible]nario card.
2) Provide each group with props and safety gear r[illegible]th[illegible]na[illegible]to help them create a realistic setting.
3) Allow time for each group to set up their area using the pr[illegible]de[illegible]ials to simulate their assigned environment.
4) Instruct each student within the group to take turns role-playing according to their scenario. They should act out appropriate safety measures for dealing with heat and light, such as applying sunscreen or using protective gear near heat.
5) Each student in the group takes turns role-playing. They should share their scenario, discuss the actions they took, and explain why those safety measures are important.
6) After the role-play, students gather as a class and each group shares their experience, discussing as a class the common dangers associated with light and heat in different environments and how best to stay safe.

© Super Simple Sheets

Name: _____ 69

Curriculum Connection
C2.7

Scenario Cards | Cut out the topics below.

Role Play Scenarios

Sunny Beach Day: A group of friends sets up a picnic under the sun, applying sunscreen and wearing hats to protect themselves from the heat and light.

Camping Night: A family gathers around a campfire, discussing safety measures like sitting at a safe distance and using sticks to roast marshmallows without getting too close to the fire.

Cooking in a Kitchen: A 10-year-old helps their parent cook dinner, using oven mitts to handle hot pots and stove safely, and check on the food.

Exploring a Cave with Flashlights: Children pretend to explore a dark cave, using flashlights to navigate safely and discuss why light is essential in such environments.

Watching a Solar Eclipse: Students use special glasses to watch a solar eclipse, discussing the importance of protecting their eyes from harmful solar radiation.

PREVIEW

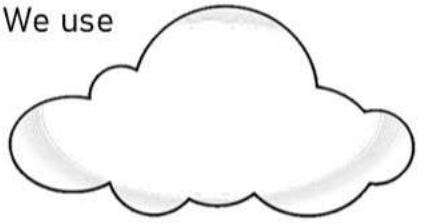
Name: _____ 70

Curriculum Connection
C2.3

Transparent, Translucent, or Opaque

Light Transmission

The transmission of light is the moving of light rays through a material. **Light transmission** refers to how well a material will allow light to pass through it. We use the terms transparent, translucent, and opaque to describe materials based on how much light they transmit.



The difference between these materials is the density of the molecules in the materials. Some materials have molecules that are so close together that light cannot transmit through them. Other materials have molecules that are less dense, which means the molecules are more spread out. This means light can easily find its way through.

PREVIEW

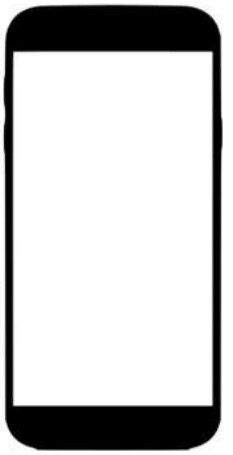
Transparent Materials

A **transparent material** is a material that allows light to pass through completely. We can clearly see through these materials. We call these materials, 'see through'. If an object is on the other side of this material, we will be able to see it because the material is transparent. Examples of transparent materials are: air, water, some plastics, glass.



Translucent Materials

A **translucent material** is a material that allows some light to pass through, but not all light. We can see partly through these objects. Examples of materials that are translucent are wax paper, frosted glass, jelly, clouds, and paper cups.



Opaque Materials

An **opaque material** is a material that does not let any light pass through. We cannot see through these objects at all. All of the light that shines on these materials is either reflected or absorbed. Examples include: cardboard, metal, cell phones, and dice.

© Super Simple Sheets

Name: _____ 71

Curriculum Connection
C2.3

True or False Circle whether the statement is true or false.

1) Light transmission means that light bounces off a material.	True	False
2) Transparent materials allow light to completely pass through.	True	False
3) Opaque materials allow some light to pass through.	True	False
4) Wax paper is an example of an opaque material.	True	False
5) We can [illegible]artly through a translucent material.	True	False

Quest[illegible]sw[illegible]uestions below using evidence from the text.

1) What is the [illegible]e [illegible]etwe[illegible]nsparent and translucent material?

_____

_____

_____

2) What does opaque mean? Does sunlight shine th[illegible]n opa[illegible]aterials?

_____

_____

_____

Draw Draw pictures of examples of transparent, translucent and opaque materials

Transparent	Translucent	Opaque

PREVIEW

© Super Simple Sheets

Curriculum Connection
C2.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class.

Name: _____ Mark

How much light passes through each material?

Transparent	
Translucent	
Opaque	

Name: _____ Mark

How much light passes through each material?

Transparent	
Translucent	
Opaque	

Name: _____ Mark

How much light passes through each material?

Transparent	
Translucent	
Opaque	

Name: _____ Mark

How much light passes through each material?

Transparent	
Translucent	
Opaque	

PREVIEW

© Super Simple Sheets

Name: _____ 73

Curriculum Connection
A1.2, A1.4, A1.5

Activity – Transparent, Translucent or Opaque?

Activity Which objects are transparent, and which are opaque?

We can determine if an object is transparent, translucent or opaque based on whether light can pass through them. If an object casts a shadow, the object is opaque. If the object does not cast a shadow, it means the light was able to go through it, which means it is transparent. If some light passes through and the shadow is dark, the object is translucent.

PREVIEW

Materials What you need for this activity?



- Flashlight – light source
- Dark room
- Objects to test

Options: wax paper, cardboard, paper, pencil, book, wrap, plastic bottle

Method How do you do this activity?



1) Start by filling in the table below under observations. Write down the objects you will use. Then make a guess or prediction. Will the object be transparent, translucent, or opaque.
2) Point the flashlight at a wall.
3) Put an object in front of the light source. Does it cast a shadow? Does some of the light come through? Or is there no shadow and all the light comes through?
4) Record your observations in the table.
5) Answer the questions below.

© Super Simple Sheets

Name: _____ 74

Curriculum Connection
A1.2, A1.4, A1.5

Observations | What happened?

Object	Prediction	Transparent, Translucent, or Opaque

PREVIEW

Results | What kinds of materials are opaque, transparent, translucent?

Opaque	
Transparent	
Translucent	

© Super Simple Sheets

Name: _____ 75

Curriculum Connection
A1.2, A1.4, A1.5

Examine Circle whether the object is transparent, translucent, or opaque.



Transparent – Translucent – Opaque



Transparent – Translucent – Opaque



Transparent – Translucent – Opaque



Transparent – Translucent – Opaque

Plastic Bag



Transparent – Translucent – Opaque



Transparent – Translucent – Opaque



Transparent – Translucent – Opaque



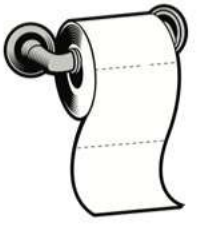
Transparent – Translucent – Opaque



Transparent – Translucent – Opaque



Transparent – Translucent – Opaque



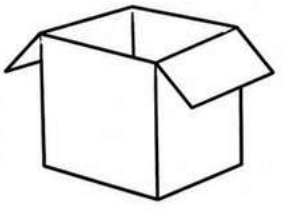
Transparent – Translucent – Opaque



Transparent – Translucent – Opaque

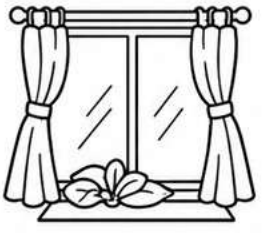


Transparent – Translucent – Opaque



Transparent – Translucent – Opaque

Window



Transparent – Translucent – Opaque

PREVIEW

© Super Simple Sheets

Name: _____ 79

Curriculum Connection
C2.3

Why Do We Need Sun Protection

Sunlight and Ultraviolet Light

Sunlight helps plants grow and keeps us warm. However, it also has ultraviolet (UV) light, which can be harmful if we get too much of it. UV light can burn our skin and hurt our eyes if we are not careful.

Sunscreen Protect Us

Sunscreen is a lotion or spray that protects our skin from the sun's harmful UV rays. It contains special ingredients that either block or absorb UV light. This helps prevent sunburn and reduces the risk of skin damage.



Key Ingredients in Sunscreen

- Zinc oxide
- Titanium dioxide
- Avobenzone

These ingredients create a shield that stops the light from reaching our skin.

Sunglasses Are Important Too

Sunglasses are not just cool fashion accessories; they are very important for protecting our eyes from UV light. Good sunglasses block 99% to 100% of UV rays.

Features to Look for in Sunglasses:

- Labels that say "100% UV protection"
- Wrap-around shapes that cover more area
- Polarized lenses, which reduce glare

Stay Safe in the Sun

It's fun to play and be outside in the sun. But remember to wear sunscreen and sunglasses to protect your skin and eyes. By doing this, you can enjoy the sun safely!

PREVIEW

Name: _____ 80

Curriculum Connection
C2.3

True or False Is the statement true or false?

1) Sunlight is always harmful.	True	False
2) UV light can burn the skin.	True	False
3) Sunscreen is only for hot days.	True	False
4) Zinc oxide blocks UV light.	True	False
5) UV ligh[illegible]isible to the eye.	True	False

Questi[illegible] [illegible] questions you have about the text.

1)	
2)	

Questions Answer the questions below.

1) What is UV light?

2) Why are sunglasses and sunscreens important for protection?

PREVIEW

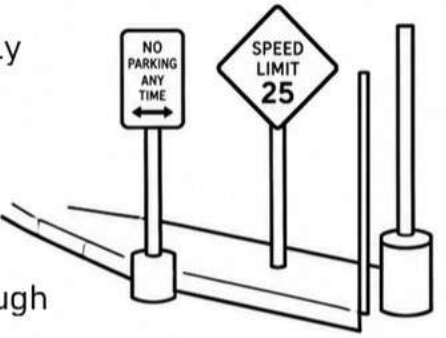
© Super Simple Sheets

Name: _____ 81

Curriculum Connection
C2.3

Shadows

What are Shadows?



The Sun sends light rays that travel in a straight line at nearly 300,000 kilometers per second. Eight minutes later, these rays will hit whatever is in their path on Earth. If the object it hit is opaque, a shadow forms.

Re[illegible]paque means that light cannot pass through the o[illegible]or[illegible]**dow** is an absence of light, meaning it is a dark area on a surface p[illegible]oduced [illegible] object is blocking the Sun's light rays.

PREVIEW

Light Sources a[illegible]ws



There are many sourc[illegible]of l[illegible]ar[illegible]s, light bulbs, flashlights, and comp[illegible]ens[illegible] examples. The light produced by t[illegible]ese s[illegible]ave in straight lines until they hit something.

All these sources of light can produce sh[illegible]f the light rays are blocked by an opaque object. Some sources of ligh[illegible]nt[illegible]n[illegible]t light that the shadows are really visible, whereas other sources of ligh[illegible]y pr[illegible]e sha[illegible]ws at close distances.

Size and Shape of Shadows



The shape of the opaque object that is blocking the light rays will always determine the shape of the shadow. However, the size of the shadow can change based on the position of the light source.

The Sun's changing position in relation to the Earth affects shadows. When the Sun is low on the horizon, the shadows are long. When the Sun is high in the sky, the shadows are much shorter. The same effects can be seen with a flashlight. If you change the position of the light source, the shadow will also change.

© Super Simple Sheets

Name: _____ 82

Curriculum Connection
C2.3

Summarize Summarize the reading by writing the important information.

True or False Circle whether the statement is true or false.

1) All objects will make a shadow.	True	False
2) Only opaque objects will make a shadow.	True	False
3) Shadows are largest when the sun is straight above us.	True	False
4) Shadows are largest when the sun is rising or setting.	True	False
5) Shadows are an area of darkness where light is blocked by an object.	True	False

Questions Answer the questions below using evidence from the text.

1) What are shadows? What can affect the size and shape of a shadow?

2) Do all objects create a shadow? Explain and give examples.

PREVIEW

© Super Simple Sheets

Curriculum Connection
C2.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class.

Name: _____

What do you know about shadows?

1) What type of object creates a shadow?	Opaque Object
	Transparent Object
2) What is a shadow?	When light hits an opaque object
	Light hits a clear object
3) How does light travel?	In circles
	In straight lines
4) What affects the shape of a shadow?	The object blocking the light
	The colour of the object
5) When is a shadow usually longest?	When Sun is high in sky
	When Sun is low in sky

Name: _____

What do you know about shadows?

1) What type of object creates a shadow?	Opaque Object
	Transparent Object
2) What is a shadow?	When light hits an opaque object
	Light hits a clear object
3) How does light travel?	In circles
	In straight lines
4) What affects the shape of a shadow?	The object blocking the light
	The colour of the object
5) When is a shadow usually longest?	When Sun is high in sky
	When Sun is low in sky

Name: _____

What do you know about shadows?

