



Preview – Information



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- ✓ **A selection of worksheets included in each workbook. Keep scrolling to find the next resource included in the bundle.**

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Workbook Preview



Grade 2 – Science Unit

Organizing Idea Matter: Energy: Understandings of the physical world are deepened by investigating matter and energy.

Guiding Question: How can the suitability of materials be determined for specific purposes?

	Learning Outcome - Students investigate the behaviours of light and sound.	Pages
E2.1	Sound behaves in various ways, including travelling in a straight line from its source transferring from one object to another bouncing off a surface (reflection/diffusion) stopping in an object (absorption)	6-12, 17-25
E2.2	Sound is produced by vibrations of objects. Vibration is a rapid back-and-forth movement.	16-21
E2.3	Sources of sound can be natural or human-made, such as musical instruments.	15, 34
E2.4	Properties of materials that affect the production and behaviour of sound include size, texture, shape, type	6-28
E2.5	Sources of light include: the Sun, electricity, fire, some plants and animals	2-25, 29-33, 35-38
E2.6	Light behaves in various ways, including: - travelling in a straight line from its source - bouncing off a surface (reflection) - bending as it travels from one material to another (refraction) - splitting into colours (dispersion)	56-58, 76-84
E2.7	Light travels through objects that can be seen through (transparent)	64-65
E2.8	The path of light is affected by mirrors, prisms, and water. The path of sunlight can be affected in a variety of ways by natural objects, such as leaves, trees, bodies of water, mountains	66-75
Computer Science:		
CS.1	Students apply creativity when designing instructions to achieve a desired outcome.	59-60, 87-92

Preview of 75 pages from
this product that contains
158 pages total.

NAME: _____

LIGHT AND SOUND



What is Energy?

Energy is used to make the things you see or do happen.

- Energy is used to move things
- Energy is used to make light
- Energy is used to make sound
- Energy is used to make heat
- Energy is used to make things grow
- Energy is used to cook our food



Draw

Draw pictures of different ways energy is used

Something Moving

Something Making Light

Something Making Sound

Something Making Heat

Something Growing

Food Being Cooked

Energy or Not ?

Energy or Not?

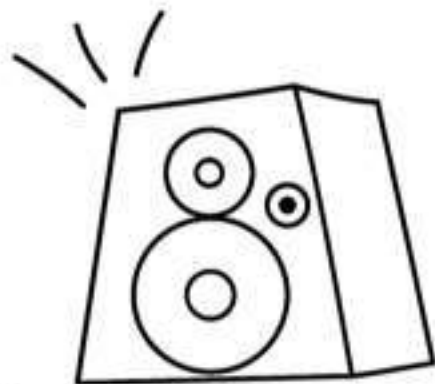
Colour the pictures that show energy being used



Sound Energy

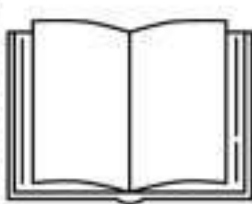
Colour

Colour anything that makes sound energy



Sound Energy Sort**Questions**

Cut and paste the pictures putting them in the right category

Sound Energy**Not Sound Energy****PREVIEW**

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?

- Computer
- Speaker



Procedure

How do we complete the activity?

1. You could find your own sounds to use for students to guess. An easier option is to search on YouTube for "sound effects" and use those.
2. Have students give their answers orally or write them down 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)	

Artificial vs Natural Sound

Artificial vs Natural Sound

Sound comes from vibrations made by artificial or natural sources. Artificial sounds come from anything human-made. Natural sounds come from nature – the living and non-living things humans did not make.

Examples of Natural Sounds

- The hum of a bee
- Waves crashing
- A bird singing
- Leaves rustling
- Heartbeats
- Thunder

Examples of Artificial Sounds

- A car starting
- A horn
- A vacuum cleaner
- A musical instrument
- Police siren
- Speaker

Yes/No

Is the answer Yes/No?

1) Is sound caused by vibrations?	Yes	No
2) Are natural sounds made by human-made things?	Yes	No
3) Do airplanes make natural sounds?		No
4) Do dogs make natural sounds?		No
5) Are artificial sounds made by human-made things?		

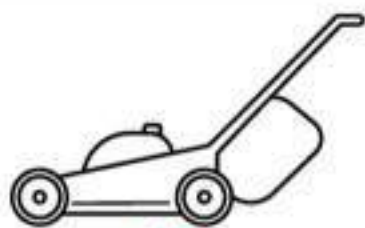
Draw

Draw examples of artificial and natural sounds

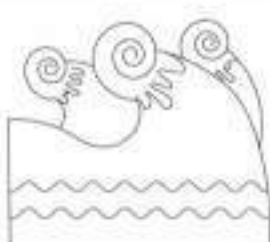
Natural Sounds	Artificial Sounds

Directions

Does the picture make natural or artificial sound?



Artificial Natural



Artificial Natural



Artificial Natural



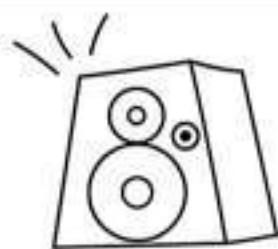
Artificial Natural



Artificial Natural



Artificial Natural



Artificial Natural



Artificial Natural



Artificial Natural



Artificial Natural



Artificial Natural



Artificial Natural

Exit Cards

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

Name: _____

Mark

List examples of artificial and natural sounds

Artificial	Natural

Name: _____

Mark

List examples of artificial and natural sounds

Artificial	Natural

Name: _____

Mark

List examples of artificial and natural sounds

Artificial	Natural

Name: _____

Mark

List examples of artificial and natural sounds

Artificial	Natural

Making Sounds

How Sound Is Made

Sound is made when an object vibrates. Vibrations often happen when there is movement with an object, like when we clap our hands. The vibrations made by the moving objects send sound waves into our ears.

Examples of Sound Vibrations

- When you sit on a chair, the ground and chair move, making vibrations
- When you talk, your vocal cords move in your throat, making vibrations
- When you touch something, the skin vibrates up and down
- When you pluck a string, it will vibrate up and down



Yes/No

Is the object moving?

1) Do vibrations make sound waves?	Yes	No
2) Do our ears hear sound waves?	Yes	No
3) If you move objects, do they sometimes make vibrations?	Yes	No
4) If things don't move, do they make vibrations?	Yes	No
5) Can you talk without moving anything?	Yes	No

Draw

Draw examples of objects moving and making vibrations.

--	--

The Journey of Sound

The Journey of Sound

When a sound is made by a vibration, it starts a journey. It moves in a straight line through air, liquids, or solids. It may bounce off an object or be absorbed by an object. Check out the journey of sound below.

1) Straight

Sound travels in a straight line from its source, the place where it is made. It's like when you yell to your friend across the playground, the sound travels in a straight line from you to your friend.

2) Transfer

Sounds move from one thing to another. If you put a cup on your ear and your friend talks into the other end of a string attached to it. The sound transfers through the string and into your cup.

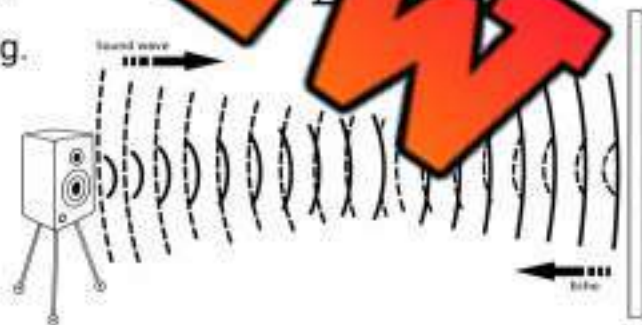
Sound is always moving through things. Most of the time, sound waves move through the air. But it can also move through water in a pool or through objects like string.

3) Bounce - Reflect

Sounds can even bounce off things.

When you shout in a big empty room

or a mountain, your sound bounces back to you. That's called an echo!



4) Stop - Absorb

Sometimes sounds get stopped by things. If you yell into a pillow, the sound doesn't go very far. The pillow absorbs, or soaks up, the sound.

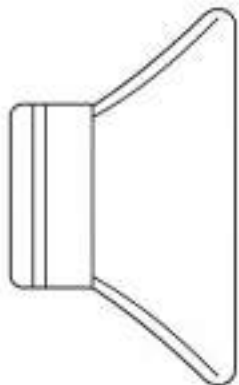
Question

How does sound move in the ways below?

Straight Line	
Transf	
Bounce or Reflect	
Stop or Absorb	

Draw

Draw a diagram of an echo. Use one colour for sound moving towards the wall and a different colour for it bouncing



Exit Cards

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

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Sound can only travel through air, not solids.	T
	F
2) An echo happens when sound comes back to you.	T
	F
3) Soft objects help sound travel farther.	T
	F
4) Sound starts when something moves or shakes.	T
	F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Sound can only travel through air, not solids.	T
	F
2) An echo happens when sound comes back to you.	T
	F
3) Soft objects help sound travel farther.	T
	F
4) Sound starts when something moves or shakes.	T
	F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Sound can only travel through air, not solids.	T
	F
2) An echo happens when sound comes back to you.	T
	F
3) Soft objects help sound travel farther.	T
	F
4) Sound starts when something moves or shakes.	T
	F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Sound can only travel through air, not solids.	T
	F
2) An echo happens when sound comes back to you.	T
	F
3) Soft objects help sound travel farther.	T
	F
4) Sound starts when something moves or shakes.	T
	F

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?