1) What type of object creates a shadow?	Opaque Object
	Transparent Object
2) What is a shadow?	When light hits an opaque object
	Light hits a clear object
3) How does light travel?	In circles
	In straight lines
4) What affects the shape of a shadow?	The object blocking the light
	The colour of the object
5) When is a shadow usually longest?	When Sun is high in sky
	When Sun is low in sky

PREVIEW

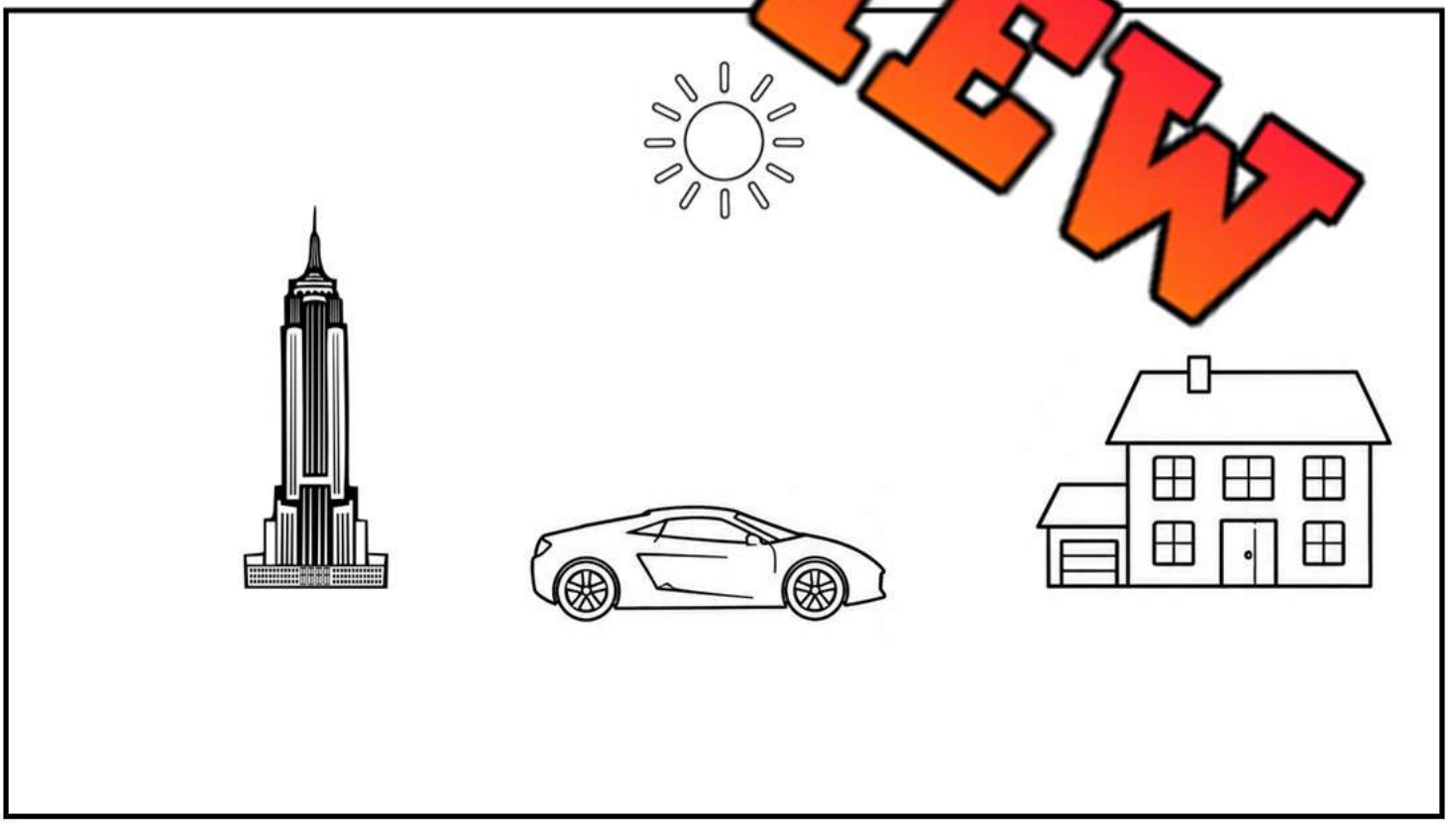
© Super Simple Sheets

Name: _____ 84

Curriculum Connection
C2.3

Draw Draw shadows of the objects in the boxes below. Look at where the sun is to know where the light would be blocked.





PREVIEW

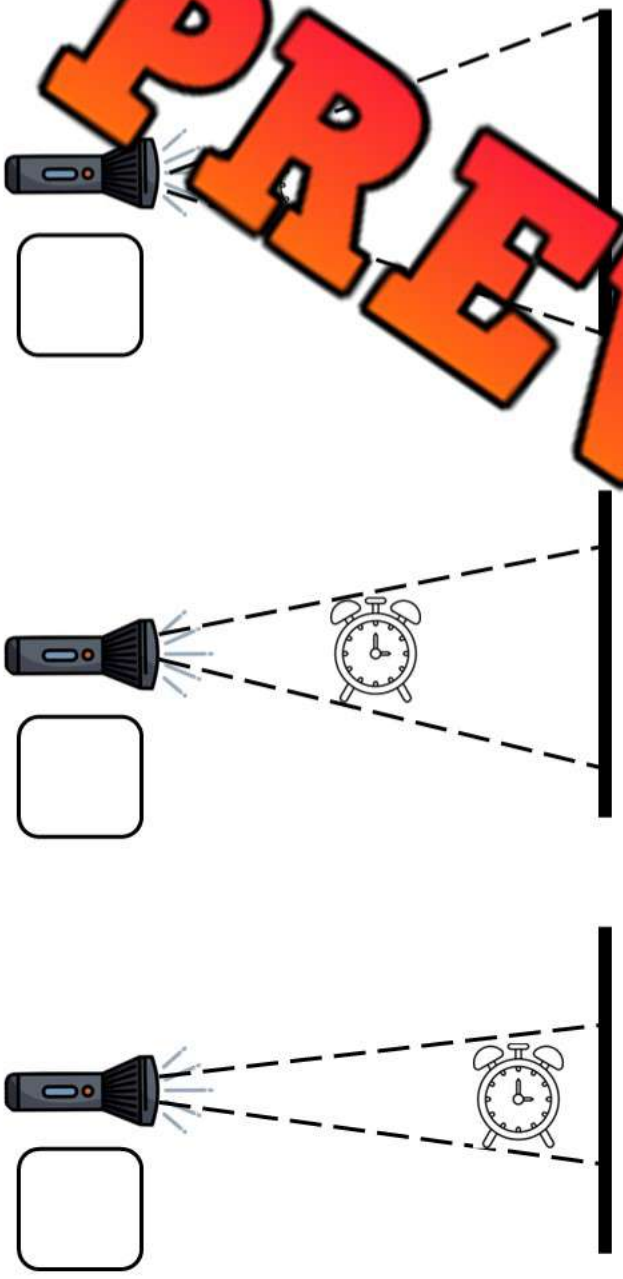
© Super Simple Sheets

Name: _____ 85

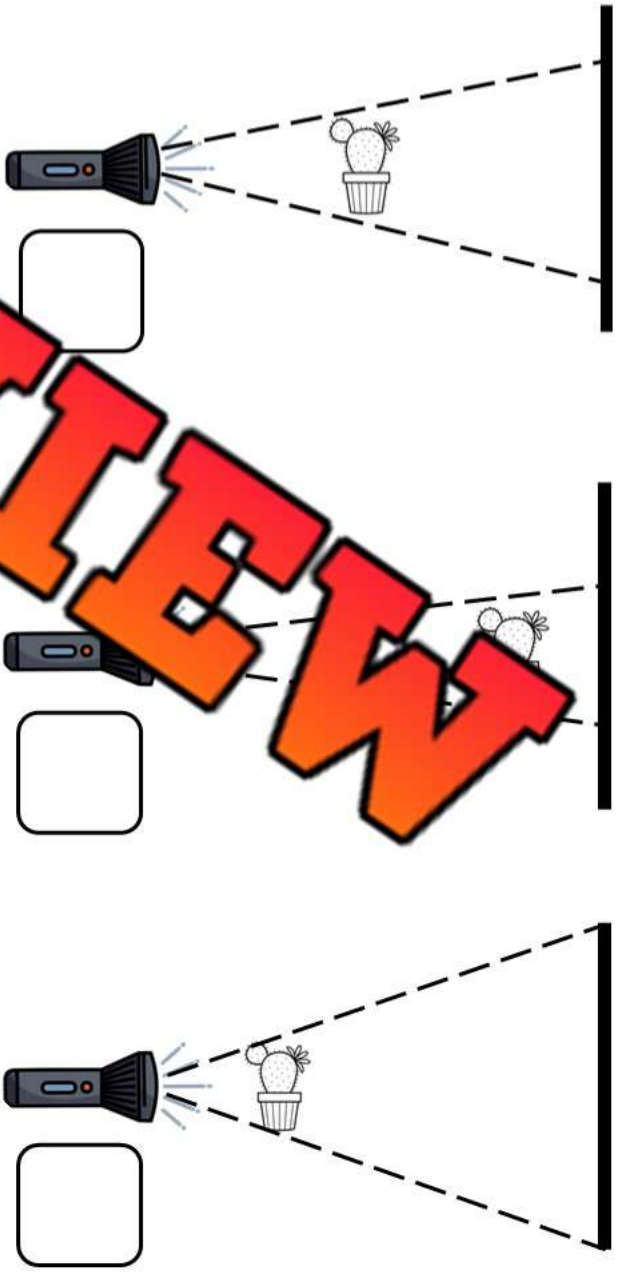
Curriculum Connection
C2.3

Instruction The closer an object is to a source of light, the bigger its shadow is. The farther an object is from a source of light, the smaller its shadow is. Answer the questions, Check the correct boxes.

1) In which position will the clock cast the biggest shadow?



2) In which position will the cactus cast the smallest shadow?



PREVIEW

© Super Simple Sheets

Name: _____ 86

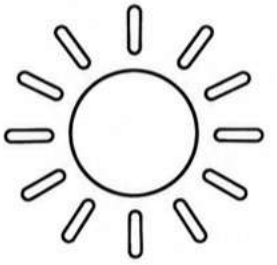
Curriculum Connection
C2.3

Experiment – Understanding Shadows

Research Question What are we learning more about?

To understand how the size and shape of shadows change when we alter the distance and position of a flashlight.

Materials What do we need for our experiment?



- [illegible]
- Sm[illegible] objec[illegible]y, a book, or a pencil)
- Blank wa[illegible]nee[illegible]per
- Measuring [illegible]

PREVIEW

Method How do we [illegible] th[illegible]nt?



1) Darken the room as much as yo[illegible]

2) Put the object on a table and shine you[illegible] flashlight on it. The light should make a sh[illegible]y on the wall or paper.

3) Measure the size of the shadow with your measuring tape and write it down.

4) Move the flashlight closer to the object and observe what happens to the shadow. Measure the size of the shadow again and write it down.

5) Next, move the flashlight farther away from the object. What happens to the shadow now? Measure and record the shadow size.

6) Finally, move the flashlight to different sides of the object. How does the shadow change? Write down what you observe.



© Super Simple Sheets

Name: _____ 87

Curriculum Connection
C2.3

Observations | Draw and explain what you saw.

1)Draw a sketch of the shadow at medium distance. Write about the size of the shadow.

2) Draw a sketch of the shadow at closer distance. Write about the size of the shadow.

3) Draw a sketch of the shadow at a far distance. Write about the size of the shadow.

4) When you moved the flashlight to the sides, what happened to the shadow?

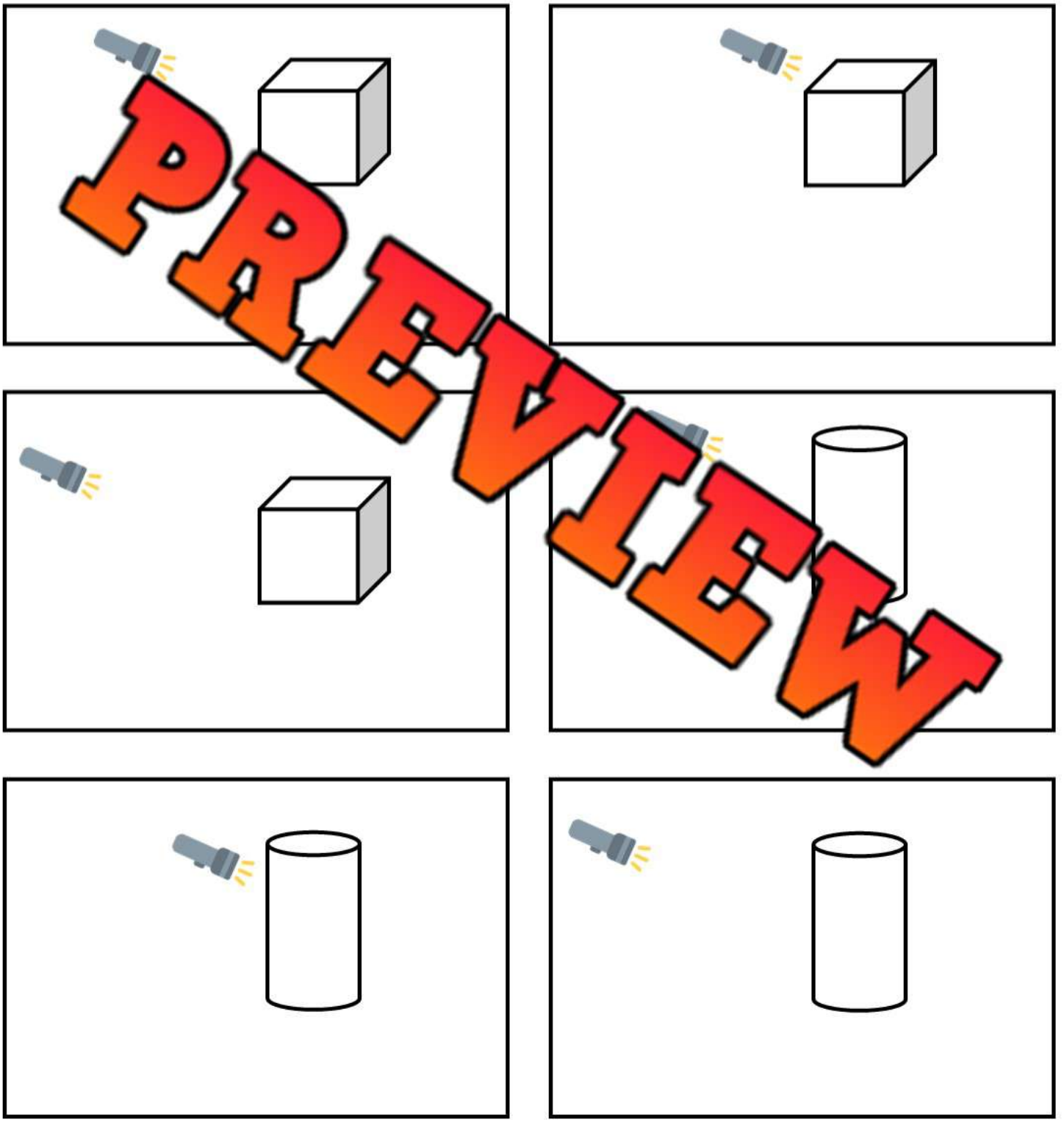
PREVIEW

Name: _____ 88

Curriculum Connection
C2.3

Shadows

Draw Draw the shadows by noticing the distance of the flashlight to the object.