- 1) More mirrors/DVDs or materials that reflect light well
- 2) Play dough to hold mirrors up
- 3) Marker
- 4) Paper to draw the maze
- 5) A flashlight



Method

How do we complete the experiment?

- 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.



Observations

What happened?

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

Results

Answer the questions below

1) Does light bend if it reflects off a surface?

2) Draw a diagram of your light maze. Label the input of the light of light.

Sound Reflecting Materials

Reflecting and Absorbing Sound

Sound waves will either be reflected or absorbed by objects they touch. Soft materials absorb sound waves. Hard materials reflect sound waves.

Reflect Sound

Have you ever heard your voice echo? That's because an echo is a sound, bounced off a hard surface, that comes back to you. This is called reflection!



Many materials reflect sound just like a bouncy ball. Here are some examples:

- Hardwood floors: They are hard and smooth, so they bounce the sound back.
- Stone or brick walls: These are also hard and smooth, and make great sound reflectors.
- Glass windows: Sound can't go through glass, so it bounces back. That's why you can hear an echo if you shout towards a window.

Absorb Sound:

Now, imagine you throw a bouncy ball into a bag of cotton. It won't bounce back, will it? Some materials absorb, or soak up sound. They are like soft pillows for sound.

- Carpet or rugs: They are soft and fluffy, so they can grab onto the sound and stop it from bouncing back.
- Curtains: These are made of soft material that soaks up sound.
- Foam or sponge: They are super good at soaking up sound. That's why you find foam in places where we want less noise, like recording studios.



Question

Which materials absorb sound, and which reflect sound?

Absorb or Reflect Circle if the material/object will reflect or absorb sound

1) Brick wall	Absorb	Reflect
2) Carpet	Absorb	Reflect
3) Curtains	Absorb	Reflect
4) Window	Absorb	Reflect
5) Trees	Absorb	Reflect
6) Tile floor	Absorb	Reflect
7) Pillow	Absorb	Reflect
8) Book	Absorb	Reflect
9) Car door	Absorb	Reflect
10) Soft teddy bear	Absorb	Reflect

**Questioning**

Write two questions you have about sound

1)	
2)	

Experiment – Soundproof Room

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?

- 1) A speaker or a phone could work or a small speaker
- 2) The box needs to be large enough that the speaker can fit inside. A shoebox could work.
- 3) Soundproofing materials such as foam, bubble wrap, clay, sponges, felt, cotton balls, newspaper, polystyrene, etc.
- 4) Tape, glue, scissors to make the box.

Method

How do we complete the experiment?

- 1) Modify your box so that it has one opening that the speaker can fit into. You need to ensure the box can open up, just like a shoebox.
- 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. 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.

Plan

Which materials will you use?

1) What materials will you use for your soundproof room/box?

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

3) Draw a diagram of the box, showing how you will organize them.

PREVIEW

Pitch, Duration, Volume

What is Pitch, Tone, and Volume?

You probably have noticed that not all sounds are the same. Our voices sound different because we speak with different pitches, tones, and at different volumes.

Pitch

- ✓ High-pitched - short waves and sound like a bird chirp or whistle blowing
- ✓ Low-pitched - long waves and sound like a bass guitar or a tuba

Duration

The duration of a sound is how long the sound lasts. A clap is short and quick, but the ring of a bell can last a few seconds. Musicians use different durations in their music, they might play a note for a short time or a long time.

Volume

The volume of sound is how loud it is. When you whisper, the volume is low.



Try This

Use your voice to say the following sentences in different pitches, durations, and volumes

Sentence - Say...	Pitch/Tone/Volume
1) "Hello, how are you?"	Say in High Pitch and Low Pitch
2) "We won the game!"	Say in Low Volume and High Volume
3) Say your name	Say using a long and short duration

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

Pitch	Duration
Low	Volume
High	Long
Short	Clap

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 will need

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



Procedure

How to do the experiment

- 1) Make coloured water by adding food colouring to the jug of water
- 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.

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

Glass # 3

2) When you added water, did the pitch get higher or lower?

Higher

3) Could you play music using the different glasses as a utensil?

Yes

Diagram**Draw a picture of the 3 glasses**

Sound Travels Through Matter

Sound Travels Through Matter

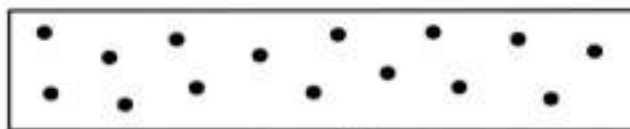
Sound waves need something to travel through to get to our ears. Sound waves can move through solids, liquids, and gases.

Gases

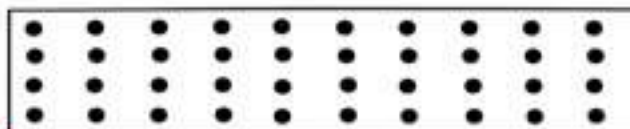
Most of the sounds we hear travel through the air.

Sound vibrations travel slowly through the air. Particles

in the air are farther apart, so it takes the waves more time to pass on from one particle to another.



Gas - Slowest



Liquid - Medium



Solid - Fastest

Liquids

Sound travels through water. If you are underwater, you hear sounds because sound waves travel through the water to your ears.

Since the particles are closer together, the sound travels faster than in the air.



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.

Draw

Draw the particles in solids, liquids, and gases



Gas - Slowest



Liquid - Medium



Solid - Fastest

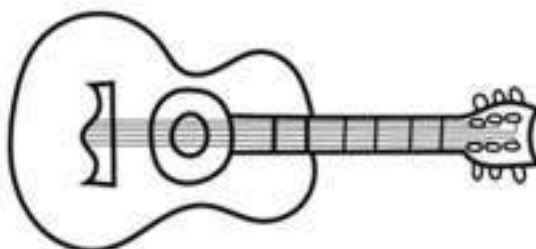
Yes/No

Is the answer yes or no?

1) Does sound travel through matter?	Yes	No
2) Does sound travel in space where there is no matter?	Yes	No
3) Does sound travel faster in air than liquids?	Yes	No
4) Does sound travel faster in solids than air?	Yes	No
5) Can you hear sound underwater?	Yes	No

Colour

Colour the sound pictures



Exit Cards

Cut Out

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

Name: _____

Mark

Match how sound moves in each state of matter.

Gases ☐ ☐ Sound moves faster than air because particles are closer.**Liquid** ☐ ☐ Sound moves very fast because particles are tightly packed.**Solid** ☐ ☐ Sound moves slow because particles are far apart.

Name: _____

Mark

Match how sound moves in each state of matter.

Gases ☐ ☐ Sound moves faster than air because particles are closer.**Liquid** ☐ ☐ Sound moves very fast because particles are tightly packed.**Solid** ☐ ☐ Sound moves slow because particles are far apart.

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Name: _____

Mark

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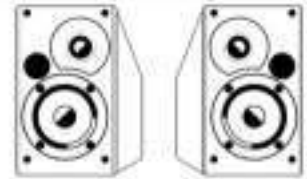
Gases ☐ ☐ Sound moves faster than air because particles are closer.**Liquid** ☐ ☐ Sound moves very fast because particles are tightly packed.**Solid** ☐ ☐ Sound moves slow because particles are far apart.

Sound Recording

What is Sound Recording?

We can record sounds using sound-recording devices. These devices turn sound waves into electric signals that can be saved. A speaker turns electric signals back into sound waves that we can hear.

We use sound-recording devices to save music, record people talking, and save sound effects. Once they are recorded, we can play them when we need to.



Sound Recording Devices

- Microphone
- Phones
- Voice recorder



Sound Playback Devices

- Speakers
- Headphones
- TV/Computer/Radio

Draw

Draw a sound recorder and a sound playback device

Sound Recording Device	Sound Playback Device

Word Scramble

Word Bank: Sound, Device, Play, Speaker, Save, Record

SUNOD		SEAKPER	
DCIEVE		PALY	
SVAE		ROCRE	

Musical Instruments – Different Sounds

Sound of Musical Instruments

Do you know why different instruments make different sounds? It's because of their size, shape, and the kind of material they are made from. Let's find out how!



Brass Instruments

Big instruments like tubas and small instruments like trumpets are called brass instruments. They are made from brass. Brass is a hard and smooth material. When you blow into a brass instrument, your lips buzz, and it makes a sound. The sound gets louder as it comes out of the instrument.

Stringed Instruments

Instruments like violins, guitars, and cellos are called stringed instruments. They have strings. When you pull or push the strings, they vibrate and make a sound. The body of the instrument makes the sound louder.



Woodwind Instruments

Flutes, clarinets, and saxophones are called woodwind instruments. You blow into them and cover or uncover holes to make different sounds. These instruments can make light or deep sounds.

Percussion Instruments

Drums, tambourines, and cymbals are called percussion instruments. You make sound by hitting or shaking them. When you hit a drum, the drum shakes, making sound waves. Bigger drums make louder sounds.



List

Provide examples of instruments that belong to each category

Brass	Stringed	Woodwind	Percussion

Multiple Choice

4th best

1) What instrument uses a bow?	Violin	Flute
2) What instrument uses a mouthpiece?	Trumpet	Drum
3) What instrument uses strings?	Guitar	Saxophone
4) What instrument is a percussion?	Drums	
5) What instrument is hit?	Tuba	Drum
6) What instrument has holes?	Cello	Flute
7) What instrument can be strummed?	Guitar	Trombone
8) What instrument can be plucked?	Trumpet	Violin
9) What instrument can be shaken?	Tambourine	Tuba
10) What instrument is a woodwind?	Saxophone	Violin

Activity- Guess the Sound

Research Question

What are we testing?

Can you tell the difference between different musical instruments?

Materials

What do we need for our experiment?

- Computer
- Speaker

**Procedure**

How do we conduct the activity?

1. You could find your own clips of musical instruments for students to guess. Or, as an easier option: see the YouTube video "Guess the Sound Musical Instruments"
2. Have students give their answers and write them down below

Recording

Write what musical instrument you

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

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

Sound Energy – Activities

Word Search

Find the words from the word bank

Sound	Energy	Hear	Drum	Noise
Guitar	Engine	Speaker	Radio	Phone

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

Word Scramble

Unscramble the words from the word bank

SUNOD		EGNREY	
SEAPKER		EGNNIE	
GTAIUR		NIOES	
POHNE		HAER	
DRMU		RIDAO	

Natural and Artificial Light

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

Natural or Artificial

Circle whether the picture is natural or artificial light



Natural



Natural

Artificial



Natural

Artificial



Natural

Artificial



Natural

Artificial



Natural

Artificial



Natural

Artificial



Natural

Artificial



Natural

Artificial



Natural

Artificial



Natural

Artificial



Natural

Artificial

Light Energy

Fill in the Blanks

What is the missing word?

1. Light energy is energy we can _____.

see/feel



2. A TV _____ energy.

light/heat

3. The biggest _____ of light energy is the _____.

moon/sun

4. At night, we can _____ for light energy.

light

5. A computer gives us _____ light energy.

natural/human-made

Word Search

Find the words from the word

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

Light

Energy

Natural

Human

Movement

Firework

Candle

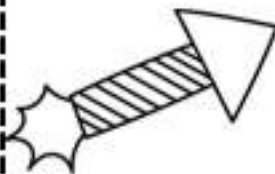
Fire

Sun

Star

Questions

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

Natural Light**Artificial Light****PREVIEW**

Exit Cards

Cut Out

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

Name: _____

Mark

Is it natural or artificial light?

Natural

Artificial

Natural

Artificial

Natural

Artificial

Name: _____

Mark

Is it natural or artificial light?

Natural

Artificial

Natural

Artificial

Natural

Artificial

Name: _____

Mark

Is it natural or artificial light?

Natural

Artificial

Natural

Artificial

Natural

Artificial

Name: _____

Mark

Is it natural or artificial light?

Natural

Artificial

Natural

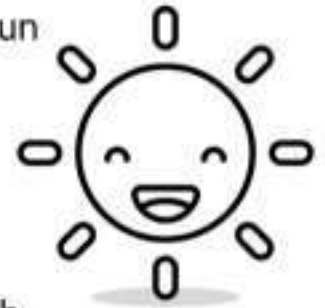
Artificial

Natural

Artificial

The Sun – Fun Facts

- 1) The sun is big! Over one million earths could fit into the sun
- 2) The sun is growing
- 3) The sun is getting brighter
- 4) The sun is not solid. It is a gas!
- 5) It takes 8 minutes for light from the sun to reach the earth
- 6) The temperature at the surface of the sun is 15 million degrees Celsius
- 7) The sun is a yellow dwarf star
- 8) The sun is a medium size star. There are many stars that are bigger.
- 9) Most of the stars in the universe are bigger than the sun
- 10) NASA sent a spacecraft to look at the sun. It has been taking pictures since 1995.



Activity

Draw pictures of 3 facts you found interesting.

The Sun – Light Energy

Fill in the Blanks

What is the missing word?

1. With no light energy from the sun, it would be _____.
light/dark
2. When the sun sets, it is _____ outside.
light/dark
3. When the moon is out, it is _____ outside.
light/dark
4. Other forms of light energy are _____ when the _____ has set.
sun/moon
5. If we had no sun, we would need a lot of _____ to make _____.
suns/lights
6. Plants need the sun's _____ to grow.
heat/light

**Write and Draw**

Write and draw about why we need the sun's light energy

-------------------------------	--

Without the Sun

**Activity**

Circle what would happen if we didn't have the sun

1) We would be	Hot	Frozen
2) It would be	Light	Dark
3) Plants would	Grow	Die
4) We would have	Seasons	Problems
5) We would have	Fun	Food
6) We would be up to	Darkness	Light
7) It would never be	Summer	Winter
8) We could get no _____ energy	Solar	Wind
9) The oceans, lakes, and rivers would be	Warm	Cold
10) You wouldn't need	Sunglasses	Gloves

Draw

Draw a picture of what life would be like without the sun

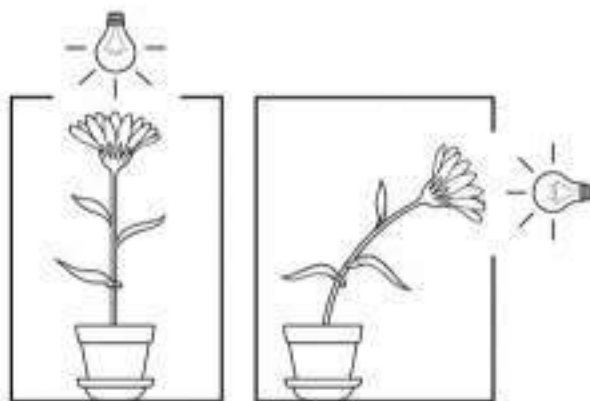
Plants Need Light

Plants Need Sunlight

For a plant to grow, it needs light. Plants are smart because they will grow towards light. They do this to get the most amount of light.

Plants use their leaves that soak up light. They use light to make food. The food they eat helps them to grow.

Outdoor plants grow towards the sun. Since the Sun moves, plants tend to grow straight up. Indoor plants grow towards their light from artificial sources. They will bend so they are aimed at the light source.



Yes/No

Is the answer yes or no?

1) Do plants grow away from light?

Yes

No

2) Do plants soak up light with their leaves?

Yes

No

3) Do indoor plants bend towards light?

Yes

No

4) Can plants make food without light?

Yes

No

5) Do plants bend more outside than inside?

Yes

No

Draw

Draw two plants that are growing towards the Sun



The Sun's Light Energy – Growing Plants

Colour

Colour the picture below that shows the sun helping the plants grow



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?

	Plants use sun light to help make their own food.
	Leaves block light because plants don't need it.
	Plants bend and grow toward light sources.

Name: _____

Mark

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

	Plants use sun light to help make their own food.
	Leaves block light because plants don't need it.
	Plants bend and grow toward light sources.

Name: _____

Mark

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

	Plants use sun light to help make their own food.
	Leaves block light because plants don't need it.
	Plants bend and grow toward light sources.

Name: _____

Mark

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

	Plants use sun light to help make their own food.
	Leaves block light because plants don't need it.
	Plants bend and grow toward light sources.

Experiment – Testing Sun Screen

Research Question

Does sunscreen work?

If we use clear sunscreen on paper, will it protect the paper from the sun?

Materials

What do we need?

- ✓ White paper
- ✓ Clear spray sunscreen SPF 30 or higher

Method

How do we conduct the experiment?

- 1) Fold a paper in half
- 2) Write sunscreen on one side and no sunscreen on the other
- 3) Coat your hands in sunscreen. Not too much that its dripping.
- 4) Place your hands on the sunscreen side
- 5) The page will be wet, but it will dry (it won't disappear completely)
- 6) Put the page in direct sunlight
- 7) If possible, take pictures to compare the paper
- 8) Wait and check on the paper periodically taking more pictures



Observations**What happened?**

1) Is the hand still dark after checking it hours later?

Yes

No

2) Is the rest of the paper getting lighter or darker or staying the same?

Darker

Lighter

Same

3) Will the paper and the handprint?

4) Did the sunscreen protect the paper? Did it stay the same colour?

Yes

5) Will sunscreen protect your skin?

Yes

Diagram

Draw a picture of the page with your hand

No Sunscreen

Sunscreen

Emitting or Reflecting Light?

Light Emitters and Reflectors

When you see something, it is because it reflects or emits light. Most things we see reflect light. Reflecting light means light bounces off something.

Examples of light reflectors are:

- Tables and chairs
- Mirrors
- Everything else we can see

Examples of light emitters are:

- The Sun
- Flashlight or lightbulbs
- Candles
- Fireflies

Yes/No

Is the object a light emitter or reflector? yes or no?

1) Most things in the world are light emitters (make light)	Yes	No
2) Most things in the world are light reflectors	Yes	No
3) Your hair reflects light	Yes	No
4) Your pencil emits light	No	No
5) A lightbulb emits light	No	No

Draw

Draw 4 pictures – 2 of light reflectors and 2 of light emitters

Light Emitter	Light Emitter	Light Reflector	Light Reflector

Which Type?