PREVIEW

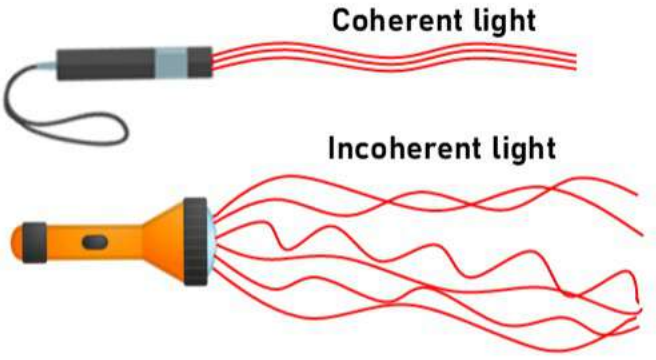
© Super Simple Sheets

Name: _____ 91

Curriculum Connection
C1.1

Coherent vs Incoherent Light

Coherent vs Incoherent Light



Coherent light is a beam of photons that have the same frequency and are all at the same frequency. The wavelengths are also i[illegible], meaning they happen at the s[illegible]

[illegible]rent li[illegible]ot spread out or diffuse. The waves travel together, which produc[illegible] be[illegible] light that does not light up the room, rather it can be seen wher[illegible]eam [illegible]

Incoherent light is [illegible]rom nor[illegible]rces, like a flashlight or bulbs that travels in waves with differen[illegible]eque[illegible]gths, and phase. The result is not a stream of light, but rather ligh[illegible] will di[illegible]nd spread out, lighting up a room (if the source is strong enough).

PREVIEW

What are Lasers?

Lasers make coherent light in many wavelengths, both v[illegible]le a[illegible]t depending on the type of lasers. The coherent light made by la[illegible]e them very useful, and dangerous at the same time.

The coherent light produced by lasers can damage skin and eyes. Depending on the wavelength, the beam of light can penetrate the epidermis of skin. They can also damage the retina by shooting a powerful light current into the eye. The eye's protective blink reflex is not fast enough to shut out the laser beam.

In fact, laser eye surgery uses a laser with a wavelength of 193 nm to cut a thin layer of corneal tissue that corrects eye issues.



© Super Simple Sheets

Name: _____ 92

Curriculum Connection
C1.1

Compare Fill in the table to compare coherent and incoherent light.

	Coherent Light	Incoherent Light
What are the advantages to this type of light?		
What are the disadvantages to this type of light?		
Give examples of both types		
Draw coherent and incoherent light waves		

PREVIEW

True or False Circle whether the statement is true or false.

1) Coherent light has the same wavelength, frequency and phase.	True	False
2) Incoherent light is used in laser eye surgery.	True	False
3) Coherent light does not spread out.	True	False
4) Coherent light is used to light up a room.	True	False
5) Laser eye surgery uses a laser with a wavelength of 193 nm (ultraviolet).	True	False

© Super Simple Sheets

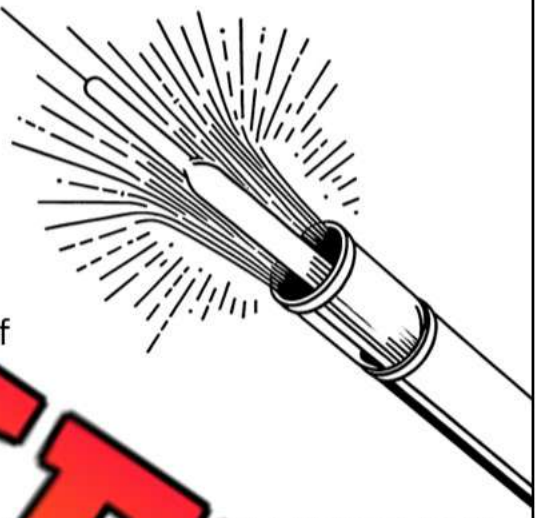
Name: _____ 94

Curriculum Connection
C1.1

Story: The Magic of Fibre Optics

"The Magic of Fibre Optics"

In the small town of Lightville, everyone was excited about the new way they were going to talk to each other and share pictures and videos. The secret? Tiny, magical threads of fibre optic cables.



Fibre optic cables are special because they use light to send information. Unlike old wires that used electricity, these cables send pulses of light through thin strands of glass or plastic. These strands are as thin as a strand of hair but can carry huge amounts of information in just one second!

Mr. Thompson, the local tech expert, explained to the kids at Lightville School how this works. "When you send an email or watch a video online, it's broken down into data. This data travels as light through the fibre optics from one computer to another, even over very long distances like from one country to another."

Thanks to fibre optics, messages and videos travel super fast, almost at the speed of light! In fact, fibre optic cables can transmit data at speeds of up to 100 gigabits per second. That's like downloading thousands of songs in a blink of an eye!

Fibre optics have changed how we communicate, making it faster than ever before. Now, everyone in Lightville could chat, learn, and play online without any delay, all thanks to the magic of light in their tiny, powerful cables.

PREVIEW

© Super Simple Sheets

Name: _____ 95

Curriculum Connection
C1.1

True or False

Is the statement true or false?

1) Fibre optic cables use electricity.	True	False
2) Fibre optics can transmit data very quickly.	True	False
3) Light travels through metal in fibre optics.	True	False
4) Fibre optics are slower than old wires.	True	False
5) Data tr as light inside the fibre optic cables.	True	False

Questic estions you have about the text.

1)	
2)	

PREVIEW

Questions

Answer the questions below.

1) How do fibre optic cables transmit data?

2) How does fibre optic technology benefit everyday internet users?

© Super Simple Sheets

Name: _____ 101

Curriculum Connection
C1.1

Protecting Our Eyes

How to Protect our Eyes

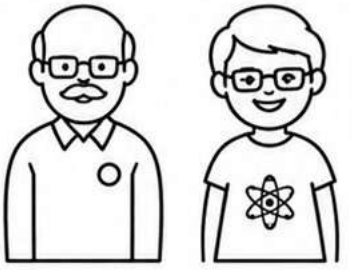


Your eyesight is important to protect because you can cause permanent damage to your eyes if you mistreat them. Permanent damage could lesson your vision or cause blindness. Here are some ways to protect your eyes and vision:

- Wear eyes with ultraviolet protection – Ultraviolet radiation comes from the sun and can be reflected off surfaces like sand or water. Too much exposure to these lights can cause short-term blindness and long-term damage to your vision and eyes.
- Use goggles in the pool – Chemicals can be very damaging to your eyes. The chlorine in pools is designed to protect you from germs in the pool, but it is also harmful to your eyes. Studies have shown that frequent exposure to chlorine negatively affects the cornea in your eye. You need your cornea to refract and bend light.



- Wash hands and avoid rubbing your eyes – The best way to avoid getting disease is to avoid touching your eyes and to wash the bacteria off your hands. You can develop eye diseases like conjunctivitis if you get bacteria in your eyes. Keep your eyes clean!



- Wear eye protection – During outdoor activities you should wear eye protection. When cutting the grass or cutting wood, tiny pieces of dust or dirt can get into your eyes and cause cuts. Cuts in the eye are painful and can affect how well we see! You should also wear eye protection in sports. In badminton, a flying birdie can damage your eye.

PREVIEW

© Super Simple Sheets

Name: _____ 101

Curriculum Connection
C1.1

Questions Answer the questions using information from the text?

1) Why is it important to wash your hands and avoid touching your eyes?

2) Why sh u wear sunglasses?

PREVIEW

Making Connections W the mind you of?

True or False Is the statement true or false?

1) Chlorine helps the cornea in the eye be healthy.	True	False
2) You should wear eye protection while cutting the grass.	True	False
3) You can look directly at the sun with sunglasses on.	True	False
4) Sunglasses protect your eyes from harmful UV rays.	True	False
5) Harmful UV rays can reflect off surfaces and harm your eyes.	True	False

© Super Simple Sheets

Curriculum Connection
C1.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class.

Name: _____

Put a checkmark (✓) on the correct answer!

Mark

Wearing sunglasses helps protect your eyes from...	
○ ight	○ UV rays
What should you wear when swimming in a pool?	
○ A hat	○ Goggles
What can happen if chlorine get eyes	
○ Damages eyes	○ Makes vision strong

Name: _____

Put a checkmark (✓) on the correct answer!

Mark

Wearing sunglasses helps protect your eyes from...	
○ Moon Light	○ UV rays
What should you wear when swimming in a pool?	
○ A hat	○ Goggles
t can happen if chlorine gets into your eyes?	
○	○ Makes vision stronger

Name: _____

Put a checkmark (✓) on the correct answer!

Mark

Wearing sunglasses helps protect your eyes from...	
○ Moon Light	○ UV rays
What should you wear when swimming in a pool?	
○ A hat	○ Goggles
What can happen if chlorine gets into your eyes?	
○ Damages eyes	○ Makes vision stronger

Name: _____

Put a checkm) o correct answer!

ark

Wearing sunglasses helps your eyes from...	
○ Moon Light	○ UV rays
What should you wear when swimming in a pool?	
○ A hat	○ Goggles
What can happen if chlorine gets into your eyes?	
○ Damages eyes	○ Makes vision stronger

PREVIEW

© Super Simple Sheets

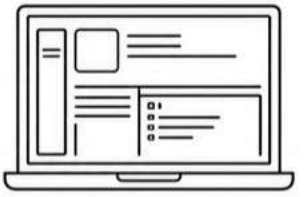
Name: _____ 107

Curriculum Connection
A2.1, A2.2, A3.1, A3.2

Coding – Automatic Street Lights

Streetlights make our cities safer. With the lights on at night, we can see better. This is helpful for us in many ways.

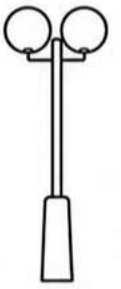
- ✓ Can drive at night more safely
- ✓ Can play outside longer
- ✓ Can prevent theft and crime



City lights are on timers. Codes are used to program these lights. The coding for the timer uses IF/ELSE statements.



if the time is between 7:00pm and 6:00am
n turn lights (on)
tay s (off)



PREVIEW

Fill in the Blanks

Use or bank to fill in the blanks.

code	crime	safer	timer

1) Lights make driving _____.

2) Streetlights are turned on by a _____.

3) A _____ is used on the timer to tell the lights w n.

4) Streetlights stop _____.

5) Lights let us play outside _____.

Read the Code

Would the lights be on or off based on the time?