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



Emitter Reflector



Emitter Reflector



Emitter Reflector



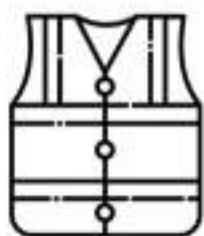
Emitter Reflector



Emitter Reflector



Emitter Reflector



Emitter Reflector



Emitter Reflector



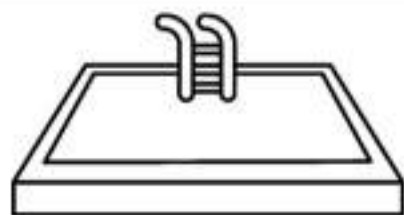
Emitter Reflector



Emitter Reflector



Emitter Reflector



Emitter Reflector

Natural or Artificial Light Emitter

Which Type?

Is the picture an example of a natural or artificial light emitter?



Artificial



Artificial

Natural



Artificial

Natural



Artificial

Natural



Artificial

Natural



Artificial

Natural



Artificial

Natural



Artificial

Natural



Artificial

Natural

Draw

Draw 4 pictures – 2 of natural and 2 of artificial light emitters

Natural

Natural

Artificial

Artificial

Light - Colour

Light - Seeing In Colour

Look around and you will see things in colour. What you are seeing is light reflecting off objects. Our eyes and our brains work together to take in the light and figure out what colour the light is.



If you see a red apple, it is red because the light reflects off the apple and goes into our eyes. Eyes have a retina that can figure out what colour the light is. The retina sends a message to our brain that the light is red, so the apple looks red.

If you turn the lights off in a room, you won't see any colour. This is because light is not reflecting off objects. Everything will look black!

Yes/No

Is the answer Yes or No?

1) Can we see colours in the dark?

Yes

No

2) Do we need light to see colours?

Yes

No

3) Do we need our brains to see colours?

Yes

No

4) Does light reflect off objects and move into our eyes?

Yes

No

5) Do we just need our brains to see colour?

Yes

No

Draw

Draw a picture of a brain and our eyes

Brain

Eyes

Light - Brightness

Brightness

The brightness of a colour is how shiny it is. An object will look bright if it reflects or emits a lot of light.



In a dark room, nothing will look bright. If you turn on a strong lamp, everything will look bright because it emits a lot of light. On the other hand, in the same room, nothing will reflect light so nothing will be bright.

Some colours are brighter than others. With the light on in your classroom, red and yellow will look brighter than many colours. Blue is not as bright because it doesn't reflect as much light.

You Choose

Which is brighter?

1)	Red	Blue
2)	Yellow	Violet
3)	Orange	Green
4)	Red	Violet

5)	White	Violet
6)	Yellow	Yellow
7)	Orange	Blue
8)	Red	Red

Draw

Draw a picture of a bright object and a dull object

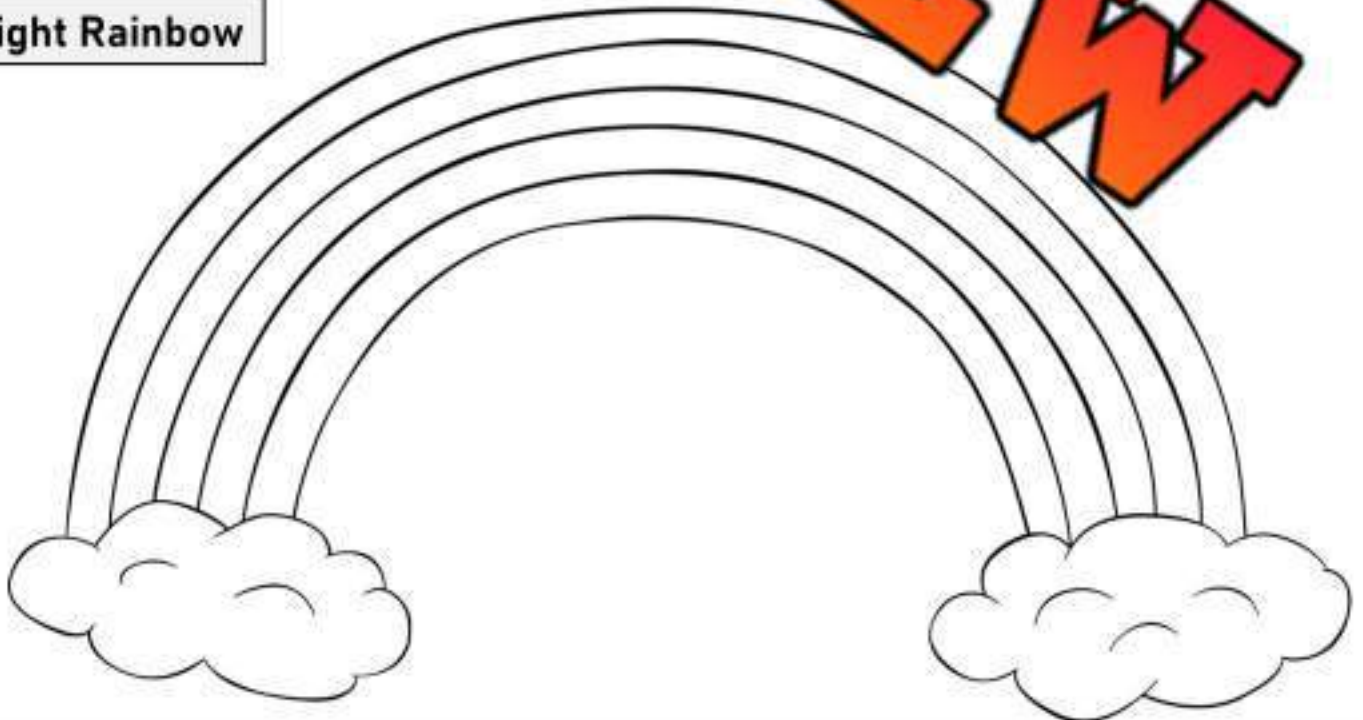
Bright	Dull

Light – Brightness Activity

The same colours can have a different brightness. An apple could be bright red or dark red (dull). A bright red apple will reflect more light than a dark red apple.

Colour

Colour the rainbows using dark and bright colours

Dark Rainbow**Bright Rainbow**

PREVIEW

Light Travels Through Objects - Transparency

Transparent Objects and Light

Transparent objects are really special! They are like doors for light - they let light pass right through them.

When light meets a transparent object, it doesn't stop or bounce back. Instead, it keeps moving straight through. That's why we can see things clearly on the other side of a transparent object.

Here are some examples of transparent objects:

- ✓ Glass: You can see outside when we look through a window!
- ✓ Clear plastic: Pipes and containers are made of this.
- ✓ Water: Have you noticed that you can see to the bottom of a clear pool?
- ✓ Air: It's all around us, which means light travels through it easily!

Yes/No

Is the material transparent?

1) Glass	Yes	No	6) Foil	Yes	No
2) Wood	Yes	No	7) Paper	Yes	No
3) Brick	Yes	No	8) Clear plastic	Yes	No
4) Paper	Yes	No	9) Clothing	Yes	No
5) Clear tape	Yes	No	10) Basketball	Yes	No

Questions

Answer the questions below

1) What does transparency mean?

2) Write 4 objects/materials you can see right now that are transparent.

Exit Cards

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

Name: _____

Mark

Sort the following items into
the correct categories:

"Transparent" or "Not Transparent"

Items	
Eyeglasses	Backpack
Book	Soap Bubble
Transparent	Not Transparent

Name: _____

Mark

Sort the following items into
the correct categories:

"Imported" or "Grown in Canada."

Items	
Eyeglasses	Backpack
Book	Soap Bubble
Transparent	Not Transparent

Name: _____

Mark

Sort the following items into
the correct categories:

"Imported" or "Grown in Canada."

Items	
Eyeglasses	Backpack
Book	Soap Bubble
Transparent	Not Transparent

Name: _____

Mark

Sort the following items into
the correct categories:

"Imported" or "Grown in Canada."

Items	
Eyeglasses	Backpack
Book	Soap Bubble
Transparent	Not Transparent

Shadows

What are Shadows?

The Sun sends light rays in straight lines nearly 300 000 km/second. When objects block the Sun's light, shadows are made.

A shadow is a dark area on a surface. It is dark because light rays can't reach the surface because it travels in straight lines.

Any light source can make a shadow. If an object blocks the light of a lamp or flashlight, a shadow is made.

The shadow will look like the object that is blocking the light. The closer the object is to the light source, the larger the shadow will be.



Multiple Choice

Circle the best

1) If the light is closer to an object, the shadow will be...	Bigger	Smaller
2) Light travels in _____ lines	Curved	Curved
3) Any light _____ can make a shadow	Reflector	Emitter
4) A shadow is a _____ area	Light	Light
5) A small object will create a _____ shadow	Small	Big

Matching

Draw a line from the animal to its shadow



Draw

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



Draw

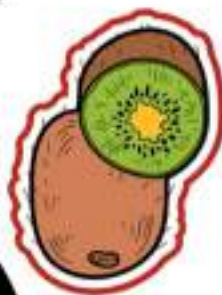
Draw shadows of the objects in the boxes below. Look at where the sun is to know where the light would be blocked



Activity – Shadow Matching

Write the number of the plant on its shadow.

Matching

PREVIEW

Light Bending - Refraction

What is Light Bending - Refraction?

Refraction is when light changes direction, or **bends**. This might sound strange, but it happens all the time!

Why Does Light Bend?

Light travels at different speeds through different materials. When light passes from one material, like air, into a different material, like water or glass, it changes speed. This makes it change direction. This is what we call refraction.

Seeing Refraction in Daily Life

You can see refraction happening in your everyday life. For example, when you put a pencil or straw in a glass of water, it looks like it's broken or bent. But it's not really - it's just the light bending when it moves from the air into the water.



Rainbows and Refraction

Rainbows are another example of light bending. When sunlight hits a raindrop, it slows down and bends. Then, it bends again when it comes out of the raindrop. This bending separates the light into all the colours of a rainbow.



Question

What is refraction? Why does it happen?

Yes/No _____ the answer yes or no?

1) Does refraction happen to sound waves?	Yes	No
2) Does light refract when it moves from air into water?	Yes	No
3) Does a rainbow happen because of refraction?	Yes	No
4) Is the pencil in the reading broken?	Yes	No
5) Does light stay the same speed in air than in water?	Yes	No

Draw

Draw your own diagram of refraction in action. Show how it is working.



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?

Materials

What do we need for our experiment?

- 1) Glass jar – the best
- 2) Water
- 3) Paper with designs
- 4) Measuring cup full of water – enough to almost fill the jar

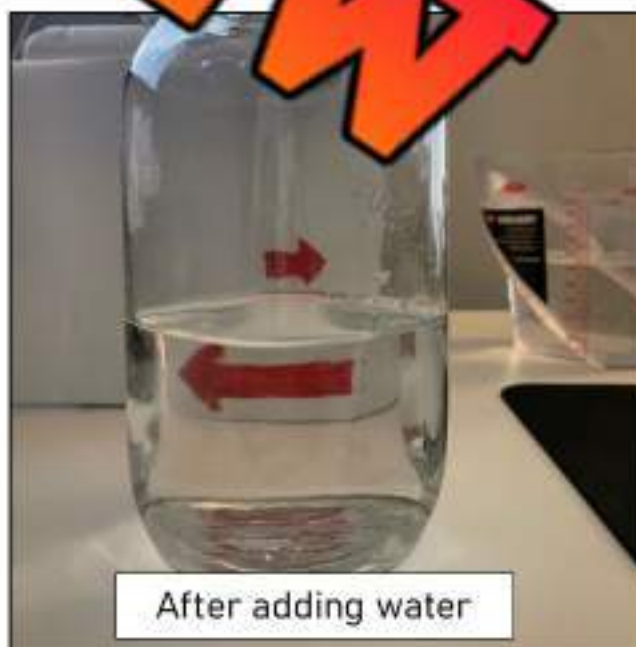


Before adding water

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 will might need to rotate the jar to show the effect.
- 5) Record your observation.



After adding water

Observations**What happened?**

1) What happened? Write down what you saw as you added water.

2) Draw a picture of the arrows before you added water and after

PREVIEW

Before Adding Water

After Adding Water

Results**Answer the questions below**

Why did the designs move as you added water?

Light Splitting into Colours - Dispersion

What is Light Dispersion?

When we talk about light dispersing, we're saying that light is splitting into different colours. Just like in a rainbow!

How Does Light Split Into Colours?

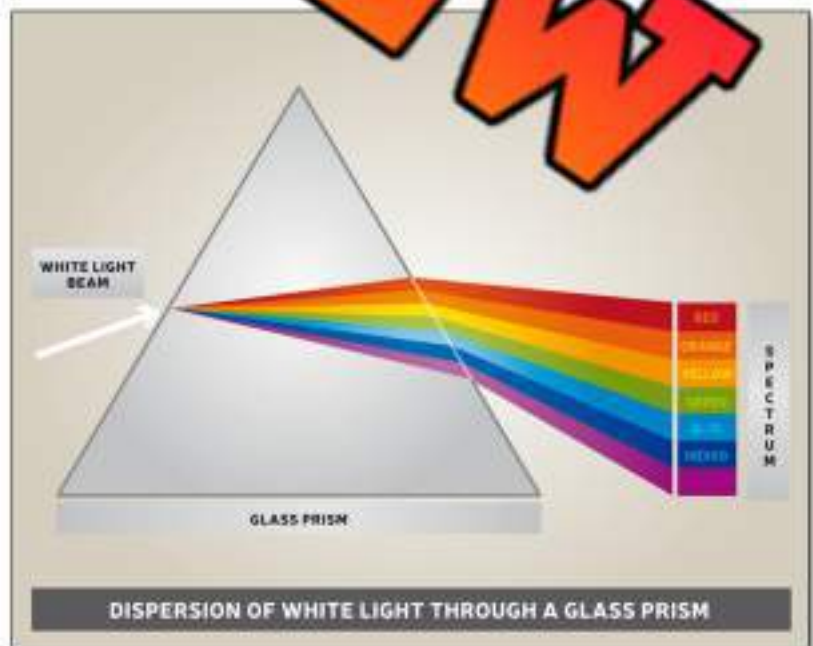
Light from the sun or a light bulb, looks white but it's actually a big team of different colours. When light passes through something special like a prism or a raindrop, it breaks apart into a bunch of colours.

Seeing Dispersed Light

You've seen light disperse if you've ever seen a rainbow. Rainbows happen when sunlight passes through raindrops. Light enters a raindrop, bends a bit, and then comes out split into all the colours we see in a rainbow.

Prisms and Light Dispersion

Prisms are another thing that can make light disperse. When white light from the sun or from a flashlight hits a prism, it splits into all the different colours we can see. This line of colours is called a spectrum.



Question

What does it mean for light to disperse?

Yes/No the answer yes or no?

1) Is light from the sun white?	Yes	No
2) Does white light split in a prism?	Yes	No
3) Does the spectrum have all the colors of the rainbow?	Yes	No
4) Do rainbows happen because of light splitting?	Yes	No
5) Does light dispersion mean light splitting?	Yes	No

Draw

Draw your own diagram of light splitting in a prism



Exit Cards

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

Name: _____ Mark _____

Circle the correct answer.

1) What happens during light dispersion?

It splits into
colours

It disappears

2) What looks white but has many
colours?

Sunlight

Shadow

3) What can split light into colours?

Prism

Mirror

4) Where do we often see dispersed
light?

Rainbow

Dark room

Name: _____ Mark _____

Circle the correct answer.

1) What happens during light dispersion?

It splits into
colours

It disappears

2) What looks white but has many
colours?

Sunlight

Shadow

3) What can split light into colours?

Prism

Mirror

4) Where do we often see dispersed
light?

Rainbow

Dark room

Name: _____ Mark _____

Circle the correct answer.

1) What happens during light dispersion?

It splits into
colours

It disappears

2) What looks white but has many
colours?

Sunlight

Shadow

3) What can split light into colours?

Prism

Mirror

4) Where do we often see dispersed
light?

Rainbow

Dark room

Name: _____ Mark _____

Circle the correct answer.

1) What happens during light dispersion?

It splits into
colours

It disappears

2) What looks white but has many
colours?

Sunlight

Shadow

3) What can split light into colours?

Prism

Mirror

4) Where do we often see dispersed
light?

Rainbow

Dark room

Experiment – Light Dispersion

Research Question

What are we learning more about?

To understand how light can split into a spectrum of colours through an experiment with a prism.

Materials

What do we need for our experiment?

- 1) A prism (you can buy one online or at a science store)
- 2) A flashlight
- 3) A white piece of paper
- 4) A dark room

Method

How do we complete the experiment?

- 1) Go into a dark room. Make sure all the lights are turned off.
- 2) Place the white piece of paper on a table or the floor.
- 3) Turn on the flashlight and shine the light through the prism onto the white piece of paper.
- 4) Look at the paper. You should see a line of different colours. This is a light spectrum!



Observations

What happened?

1) What colours did you see on the piece of paper?

2) Can you remember and tell the order of the colours?

3) Draw the colours you saw in the oil and saw

Can you remember and tell the order of the colours?