5:00 pm	On	Off
9:00 pm	On	Off
7:00 am	On	Off
5:30 am	On	Off

7:01 pm	On	Off
6:01 am	On	Off
6:50 pm	On	Off
2:30 am	On	Off

© Super Simple Sheets

Name: _____ 108

Curriculum Connection
A2.1

Coding – Following Instructions

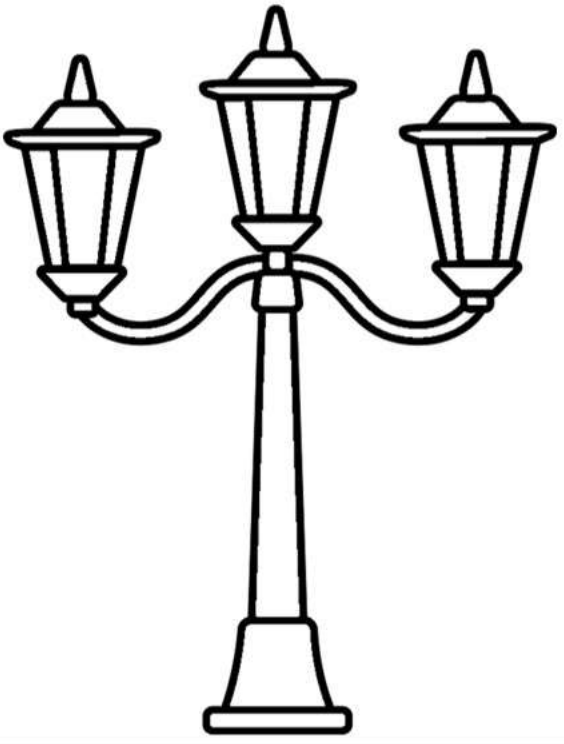
Directions Read the program and follow the instructions to draw the output.



If ► is clicked
our the street light (grey)
lights (yellow)
A bl background
Draw a be streetlight



PREVIEW

Original	tput
	

© Super Simple Sheets

Name: _____ 109

Curriculum Connection
A2.1, A2.2, A3.1, A3.2

Writing Code – Lights In Your Room

Coding Write your own code for a timer that controls lights in your room.



Read Code ...uld the lights be on or off based on the time?

7:00 pm	On	Off
11:00 pm	On	Off
6:00 am	On	Off
3:30 am	On	Off
12:00 pm	On	Off

6:01 pm	On	Off
8:01 am	On	Off
5:50 pm	On	Off
[illegible]	On	Off
[illegible]0 pm	On	Off

PREVIEW

Results Answer the questions below.

1) Why did you program the timer for these times?

2) How could using coding/timers help you in your life?

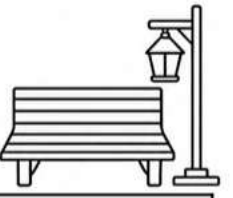
3) What else could you put on a timer to help you in your life? Explain.

© Super Simple Sheets

Name: _____ 110

Curriculum Connection
A1.1

Research – Automatic Lights



Research Ask your family about the automatic lights at your house.

1) Do you have any automatic lights at your house?	
Yes	No

2) If yes, h… the automatic lights help your family? If no where would they be helpful?

3) What time do the automati… lights … do they turn off?

Turn On		…	

PREVIEW

Research Ask your family about the automatic …



1) Do you have any automatic lights at on your street or … our …	
Yes	No

2) How do these lights help you and the people in your community?

3) What time do the automatic lights come on? When do they turn off?

Turn On		**Turn Off**	

© Super Simple Sheets

Name: _____ 111

Curriculum Connection
C1.1, C1.2, C2.3

Spelling Bee – Light Vocabulary Spelling Bee

Objective

What are we learning about?

To enhance students' spelling abilities and expand their vocabulary with terms related to light and optical technologies. This activity will reinforce their learning about light while promoting accuracy in spelling complex words.

Materials

What will you need for the activity?

- List of spelling words related to light and optical technologies
- Bell or buzzer for signaling correct spellings



Instructions

How will you complete the activity?

1) Use the list of spelling words related to provided.
2) Divide participants into teams or have them compete individually, based on class size and dynamics.
3) Clarify the rules, including turn-taking, scoring, and handling of misspellings.
4) Begin the bee by having the first participant spell a word from the theme list, noting their attempt on the board.
5) Use a signal device to indicate correct or incorrect responses and display the correct spelling for any mistakes.
6) Progress through participants, allowing multiple attempts and cycling through the word list.
7) Tally correct spellings to determine scores for each participant or team.

PREVIEW

Name: _____ 112

Curriculum Connection
C1.1, C1.2, C2.3

Spelling Terms | List of light related words

Easy	Moderate	Hard	Very Hard
Lens	Glass	Flashlight	Fluorescence
Beam	Mirror	Wavelength	Binoculars
La	Fibre	Reflection	Transmission
b	Visual	Refraction	Illumination
Colour		Chromatic	Photoluminescence
Shade	scope	pectrum	Radiation
Light	Focal	Micr e	Transparent
Flash	Prism	nsity	Absorption
Shine	Optics	Infra	raction
Clear	Focus	Ultraviolet	
View	Reflector	Spectral	Kaleidoscope
Image	Photons	Emission	Electromagnetic
Angle	Zoom	Translucent	Dispersion
See	Dark	Bright	Optoelectronics
Eye	Laser	Monochromatic	Photosensitive

PREVIEW

© Super Simple Sheets

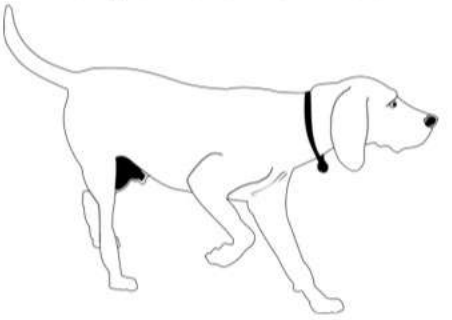
Name: _____ 113

Curriculum Connection
C2.4

Sound – Interesting Facts

What is Sound?

Sound comes from vibrations that create sound waves. These sound waves move through the air, water, and solid objects until they reach our ears. Our ears vibrate in similar ways to the original source of the vibrations, which allows us to hear many different sounds.



Interesting Facts about Sound

Animal Sound

- Dogs can hear sounds at a higher frequency than humans, which gives them the ability to hear noises that we can't
- Sound is used by animals to scare away predators. This allows them to hear predators that might be planning an attack on them
- Dolphins use sound to detect the size and speed of objects hundreds of metres away. They can understand the difference between a golf ball and a ping-pong ball just by their sound waves bouncing off the objects
- Sound cannot travel through space because there is no matter for the sound waves to travel through

PREVIEW



Speed of Sound

- Sound travels at a speed of 1,230 km per hour.
- Sound is much, much slower than light. Light is 900,000 times faster!
- Sound travels 4 times faster through water than through air
- When you crack a whip, the loud sound occurs because the tip is moving so fast, it breaks the speed of sound!



Study of Sound

- The scientific study of sound waves is called acoustics
- Music is the pleasing arrangements of sounds

© Super Simple Sheets

Name: _____ 114

Curriculum Connection
C2.4

Questioning What questions do you have after reading the information?

1)	
2)	

True or False Circle whether the statement is true or false.

1) Sounds moves [illegible] than [illegible]	True	False
2) Cracking a whip brea[illegible]s[illegible]eed o[illegible]	True	False
3) Sounds come from vibratio[illegible]hat[illegible]ves.	True	False
4) Music is the study of sound waves	True	False
5) Dolphins use sound to understand the wo[illegible]ound	True	False

Questions Answer the questions below using eviden[illegible]th[illegible]t.

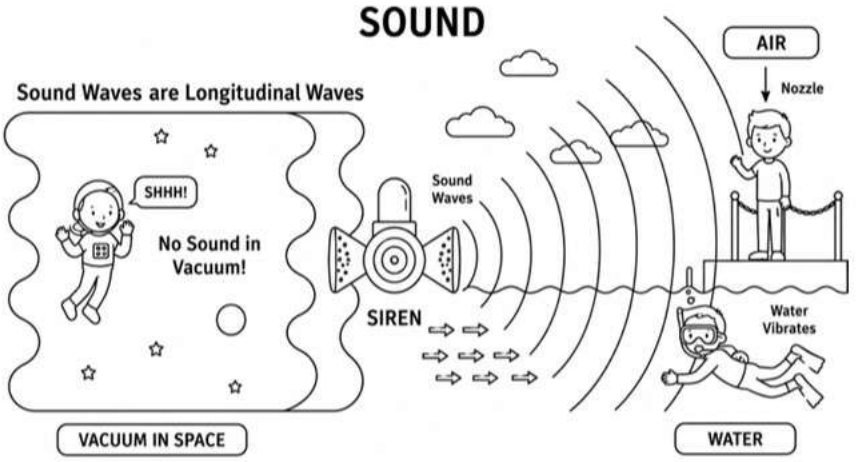
1) What is sound? How do animals hear sounds differently than humans?
_____ _____ _____
2) How fast does sound travel? What else did you learn about the speed of sound?
_____ _____ _____

PREVIEW

© Super Simple Sheets

Sound is Energy

Sound – A Form of Energy



Sound is the movement of energy through a substance – like air or water. Sound is caused by vibrations [illegible] travel through a substance [illegible] rm of waves. These [illegible] s [illegible] substan[illegible] o trav[illegible] e the waves vibrate [illegible] the [illegible] ater and send the waves through it. If there is no substance, like in o[illegible] pace [illegible] acuum.

In a vacuum, sound [illegible] n't tra[illegible] se there are no atoms to transmit or send the sound waves. Sound w[illegible] ca[illegible] mething passes them along! Therefore, in outer space, you cannot h[illegible] y soun[illegible]

How Sound Energy is Produced?

Sound energy is produced by a force that causes a[illegible] bstan[illegible] ibrate. We produce sound energy each day when we talk. Our vocal [illegible] d v[illegible] s i[illegible] the air that travel through the air particles.

You can create more sound energy by yelling, which will requi[illegible] m[illegible] rgy from your vocal cords. The extra energy your vocal cords are producing will tra[illegible] fer into larger vibrations and bigger sound waves.

Your voice isn't the only thing that causes sound. You make sounds when you move your chair or clap your hands. These movements cause vibrations in the air as well.

Sound Energy Through Air or Metal

You can hear a train coming by putting your ear on the train track before you hear the sound of it coming through the air. This is because the sound waves from the train travel faster through the solid metal than through the air, which is a gas.

PREVIEW

© Super Simple Sheets

Name: _____ 120

Curriculum Connection
C2.4

True or False

Circle whether the statement is true or false.

1) In outer space, sound waves do not travel so you can't hear anything.	True	False
2) A vacuum has no particles in it so sound can't travel through.	True	False
3) Sound waves travel faster through air (gas) than metal (solid).	True	False
4) The more energy used to make vibrations, the louder the sound.	True	False
5) Sound w[illegible] only travel through the air.	True	False

Questi[illegible]

[illegible] questions below using evidence from the text.

1) Can sound t[illegible]um [illegible]hy or why not?

2) How is sound energy produced?

Visualizing

Draw what you were picturing while you were reading. Ex[illegible] the picture.

PREVIEW

© Super Simple Sheets

Name: _____ 124

Curriculum Connection
C2.4

Activity – Guess the Sound

Research Question What are we testing?

Can you tell the difference between different types of sounds?



Materials What do we need for our experiment?

- Com
- S

Procedure w do mplete the activity?

1) You could find your nds to for students to guess. An easier option is to search on YouTu s th me".
2) Have students give their answers or w em below.

Recording Write what sound you hear.

1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	
9)	
10)	

11)	
12)	
13)	
14)	
15)	
16)	
17)	
18)	
19)	
20)	

PREVIEW

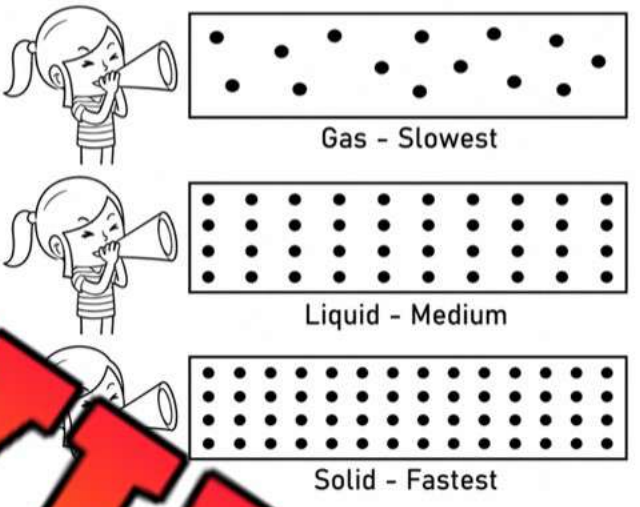
Name: _____ 125

Curriculum Connection
C2.5, C2.6

Sound Travels Through Matter

Sound Travels Through Matter

Sound vibrations will not travel if there is no matter for them to travel through. In deep space, there is no matter. There is no air, liquids, or solids in deep space between the planets. This means there is no matter for sound vibrations to travel through, which means the[illegible] no sound. Sound travels differently through [illegible]ids, and solids.



Gases

Most of the so[illegible]e [illegible] trave[illegible]ugh gases in the form o[illegible]Rem[illegible] made up of mostly 2 gase[illegible]o[illegible]en an[illegible] oxygen. Sound vibrations travel[illegible]vly through the air. The particles in the air [illegible] farther apart, so it takes the vibrations more time [illegible]ss on[illegible]e particle to another.

Liquids

Sound will travel through water, as you may have noticed wh[illegible]ou [illegible] and heard a friend call "Marco". The particles in liquids are closer toget[illegible] which means the sound travels faster in liquids.

The vibrations can move from particle to particle quicker.



Solids

Some sounds we hear travel through solids. If you put your ear on the table and someone taps their pencil on the table, you can hear the tapping through the table. These sound waves travel very fast because the particles are so close together that the sound vibrations can travel quickly from particle to particle.