Draw the colours you saw in the order you saw

PREVIEW

Sound and Light Energy

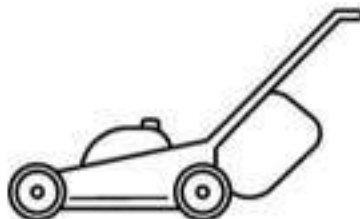
Directions

Circle if the picture makes sound and/or light



Light

Sound



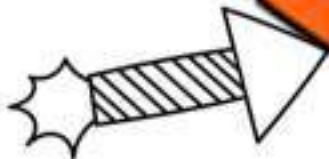
Light

Sound



Light

Sound



Light

Sound



Light

Sound



Light

Sound



Light

Sound



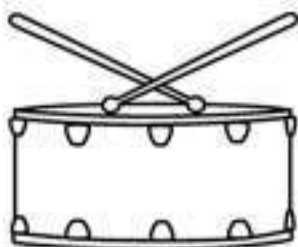
Light

Sound



Light

Sound



Light

Sound



Light

Sound

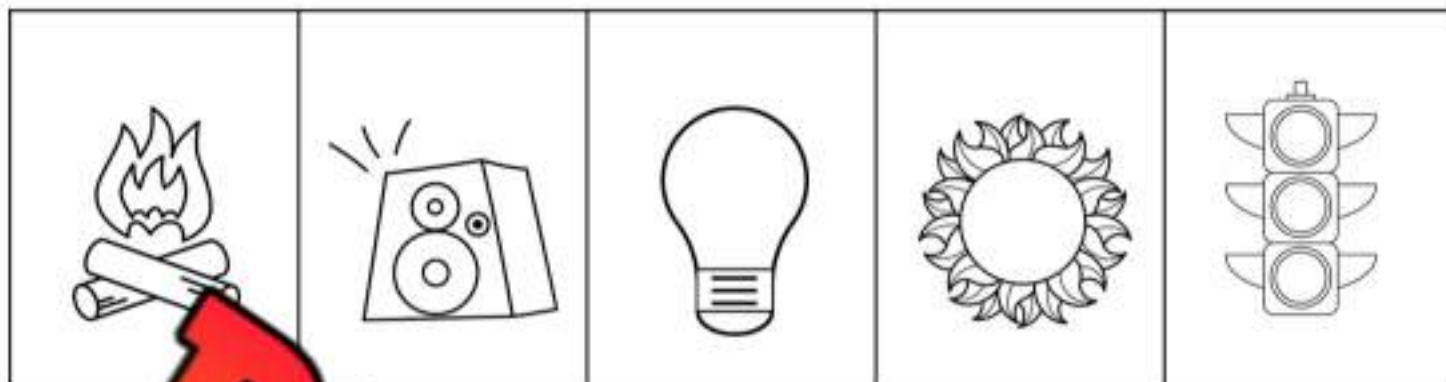


Light

Sound

Light Energy

Circle the picture that is NOT light energy



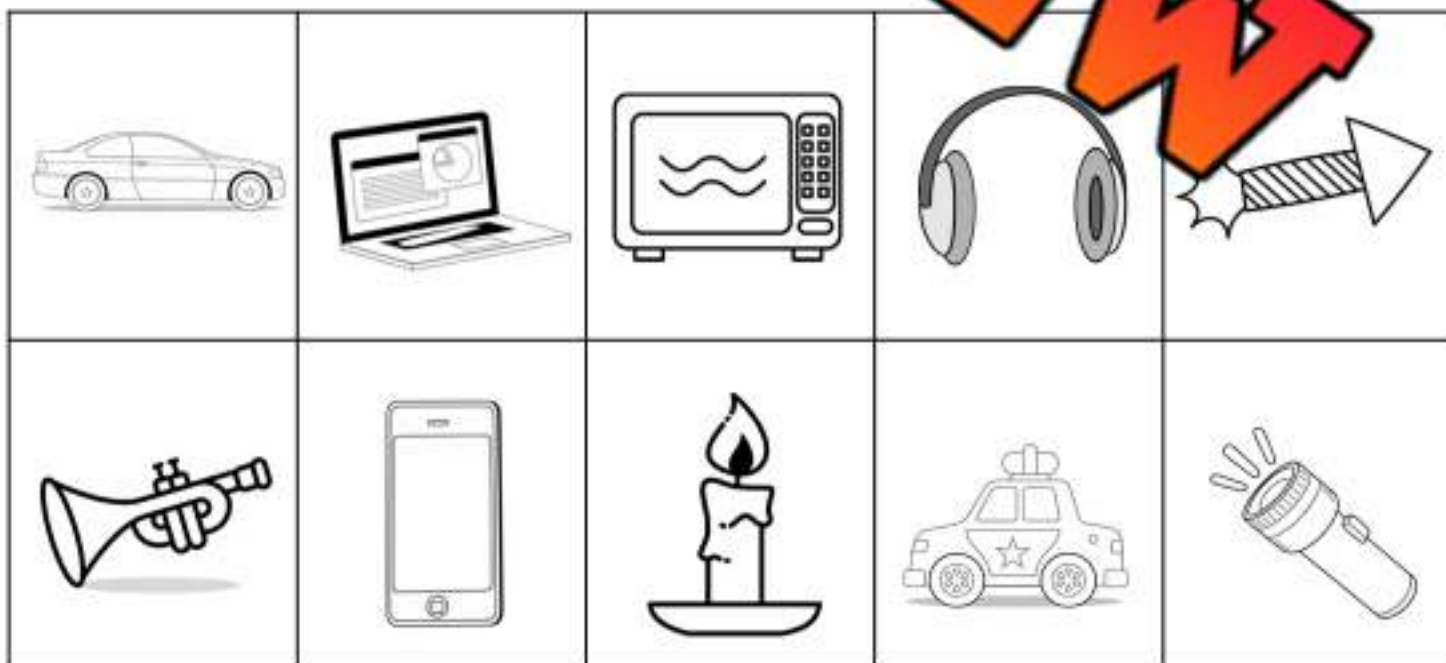
Sound Energy

Circle the picture that is NOT sound energy



Both Types

Circle the pictures that make both light and sound



If Then Conditional Statements - Activity

Questions

Follow the if/then statements to move the lion to the watering hole

1)	If light energy comes from the sun	then	Move ↓ 4 spots
2)	If crickets are natural sources of sound	then	Move → 2 spots
3)	If a _____ energy	then	Move ↓ 3 spots
4)	If _____ is _____ light	then	Move → 3 spots
5)	If plants _____ an's _____	then	Move ↓ 3 spots
6)	If drums _____ nature _____	then	Move ← 5 spots
7)	If the sun makes its _____	then	Move → 3 spots
8)	If the moon makes its own light		Move ↑ 4 spots



Coding – Automatic Street Lights

Street lights 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

turn lights ☐ on ☐ off

else turn lights ☐ on ☐ off



Fill in the Blanks

Use the words below to fill in the blanks

Bank

code

crime

safer

timer

- 1) Lights make driving _____.
- 2) Street lights are turned on by a _____.
- 3) A _____ is used on the timer to tell the lights when to turn on.
- 4) Street lights 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

Writing Code – Lights In Your Room

Coding

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



Read Code

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

7:00 pm	On	Off	6:01 pm	On	Off
11:00 pm	Off	On	8:01 am	On	Off
6:00 am	On	Off	2:50 pm	On	Off
3:30 am	On	Off	1:00 am	On	Off
12:00 pm	On	Off	1:30 pm	On	Off

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.

History of Street Lights

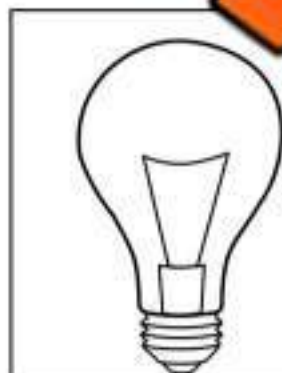
History of Street Lights

In ancient Rome, wealthy citizens used vegetable oil lamps on the front of their homes to light up the streets. Special slaves were in charge of lighting, extinguishing and watching the lamps.

In the year 1417, the mayor of London, England made it the law that everyone had to hang lanterns outside of their homes after dark and in the winter.

In 1879 Thomas Edison created the first lightbulb. These bulbs were used for streetlights later. Before lightbulbs, people burned oil to make a flame that made light.

Colour in the lightbulb and the oil lamp, then draw your own versions



Lightbulb



Oil Lamp

Questions

Answer the questions below

1) Who invented the lightbulb?

2) Which is safer – a lightbulb or oil lamp?

Lightbulbs

Oil Lamps

3) How has the invention of coding and timers made our streets safer?

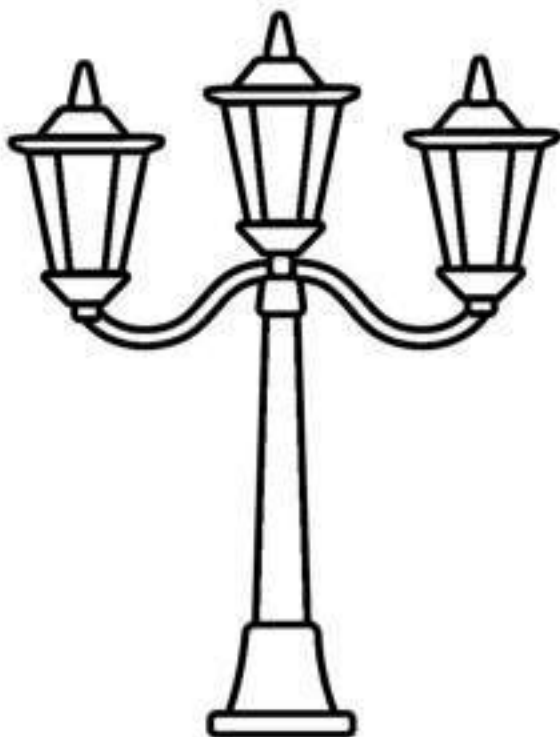
Coding – Following Instruction

Directions

Read the program and follow the instructions to draw the output

If  is clickedColour the street light greyColour the lights yellow

Add a black background

Draw a  and erase the street light**Original****Output**

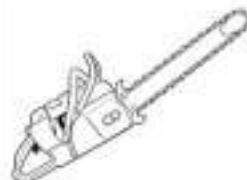
Unit Test – Energy in our Lives

Light Energy

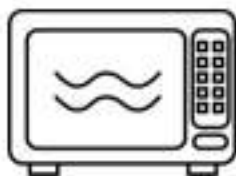
Circle the picture that is NOT light energy

**Sound Energy**

Circle the picture that is NOT sound energy

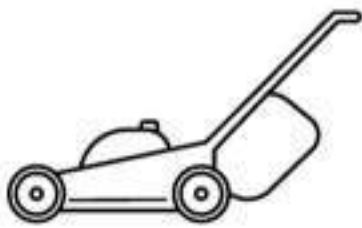
**Both Types**

Circle the pictures that makes sound and light



Directions

Does the picture make artificial sound or natural sound?



Artificial

Natural



Artificial

Natural



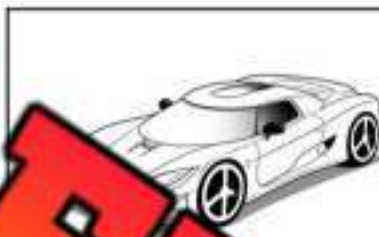
Artificial

Natural



Artificial

Natural



Artificial

Natural

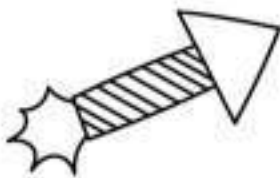


Artificial

Natural

Which Type?

Is the picture an example of artificial or natural light emitter?



Artificial

Natural



Artificial

Natural



Artificial

Natural



Artificial

Natural



Artificial

Natural



Artificial

Natural

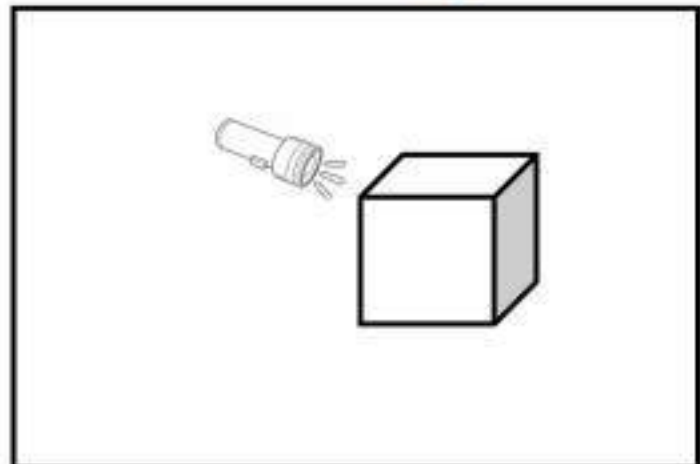
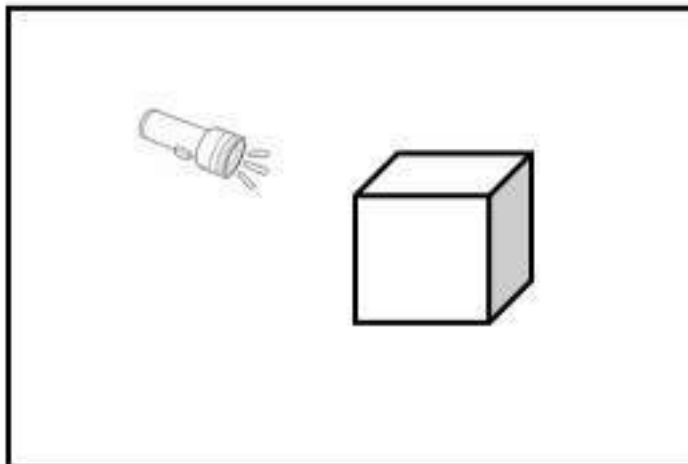
Multiple Choice

Circle the best answer

1) What is the biggest source of light?	Lightbulbs	Sun
2) Light and sound move in a _____ path.	Curved	Straight
3) Which material reflects light/sound?	Hard Floors	Carpet
4) Which material absorbs light/sound?	Windows	Curtains
5) What is light bending called?	Refraction	Reflection
6) _____ is how loud a noise is.	Pitch	Volume
7) _____ is how long a note lasts.	Duration	Pitch
8) A bird chirping is a _____ pitch.	Low	High
9) We hear sound because of _____.	Vibrations	Pitch
10) Which drum makes a louder sound?	Small Drum	Large Drum

Draw

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





Workbook Preview



Grade 2 – Science Unit

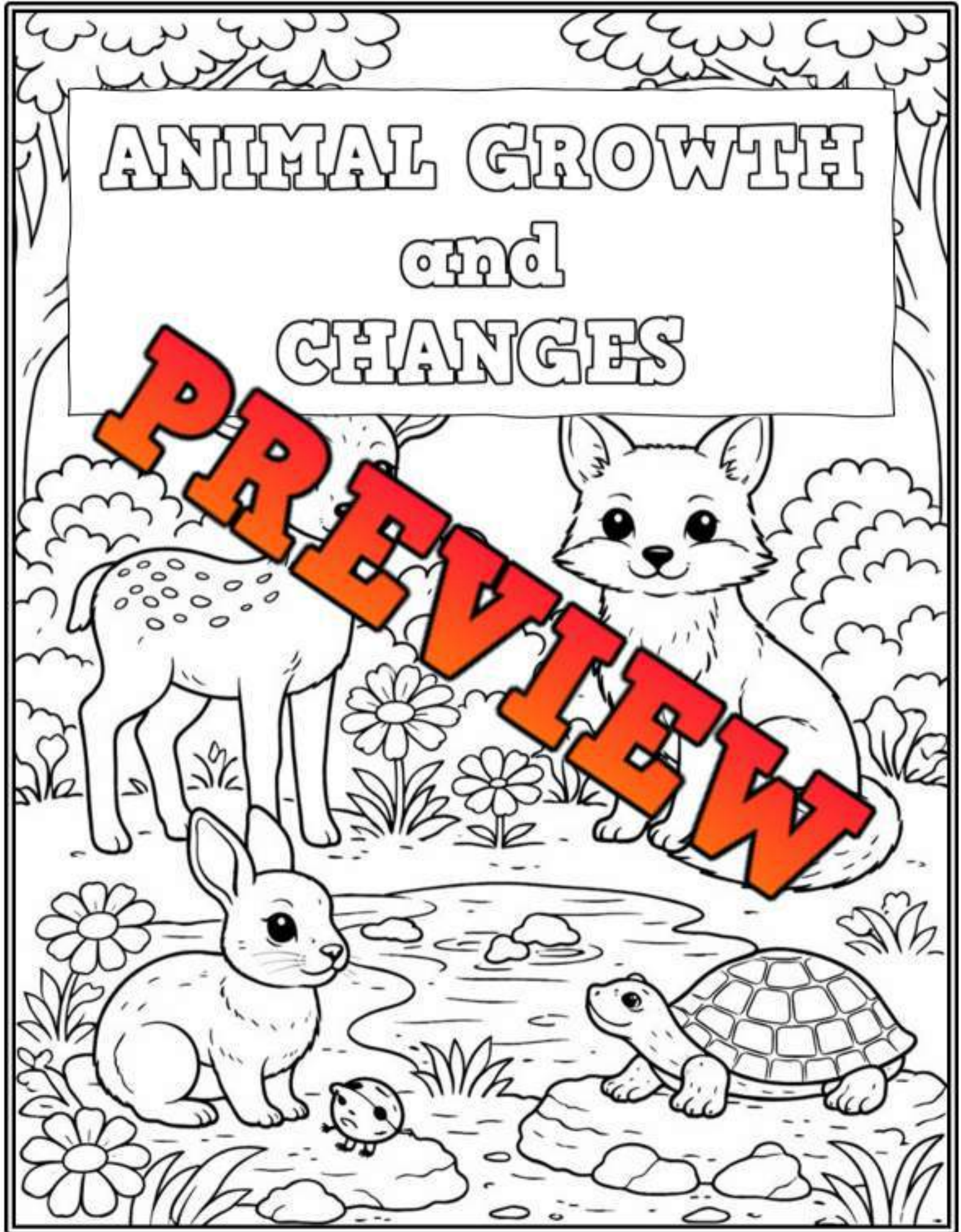
Organizing Idea Matter: Living Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.

Guiding Question: How do plants and animals live and grow?

	Learning Outcome - Students investigate the growth and development of plants and animals and consider their relationship to humans.	Pages
LS.1	Some human behaviours can positively affect plants and animals, such as - reducing, reusing, recycling, and repurposing - recovering natural areas - protecting natural spaces	82 – 87, 90 – 96
LS.2	Preview of 80 pages from this product that contains 177 pages total.	- 81, - 89
LS.3		- 64
LS.4	A life cycle shows the different stages of life that a plant or an animal goes through. Life cycles can be represented in many ways, such as illustrations diagrams models stories	6 – 58, 65 – 71
LS.5	First Nations, Métis, and Inuit relate to land, plants, and animals as equals. - Care and consideration for land, plants, and animals can be demonstrated through cultural practices, such as - taking only what is needed - using the whole plant or animal - protecting water and soil - treating land, plants, and animals as relatives	104 - 12
Computer Science:		
CS.1	Students apply creativity when designing instructions to achieve a desired outcome.	97 – 103

ANIMAL GROWTH and CHANGES

PREVIEW



Groups of Animals - Vertebrates

Animal Kingdom – Vertebrates vs Invertebrates

We can split the animal kingdom into two groups: Vertebrates and Invertebrates. **Vertebrate** animals have a backbone, while **invertebrate** animals do not.