PREVIEW

© Super Simple Sheets

Name: _____ 126

Curriculum Connection
C2.5, C2.6

Questions Answer the questions below using evidence from the text.

1) Why does sound travel faster through solid than gas?

2) When w[illegible]someone talk, how are the sound waves traveling to our ears?

PREVIEW

Summarize Summariz[illegible]ding[illegible] the important information.

True or False Circle whether the statement is true or false.

1) Sound can travel through solids, liquids, and gases.	True	False
2) Sound can travel in space because space has air in it.	True	False
3) Sound travels fastest through air.	True	False
4) You can't hear sound when you are underwater.	True	False
5) Sound vibrations travel through particles in solids, liquids, and gases.	True	False

© Super Simple Sheets

Name: _____ 127

Curriculum Connection
C2.5, C2.6

Exploring Sound with Materials

How Sound Travels

Sound travels through different materials in waves. These waves can be absorbed (soaked up), reflected (bounced back), or transmitted (passed through) depending on what the material is.

Testing M

To fin et rials handle sound, we can do simple s:

- **Clap Test**: hands fferent materials to hear if the soun ud
- **Whisper Test**: Whisper ater if someone on the other side hea



Common Materials and Sound

Here are some materials we see every day ar they und:

- **Wood**: Wood can absorb some sound but also ref , which is t is used in musical instruments.
- **Metal**: Metal usually reflects sound very well, making noises l
- **Fabric**: Thick fabrics, like curtains, absorb sound and help make roo ieter.
- **Glass**: Glass can transmit sound, which is why we can hear through windows.
- **Foam**: Foam is very good at absorbing sound, often used in headphones.

Why It Matters

Understanding how materials affect sound is important. It helps us choose the right materials for places like schools, homes, and music halls to make them sound better and more comfortable. By exploring different materials, we learn which ones are best for keeping places quiet or making sounds clearer.

PREVIEW

Name: _____ 128

Curriculum Connection
C2.5, C2.6

Questions

Answer the questions below.

1) What material is good for making a room quiet and why?

2) Why do [illegible]use foam in headphones?

True or False

Is [illegible] false?

1) Fabric absorbs sound wel[illegible]	True	False
2) Glass reflects sound like metal.	True	False
3) Wood is used in instruments because it ref[illegible]soun[illegible]	True	False
4) Metal absorbs sound, making it quieter.	True	False
5) Foam is commonly found in headphones.	True	False

Diagram

Draw items in your classroom that can absorb a[illegible]nd.

Items that absorb	Items that reflect

PREVIEW

© Super Simple Sheets

Curriculum Connection
C2.5, C2.6

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class.

Name: _____ | Mark

2 Truths and a Lie – Can you find the one that's not true?

	Metal usually reflects sound very well and can make sounds seem louder.
	Thick fabrics, such as curtains, can absorb sound and make a room quieter.
	Glass absorbs all sound and does not let any sound pass through.

Name: _____ | Mark

2 Truths and a Lie – Can you find the one that's not true?

	Metal usually reflects sound very well and can make sounds seem louder.
	Thick fabrics, such as curtains, can absorb sound and make a room quieter.
	Glass absorbs all sound and does not let any sound pass through.

Name: _____ | Mark

2 Truths and a Lie – Can you find the one that's not true?

	Metal usually reflects sound very well and can make sounds seem louder.
	Thick fabrics, such as curtains, can absorb sound and make a room quieter.
	Glass absorbs all sound and does not let any sound pass through.

PREVIEW

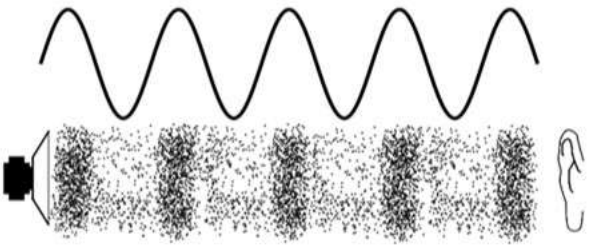
Name: _____ 133

Curriculum Connection
C2.4

Properties of Sound

Properties of Sound

The properties of sound tell us how sound works. The main properties of sound is that it travels in waves, can be absorbed, and can be reflected.



Sound Travels

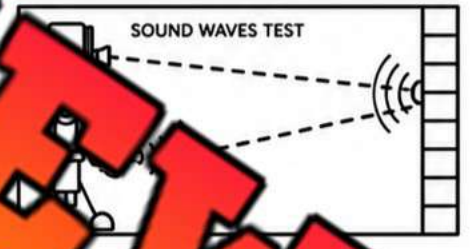
Sound travels out of a source, like a musical instrument or a noisy machine, but it needs to have something to travel through (known as a medium) such as air, water, glass, or metal.

When you hear an alarm clock ringing, you're listening to energy making a journey. It starts as sound waves inside the clock and travels through the air and eventually reaches your ears.

Sound is Absorbed and Reflected

Some materials absorb the sound waves that come into contact with them. This means that the sound energy is absorbed by the material. Carpet and curtains will absorb sound waves, which makes a room quieter. This means they do not reflect sound, as the sound waves do not bounce off the material.

Other materials reflect sound waves, which makes a louder room. A loud room would have walls and hardwood or tile floors that allow the sound waves to bounce off the surfaces. Parts of the sound waves are absorbed by the surface, but most of the vibrations continue until they hit another surface.



Materials that Reflect Sound

We build rooms using certain materials if we need sound to travel loudly throughout. An example of this might be an auditorium where a speaker needs their voice to project to all areas of the room. The best materials for sound waves have smooth, hard, and flat surfaces, such as metal, wood, glass.

The sound waves bounce easily off these surfaces and can sometimes even make the sound louder. You may even hear an echo in an empty room that has no soft materials in it if the room is large enough.

Materials that Absorb Sound

The opposite is true for materials that absorb sound. These materials are soft and sometimes jagged with hollow recesses in them so that sound waves can penetrate into the material.

Examples of these materials are sponges, cotton wool, and foam. If you yell inside an empty room that has hard surfaces, the sound will be very loud. When we add soft couches, chairs, and carpet, these surfaces absorb the sound waves, which will make the room much quieter.

A soundproof room would have foam inside the walls to absorb the sound waves.

PREVIEW

© Super Simple Sheets

Name: _____ 134

Curriculum Connection
C2.4

True or False

Circle whether the statement is true or false.

1) A pillow reflects sound very well.	True	False
2) A room with hardwood floors and nothing in it will reflect sound well.	True	False
3) Sponges and foam materials are great at absorbing sound.	True	False
4) A soundproof room should have thick carpet and not hardwood floors.	True	False
5) A room with nothing in it can reflect your sound to make it louder.	True	False

Questions

Answer the questions below using evidence from the text.

1) Why would you want a room to be sound-proof? What materials would you use?

2) What kinds of materials reflect sound? Do you think of more examples?

PREVIEW

Visualizing

Draw what you were picturing while you were reading. Explain the picture.

© Super Simple Sheets

Name: _____ 135

Curriculum Connection
C2.4, C2.5

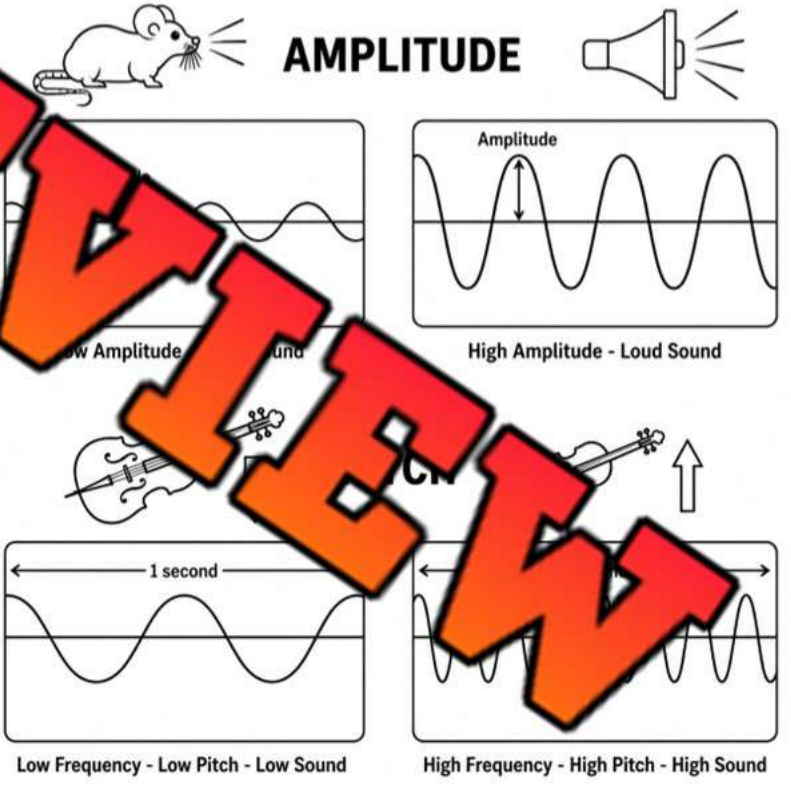
Pitch, Frequency, and Amplitude

What is Pitch and Frequency?

Pitch is the frequency of a sound wave. **Frequency** is the number of times per second that a sound wave repeats itself. Therefore, **pitch** is the number of times a sound wave repeats itself. A high frequency has a lot of sound waves in one second. This means the pitch will [illegible]h.

Thi[illegible]makes it possible to hear higher and lower sounds. A chirp of a bird has a [illegible] but [illegible] roar has a low pitch. A higher frequency sound has a higher pitch, and a lowe[illegible] sound has a lo[illegible]

The human ear can [illegible] range of frequencies that [illegible] hear different sounds.



Amplitude and Loudness

Loudness refers to the volume of a sound. We can amplify a sound when we talk by transmitting more energy into our voice, which increases the vibrations we create. **Amplitude** is the strength of the sound. On a sound wave, a stronger amplitude will have taller sound waves.

A larger amplitude means we get a louder sound, while a smaller amplitude means we get a softer sound.

Loudness can also be affect by the sensitivity of our ears. Your grandparents might consider a sound quiet, while you think the sound is deafening! This is why many people prefer the sound on a TV or movie to be at different levels.

PREVIEW

© Super Simple Sheets

Name: _____ 136

Curriculum Connection
C2.4, C2.5

True or False

Circle whether the statement is true or false.

1) Pitch refers to the frequency of a sound wave.	True	False
2) A bird chirp is a low pitch sound.	True	False
3) A lion's roar is a low pitch sound.	True	False
4) Sound waves that repeat many times in a second have a high frequency.	True	False
5) The loud[illegible] a sound is only based on how much sound energy there is.	True	False

Definit[illegible]

[illegible]at [illegible]of the terms mean?

Pitch	
Frequency	
Amplitude	
Loudness	

PREVIEW

Draw

Draw the sound waves below.

High Pitch, Low Amplitude	Low Pitch, High Amplitude	High Pitch, High Amplitude

© Super Simple Sheets

Name: _____ 137

Curriculum Connection
C2.4, C2.5

Experiment – Testing Pitch with Bottles

Research Question

What are we learning about?

If we fill 3 glass bottles with water, one with just a bit of water, one half full, and one almost full, will we hear different pitched sounds?

Materials

What you need for the experiment?

- 3 glass bottles or cups
- Jug of water
- Food colouring
- Metal utensil



PREVIEW

Procedure

Complete the steps below to finish the experiment.

1) Make coloured water by adding food colouring to the jug
2) Pour just a small amount of water into glass #1.
3) Fill glass #2 half full of water
4) Fill glass #3 full of water
5) Tap the side of the first glass and listen to the sound. Was it a high pitch, low pitch, or medium pitch?
6) Repeat the step above for glass number 2 and 3. Record what pitch you hear.

Name: _____ 138

Curriculum Connection
C2.4, C2.5

Observations | What happened?

1) Which glass had the highest pitch? Which had the lowest pitch? Which was in between?

Glass	Pitch – Highest, Medium, Lowest
Glass # 1	
Glass # 2	
# 3	

2) W[illegible] did the pitch get higher or lower?

Higher Lower

3) Could you p[illegible] using [illegible]fferent glasses and utensil?

[illegible] No

4) Why do you the amoun[illegible] in[illegible]d affect its pitch?

_____

_____

_____

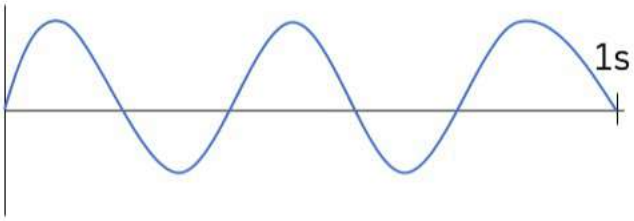
Diagram | Draw a picture of the 3 glasses. Label the pitc[illegible] fro[illegible]est.

PREVIEW

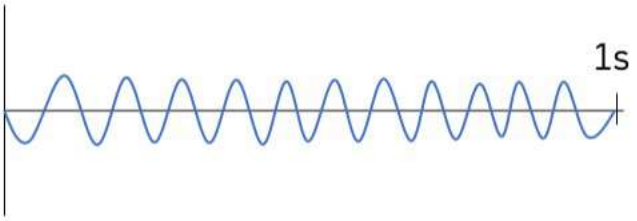
Name: _____ 139

Curriculum Connection
C2.4, C2.5

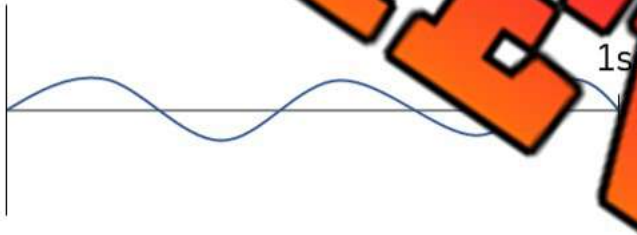
Describe Describe the frequency, pitch, and amplitude of the sound waves.



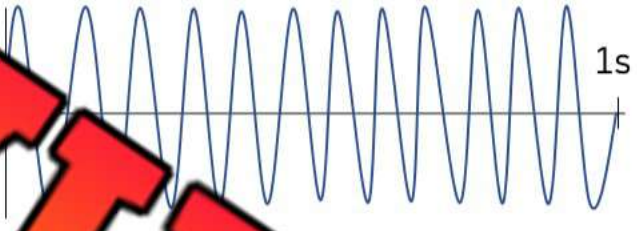
Frequen	2.5 (2 and one half)
	Low
Amp ude	High



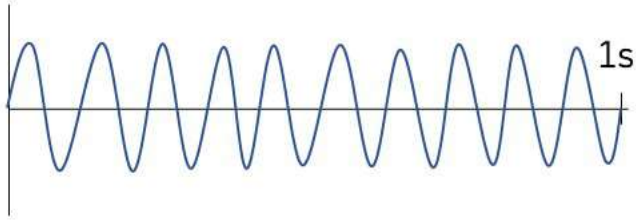
Frequency (#)	
Pitch	
Amplitude	



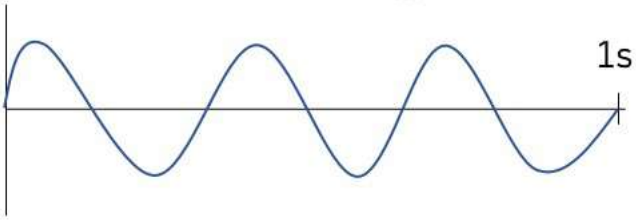
Frequency (#)	
Pitch	
Amplitude	



Frequency (#)	
Pitch	
Amplitude	



Frequency (#)	
Pitch	
Amplitude	



Frequency (#)	
Pitch	
Amplitude	

PREVIEW

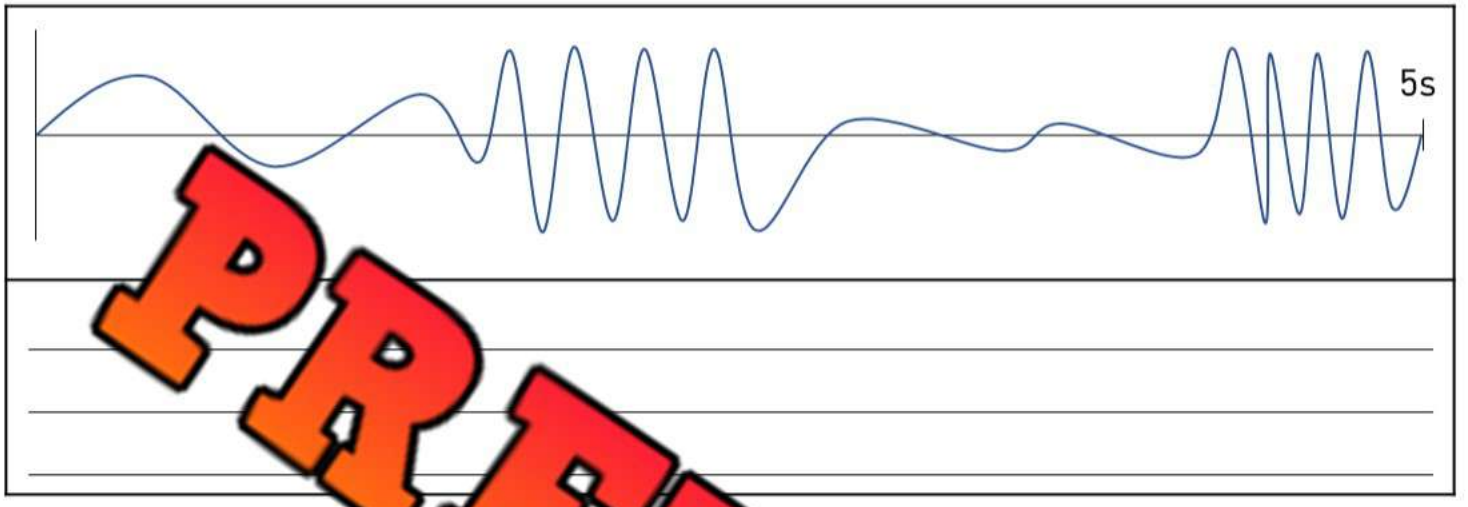
© Super Simple Sheets

Name: _____ 140

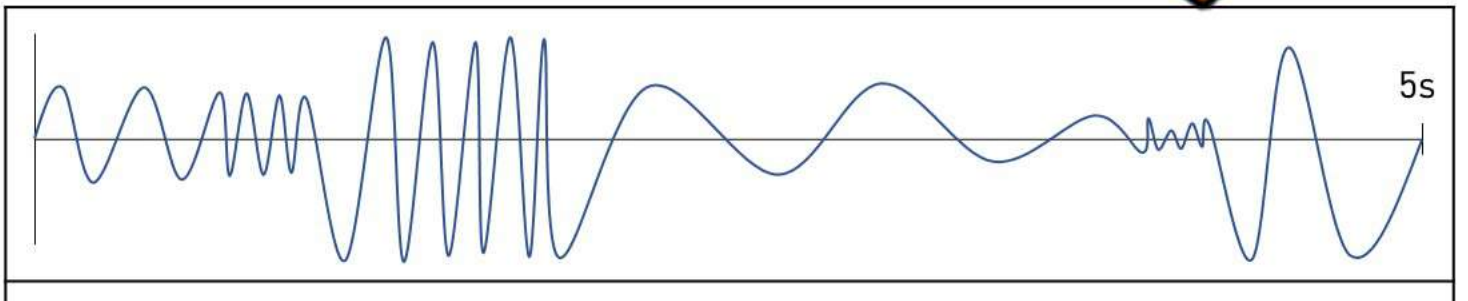
Curriculum Connection
C2.5

Pitch, Frequency, and Amplitude

Describe Describe what you would hear by listening to this music.







PREVIEW

© Super Simple Sheets

Name: _____ 148

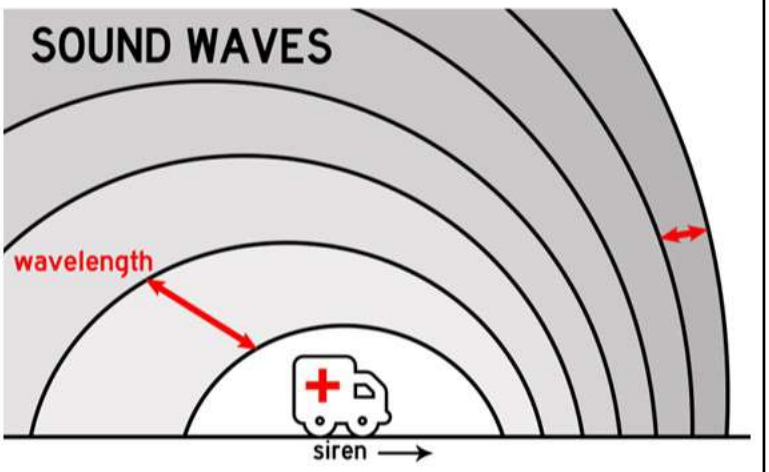
Curriculum Connection
C2.5

Vibrations Causing Sound

How Does a Vibration Make Sound?

A sound wave is a transfer of energy that travels away from the vibrating source. Your voice is the vibrating source as you create vibr[illegible]ns that travel through the air for oth[illegible]ar you.

[illegible]selves need a mediu[illegible]ravel [illegible]m can be a solid, liquid, o[illegible]xam[illegible]e metals, water, or a[illegible]n the [illegible] leave the vibrating sourc[illegible]ca[illegible]se the [illegible]ding medium to vibrate. As the sound waves move through the medi[illegible] pa[illegible]forwards and backwards.

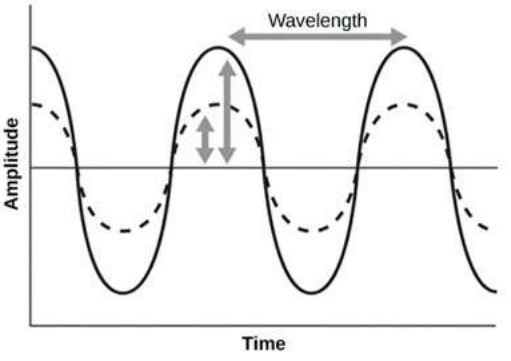


short wavelength ➡ high frequency ➡ high pitch
long wavelength ➡ low frequency ➡ low pitch

The volume of the sound depends [illegible]sound [illegible]The more energy that is put into the sound wave, the louder it will be. If you hit [illegible]m wi[illegible]a energy, the vibrations will be stronger.

The farther the sound wave needs to travel affec[illegible]olume as [illegible]his is because the sound wave spreads out and weakens. That is why it is d[illegible]to l[illegible]ming from further distances.

Sound vibrations can differ in strength and speed. If a sound is mad[illegible]s loud and slow, it will have a large amplitude and low pitch. An example of this is a bass drum hit with a soft mallet. If the vibration is weak but fast, like a bird chirp, the amplitude will be soft and high pitched.



Wavelengths

A **wavelength** is the distance between the peak of one wave to the peak of the next wave. If soundwaves have a high frequency, the wavelengths will be short and the pitch will be high. If the frequency is low, the wavelengths will be long and the pitch will be low.

PREVIEW

© Super Simple Sheets

Name: _____ 149

Curriculum Connection
C2.5

True or False

Circle whether the statement is true or false.

1) A medium can be a sold, liquid, or gas.	True	False
2) Vibrations can travel through areas where there is no matter.	True	False
3) The distance a sound wave travels affects how loud it will be.	True	False
4) Examples of mediums that sound waves travel on are air and water.	True	False
5) A bass drum provides a soft and high pitched sound.	True	False

Definitions

What do each of the terms mean?

1) How do vibrations create sound?

2) Why is sound heard louder when it is closer than when it is further?

PREVIEW

Draw

Draw the sound waves below.

Long wavelength, low pitch, low amplitude	Short wavelength, high frequency, high amplitude	Long wavelength, low pitch, high amplitude

© Super Simple Sheets

Name: _____ 157

Curriculum Connection
C2.4

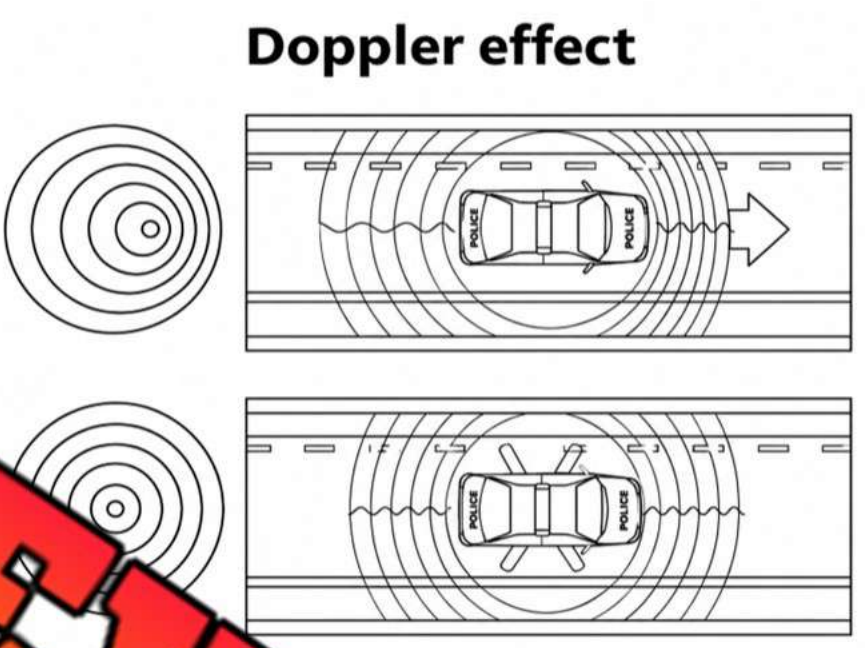
Doppler Effect – Sound

What is the Doppler Effect?

The **doppler effect** is a change in frequency and wavelength in a sound wave.

It is caused by the change in distance between the source of the sound (causer) and whoever is hearing the sound wave.

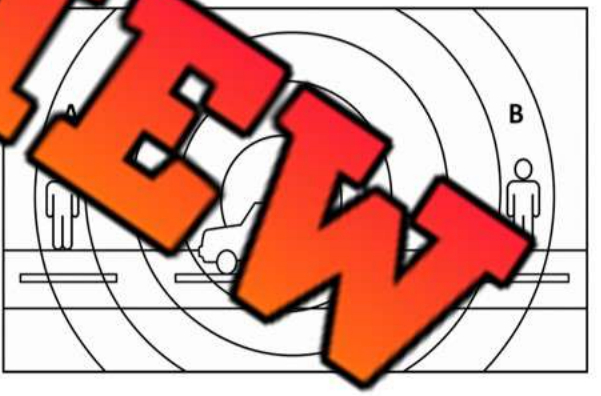
When the source of sound moves in relation to you, the pitch changes. If it isn't moving, the frequency will be the same all around the source of the sound. If it is moving, the frequency of the sound increases as it gets closer. As the source gets further, the frequency gets lower.



PREVIEW

Example

In the photo below, person A (observer) is closer to the source of the sound waves (causer) than person B. You can see that the pitch changes as the sound wave gets further from the source.



The frequency of the sound wave becomes lower and more spread out. This affects how we hear the sound. The human ear only hears sounds at a certain frequency. If the frequency becomes too low, it cannot be heard.

In the photo, you can see the waves getting further and further apart which means person B is not hearing the sound as well as person A. You will also notice that as the distance from the source of the sound gets longer, the sound wave gets longer (larger) which means it is more spread out. This makes the volume of the sound quieter to anyone hearing it.

© Super Simple Sheets

Name: _____ 158

Curriculum Connection
C2.4

Questions Answer the questions below using evidence from the text.

1) What is the doppler effect?

2) What w[illegible]nen with the frequency of sound waves as a moving vehicle gets closer to you?

PREVIEW

Diagram Draw [illegible]m [illegible] vehicle and its sound waves.

Explain Read what is happening with the sound waves. Which direction is the sound moving?

1) High frequency and smaller wavelength	2) Low frequency and long wavelength	3) Wavelength and frequency are not changing

© Super Simple Sheets

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class.

Name: _____

Circle the word that fits on the blank.

1) The Doppler effect is a change in sound _____.	Wavelength / Colour
2) When a sound source moves toward you, the pitch becomes _____.	Higher / Lower
3) When a sound source moves away from you, the frequency becomes _____.	Lower / Higher
4) Sound waves that are close together have a _____ frequency.	Lower / Higher
5) Person A is closer to the sound source, so the sound is _____.	Louder / Quieter

Name: _____

Circle the word that fits on the blank.

1) The Doppler effect is a change in sound _____.	Wavelength / Colour
2) When a sound source moves toward you, the pitch becomes _____.	Higher / Lower
3) When a sound source moves away from you, the frequency becomes _____.	Lower / Higher
4) Sound waves that are close together have a _____ frequency.	Lower / Higher
5) Person A is closer to the sound source, so the sound is _____.	Louder / Quieter

Name: _____

Circle the word that fits on the blank.

1) The Doppler effect is a change in sound _____.	Wavelength / Colour
2) When a sound source moves toward you, the pitch becomes _____.	Higher / Lower
3) When a sound source moves away from you, the frequency becomes _____.	Lower / Higher
4) Sound waves that are close together have a _____ frequency.	Lower / Higher
5) Person A is closer to the sound source, so the sound is _____.	Louder / Quieter

PREVIEW

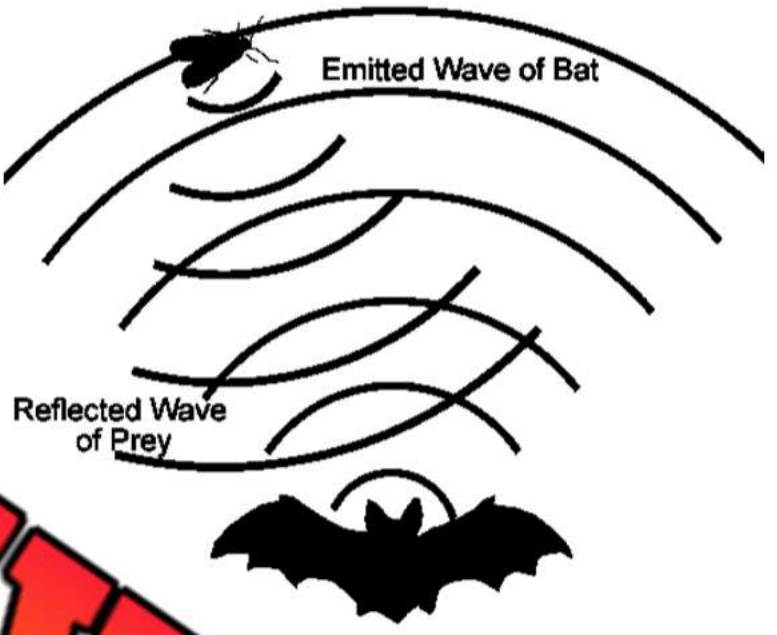
Name: _____ 160

Curriculum Connection
C2.4

Echolocation

What is Echolocation?

Echolocation is how animals emit calls out to the environment and listen to the echoes of those calls when they bounce off various objects ne



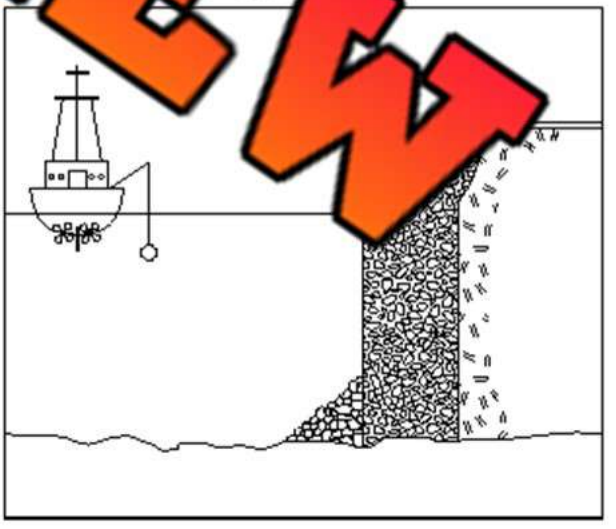
PREVIEW

Th s es to tell them w they a elp them navigate g ces. A animal can tell how ey a from an object by measur w long it takes for the sound they to them.

The relative intensity of the soun used hem where their surroundings are. This means if they make a loud sound, if a qui nd re o them, then the object is further away. Echolocation allows anim see tead of vision.

What Animals Use Echolocation?

The most notable animal that uses echolocation are bats. Other animals like toothed whales and dolphins also use echolocation. It is mainly used by birds and more specifically, cave dwelling birds.



Humans also use echolocation, but we need machines to do it as our ears and brains cannot process the calculations. When humans use echolocation, we call it **sonar**. Sonar devices are often used on boats to detect fish, structures, and anything under the boat. Sonar is used to detect things that have fallen to the bottom of oceans, such as aircrafts and sunken ships.

© Super Simple Sheets

Name: _____ 161

Curriculum Connection
C2.4

Questions Answer the questions below using evidence from the text.

1) What is echolocation? Why is it used?

2) What an[illegible] use echolocation?

PREVIEW

Draw Draw a pic[illegible] an anim[illegible] echolocation to navigate.

Wordsearch Find the words from the word bank.

Word Bank	
Echo	Location
Reflect	Sound
Waves	Sonar
Bats	Dolphins

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

© Super Simple Sheets

Name: _____ 162

Curriculum Connection
C2.4

Super Hearing Animals

Super Hearing Animals



1. Dogs

Dogs have large, floppy ears that can move in the direction of sounds. They have more ear muscles than humans, which allow them to turn their ears like a radar dish to focus on sounds.

2. Cats

Cats also have ears that can move towards sounds. The shape of a cat's ear funnels sound into the ear canal, improving their ability to hear. They also have a large amount of tiny hairs on their ears which are highly sensitive to sound vibrations.



3. Bats

Bats have large ears compared to their body size, which help them capture sound. They use these sounds to navigate and make sense of their surroundings. This is called echolocation.



4. Dolphins

Dolphins have small ear openings on the sides of their heads, but their main hearing organ is inside their heads. They receive sounds through their lower jaw which conducts the sound vibrations to their inner ear.

5. Owls

Owls have asymmetrical ears. One ear is higher than the other, which helps them locate sounds in multiple dimensions. The feathers around an owl's face also help direct sound into their ears.



PREVIEW

Name: _____ 163

Curriculum Connection
C2.4

Explain How does each animal hear better than humans?

Dog	
Cat	
Dol	
Bat	

PREVIEW

True or False Circle whether the st ent is t fa

1) Bats use echolocation to navigate their sur din	True	False
2) Dolphins hear best through their ear openings on ads.	rue	False
3) Owls have ears at the same height.	e	lse
4) Dogs can rotate their ears to focus on different sounds.		False
5) Cats have tiny hair cells in their ears for hearing.	rue	False

Think Which animal's hearing would you want to have? Explain.

© Super Simple Sheets

Name: _____ 164

Curriculum Connection
C2.4

Many animals can hear better than humans because of the position and size of their ears. Choose an animal to draw and make changes to their ears and body that will help them be able to hear better.

Examples include:

1) Bigger ears
2) More ears
3) Ears at different heights
4) Ears on top of head
5) Ears that fold
6) Echolocation ability



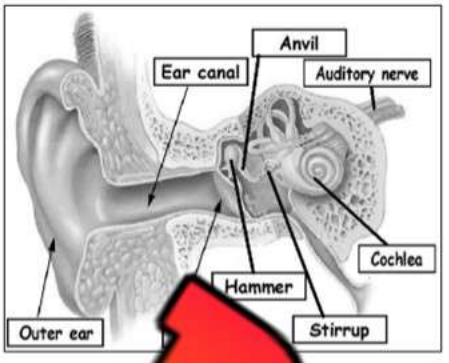
Draw an animal with super hearing. Explain the animal's hearing below

PREVIEW

Name: _____ 167

Curriculum Connection
C2.8

Sound – How We Hear



Hearing – The Human Ear

The ear allows us to hear the environment around us. Sound is funneled through the outer part of the ear and into the ear canal. The sound then enters the eardrum as sound waves. The eardrum is made of a thin sheet of connective tissue that vibrates when sound waves strike it.

Middle Ear

The vibrations from the eardrum travel to the middle ear where th[illegible] send vibrations to the cochlea. The cochlea translates the vibrations into e[illegible] travel to the brain via our auditory nerve.

PREVIEW

Experiment

W[illegible]ear

Close your eyes or u[illegible]lind[illegible]ot see. Have your friend use various supplies to make a noise. For exam[illegible]ing a [illegible]rumpling a paper. See if you can guess the noise. Try doing 5 noises.

1) How did you do? Was this chall[illegible]e ea[illegible]

2) How does our sight and hearing work together to allow us [illegible]erst[illegible]on[illegible]nment?

True or False

Circle whether the statement is true or false.

1) Sound is funnelled through the outside part of the ear.	True	False
2) Sound waves turn into vibrations in our eardrum.	True	False
3) The eardrum is made of a thin sheet of connective tissue.	True	False
4) The 3 bones in our inner ear send electrical impulses to the brain.	True	False
5) The auditory nerve sends electrical impulses to the brain.	True	False

© Super Simple Sheets

Name: _____ 168

Curriculum Connection
C1.1, C2.8

Activity – Hearing Test

Research Question | What are we testing?

A frequency hearing test is a special check-up for your ears. You know how in music there are high notes like bird chirps and low notes like a big drum? Those are different frequencies, or pitches, of sound. Our ears are amazing because they can hear a lot [illegible] different pitches.

In th[illegible] a machine plays different pitches of sounds, one at a time, to see if your ea[illegible] [illegible]em all. You'll wear headphones and when you hear a sound, you t[illegible] or [illegible]se.

[illegible]helps t[illegible] [illegible]e out if your ears are having trouble hearing any specific pitches. It's im[illegible] [illegible]aus[illegible] need to hear all kinds of sounds to understand things around [illegible] [illegible]hat p[illegible] saying or if a car is coming.

Materials | What do we [illegible] our [illegible]ent?

- Computer
- Speakers



Procedure | How do we complete the activity

1) Search on YouTube: "Hearing test" or "How old are y[illegible] ear[illegible] [illegible] you can do with your entire class or with individual students. It [illegible] to use headphones to do the test, but you could do this together as [illegible]le class for fun.
2) Have students write below the results of the test, like what frequency or frequencies they could detect.

Results | What were the results of your test?

_____

_____

_____

PREVIEW

Name: _____ 169

Curriculum Connection
C1.1, C2.8

Activity – Listening to Different Tones (Pitches)

Research Question What are we testing?

All sounds have a certain pitch that ranges from low pitch to high pitch. When musicians make music, they change the pitch of the music to make rhythms that sound great.

Are you good at hearing different pitches? Can you tell if a pitch is higher or lower? How well do you know music? Try the test below.

Materials What do we need for our experiment?

- Computer
- Speakers



Procedure How do we complete the test?

1) Search on YouTube: "Are you TONE-DEAF or MUSICALLY GIFTED?

2) Listen to the questions and write your answers below.

Recording Write your answers below.

1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	

9)	
10)	
11)	
12)	
13)	
14)	
15)	

PREVIEW

© Super Simple Sheets

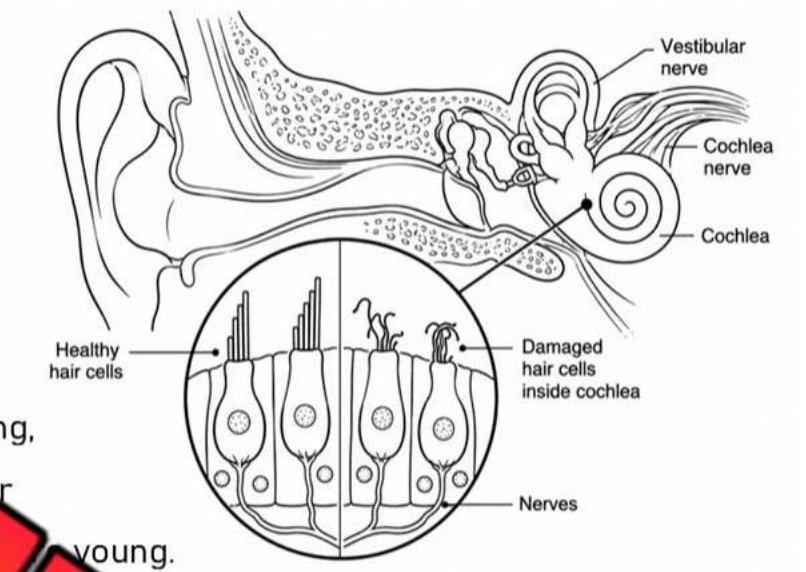
Name: _____ 170

Curriculum Connection
C1.1, C2.8

Protecting Your Ears and Hearing

Why Protect Your Ears?

Your ears are what allow you to hear the world around you. At your young age, it can be difficult to understand the importance of protecting your ears. But understanding this, once your hearing is damaged, it is gone for good. You can use devices that help your hearing, like a hearing aid, but it can't restore your hearing back to what it was when you were young.



PREVIEW

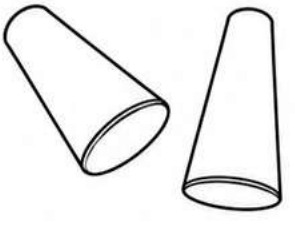
Why We Lose Hearing

As you get older, your hearing can get worse. This happens because loud noises and aging cause wear and tear on the hairs or nerve cells in the cochlea. These hairs and nerve cells send sound signals to the brain. When they are damaged or missing, the signals aren't sent as well, which results in hearing loss.

Turn the Volume Down

According to the World Health Organization, 1.1 billion teenagers and young adults worldwide are at risk for noise-induced hearing loss from listening to music too loud using headphones. Earbuds can be the most dangerous because they fit directly next to the eardrum. The better option is to use over-the-ear headphones instead.

Use Earplugs around Loud Noises



Approximately 15 percent of noise causing hearing loss happens because of loud work or loud music. Gardeners or autoworkers are often working with loud equipment like leaf blowers or lawnmowers.

Going to concerts where you have to shout at the person next to you is also hard on your ears. The repetitive loud noise is dangerous as it causes hearing loss. Use earplugs to dampen the sound and lesson the effects of the intense vibrations on your eardrum.

© Super Simple Sheets

Name: _____ 171

Curriculum Connection
C1.1, C2.8

Questions

Answer the questions below using evidence from the text.

1) Why is it important to protect your ears? What can you wear to help?

2) What ki oises can damage your ears?

PREVIEW

Making Connections

es th remind you of?

True or False

Circle whether the statement is true or false.

1) Hearing loss happens as we get older.	True	False
2) We can slow down hearing loss by not listening to loud noises.	True	False
3) If we lose our hearing young, doctors can get it back for us.	True	False
4) Listening to loud music while we are young is okay.	True	False
5) The cochlea sends sound signals to the brain.	True	False

© Super Simple Sheets

Name: _____ 175

Curriculum Connection
C1.1, C2.8

Experiment – Soundproof Room

Research Question — What are we learning more about?

Can you create a soundproof box? What materials will you use? How will you layer the materials?



Materials — What do we need for our experiment?

- A speaker. Any phone could work, but a strong, small speaker would be best.
- 1 box. The box needs to be large enough that the speaker can fit inside. A shoebox should work.
- Soundproofing materials. Bubble wrap, clay, sponges, felt, cotton balls, newspaper, paper plates, cardboard, etc.
- Tape, glue, scissors to make the box
- A decibel noise meter. Some phones have these. This is optional as you can use your ears for a more subjective test.

PREVIEW

Method — How do we complete the experiment?

1) Modify your box so that it has one opening that the speaker can fit through. Add a flap to ensure the box can open up, just like a soundproof room has a door.

2) Soundproof your box by adding your materials inside. Layer the materials but leave room for the speaker to fit inside.

3) Test your soundproof box by putting the speaker inside. Turn on the speaker and choose a song to play. You could use a consistent noise, like rainfall or dark noise.

4) Start at volume 1 and listen for the sound. Use the noise meter if you have one. Make sure to keep it the same distance away from the speaker.

5) Continue to adjust the volume, making note of when you hear the sound. If you can always hear the sound, you could change the test slightly. You could keep the sound at level 10 but compare how loud it sounds in each box.

© Super Simple Sheets

Name: _____ 176

Curriculum Connection
C1.1, C2.8

Plan — Which materials will you use?

1) Research which materials you will use for your soundproof box.

2) How will you stop sound from escaping out of the door?

3) Draw a diagram of your box and the materials and how you will organize them.

PREVIEW

Results — What happened?

1) How soundproof was your box?

2) What could you have done to improve your soundproof box?

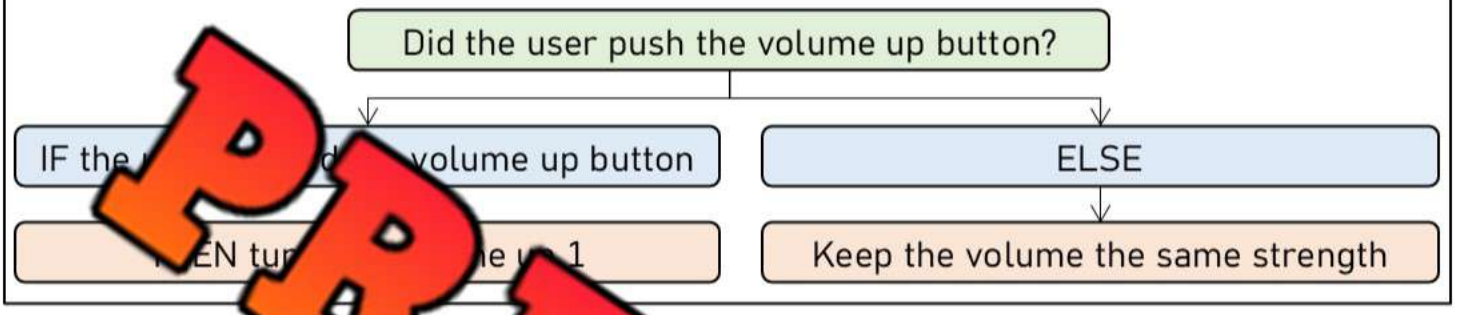
Name: _____ 180

Curriculum Connection
A2.1, A2.2, A3.1, A3.2

Coding IF/ELSE – Using Sound Devices

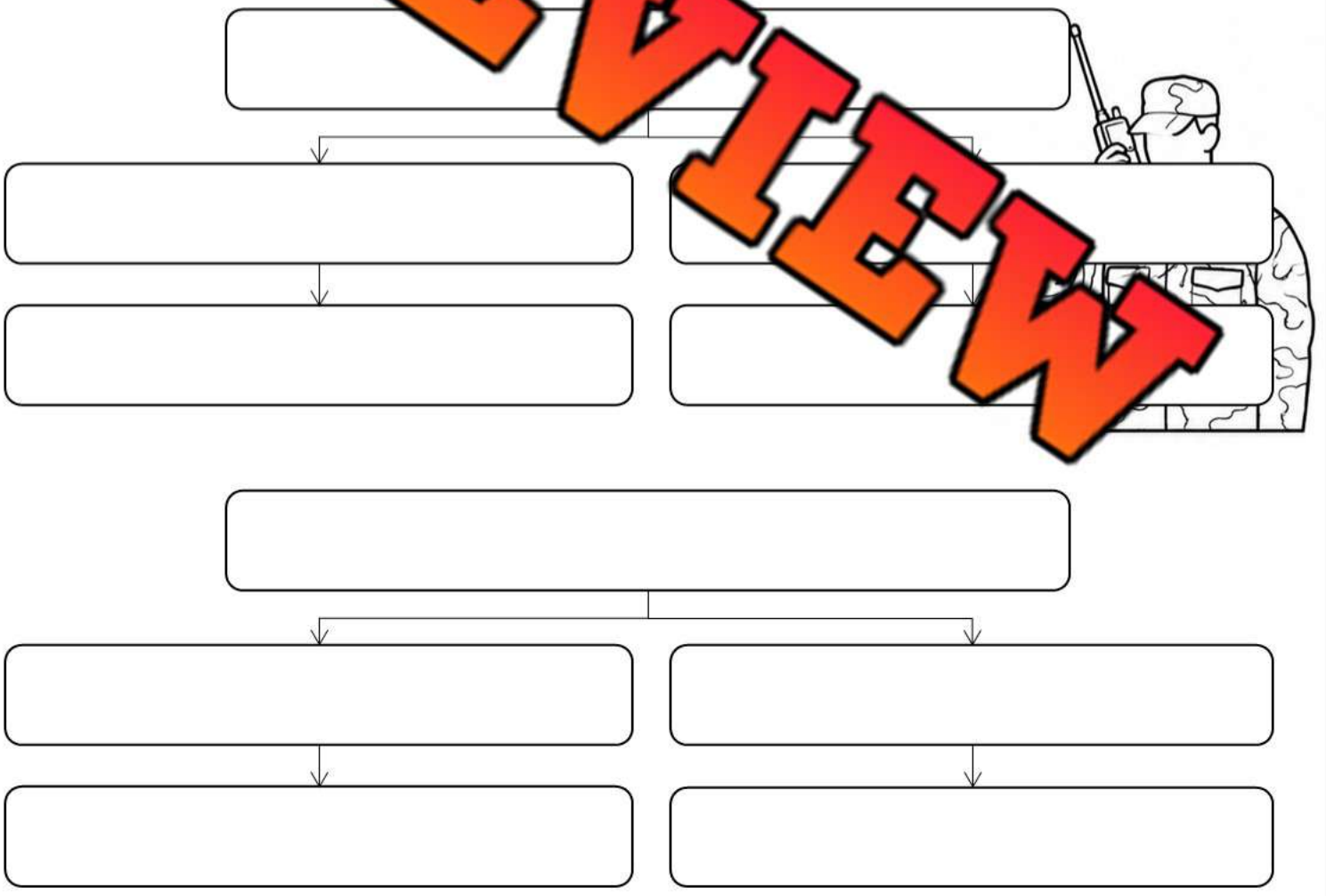
Sound Devices Using Code

When we use sound devices, like a sound recorder, code is used to follow our commands. A walkie-talkie also uses code as it follows our instructions. Many sound devices have three main functions – volume up, volume down, and a record button. Check out how the sound device could be programmed to follow the user's commands.



PREVIEW

Directions Write th… …he volume down and record button.



Name: _____ Date: _____

Light and Sound – Unit Test

Multiple Choice /6

1) How fast does light travel? a) 100,000km per second b) 300,000km per minute c) 100,000 minute d) 300,00 d	2) Which of the following is an example of natural light? a) Firefly b) Lightbulb c) Candle d) Fireworks
3) W the foll source of light? a) The sun b) The moon c) Safety vests d) Diamonds	4) Which of the following is a light reflector? a) The sun b) The moon flies Can
5) Sound comes from... a) Air particles b) Vibrations c) Ripples in the air d) Radio transmissions	6) A will have a higher... uency b) Pitch c) Waveleng d) Amplitude
7) Which material is opaque? a) Glass b) Water c) Cardboard d) Wax Paper	8) Which material is transp a) Glass b) Cell Phones c) Cardboard d) Wax Paper
9) True or False: Sound travels faster in air than in water a) True b) False	10) True or False: Pitch refers to the frequency of a sound wave. a) True b) False

PREVIEW

Definitions (1 marks each) **/3**

Term	Definition (what does it mean)
Doppler Effect	
Echo	
Refraction	

PREVIEW

Short Answer Questions (2 ma h)

1) What is the difference between natu d artifi ght?

2) How is sound reflected and absorbed? Which materials absorb sou nd eflect it?

3) Which colours absorb light and which reflect it? When would you want to reflect light?

Long Answer Questions **/10**

1) Which sources of light give off both light and heat? Which give off just light and not heat? Why would we want to use sources of light that only give off light and no heat?

2) Choose a device that uses the properties of light or sound. Describe the device and how it works. Explain why the device is important. Include: microphone, speaker, hearing aid, phone

PREVIEW