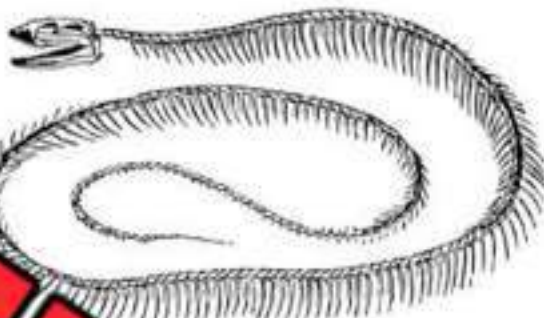


Horses have

What are backbones?

A **backbone** is the part of the body that we have in the middle. It is made of many small bones called vertebrae. We have spines that run from the back of our head, down our neck and back, and into our hips. Humans have around 33 bones in our spines. These are called vertebrae.

Snakes are reptiles and they have backbones, too. Their backbone has way more bones than we have. Snakes have between 200 and 400 vertebrae. That's a lot of bones!



Search and Find

Follow the instructions below

1. Circle all of the numbers in the text. How many bones in a human spine? _____
2. Circle the word backbone. How many times do you see it in the text? _____
3. What two words make up the word backbone? _____ + _____

True or False

Is the statement true or false

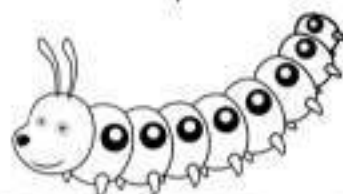
1. Humans have more backbones than snakes	True	False
2. Snakes have between 200-400 bones	True	False
3. Mammals, fish, reptiles, birds, and amphibians all have backbones	True	False
4. Humans are not vertebrates	True	False
5. Horses are vertebrates with long spines	True	False

Metamorphic Life Cycles

Metamorphic vs Non-Metamorphic Life Cycles

Some animals have a metamorphic life cycle. A **metamorphic life cycle** means the animal's body changes completely. A **non-metamorphic life cycle** means the animal keeps their same body structure but their size changes as they grow.

An animal that goes through a metamorphic life cycle undergoes **metamorphosis**. This means their body changes.



Examples of Metamorphic Life Cycle

- ✓ From caterpillar to butterfly
- ✓ From tadpole to frog
- ✓ From larva to pupa to adult
- ✓ From zoea to crab

Examples of Non-Metamorphic Life Cycle

- ✓ Humans - baby to adult
- ✓ Dogs - puppy to adult
- ✓ Chicken - chick to adult
- ✓ Turtle - juvenile to adult

Draw

Draw an example of a metamorphic and non-metamorphic animal

Metamorphic

Non-metamorphic

Yes/No

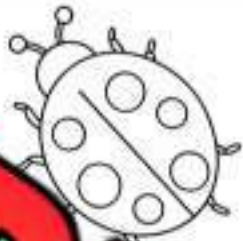
Is the answer yes or no?

1) Does a butterfly go through a non-metamorphic life cycle?	Yes	No
2) Does a metamorphic life cycle mean the animal doesn't change its body?	Yes	No
3) Will you go through a non-metamorphic life cycle?	Yes	No
4) Does metamorphosis mean change?	Yes	No
5) Is an adult the last stage in many non-metamorphic life cycles?	Yes	No

Metamorphic or Non-Metamorphic Life Cycles

Choose

Does the animal have a metamorphic or non-metamorphic life cycle?



Metamorphic



Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic

Types of Animals - Amphibians

What are Amphibians?

Amphibians are vertebrate animals that are born in the water. As amphibians get older, they will grow lungs that allow them to breathe outside of the water. This means that adult amphibians can live on land or in the water.

Amphibians are animals that have these things in common:

Cold-blooded	Lay eggs	Moist skin	Webbed feet
--------------	----------	------------	-------------

Amphibians are cold-blooded

Like fish and reptiles, amphibians are cold-blooded. Being cold-blooded means their bodies don't adjust to change their temperature. They need to use their surroundings to cool off or warm up. Humans are warm-blooded. This means our bodies change our temperature to keep it at 98.6 degrees Celsius. When we get too warm, we release water as sweat to cool our skin.

Examples of Amphibians

- Frogs, salamanders, newts, and toads

Search and Find

Follow the instructions below.

1. Underline the word cold in the text. How many times did you find it?
2. What are four types of amphibians?
1. _____ 2. _____ 3. _____ 4. _____
3. Shade in the boxes with the 4 things amphibians have in common. Write one thing below

Questioning

What questions do you have after reading the information?

1)

2)

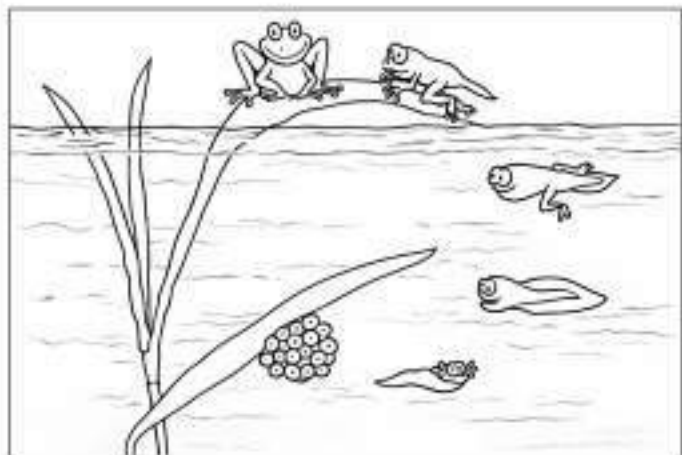
Frog Life Cycle – Stages of Development

Life Cycle of a Frog

A life cycle refers to the stages or changes an animal goes through while it is alive.

A frog goes through four stages throughout its life.

- **Stage 1: Egg** – A frog begins life as an egg. A female frog lays a lot of eggs at one time in water. The eggs float on the water in a jelly mass or cluster. The eggs will hatch into tadpoles.
- **Stage 2: Tadpole** – When the tadpole hatches, it looks more like a fish than a frog. It has gills instead of lungs to allow it to breathe underwater. A tadpole will survive by eating plant matter and algae from the water. Over several weeks, a tadpole will grow two hind legs so it can jump instead of only swimming.
- **Stage 3: Young Frog** – The tadpole grows two front legs and the tail becomes shorter and shorter. The tadpole uses the fat in its short tail as food. It doesn't need any other food until its tail is gone. When its tail is gone, it now looks like a young frog. It hops right out of the water onto land for the first time. The frog is very small.
- **Stage 4: Adult Frog** – The young frog's tail will completely disappear and it will start to eat insects instead of plants from the water. A young frog needs to grow for 2-4 years before it becomes an adult. The female adult frogs then lay their eggs and more tadpoles hatch to begin the cycle again.



True or False

Circle whether the statement is true or false

1. A frog will grow its front legs first	True	False
2. A frog begins its life as a tadpole	True	False
3. Frog eggs are commonly laid in a pond	True	False
4. A young frog takes 2-4 years to develop into an adult frog	True	False
5. Tadpoles are more like fish than frogs	True	False

Draw a picture of each stage of a frog's life cycle

Egg	Tadpole	Young Frog	Adult Frog

Questions

Use information from the text to answer the questions.

1) What does a life cycle mean? What is our life cycle?

2) What is the life cycle of a frog? Explain the stages they go through.

Exit Cards

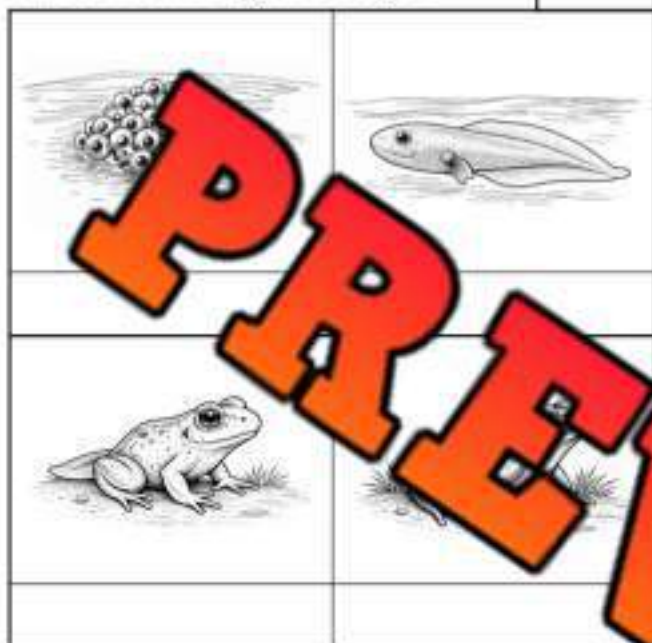
Cut Out

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

Name: _____

Mark

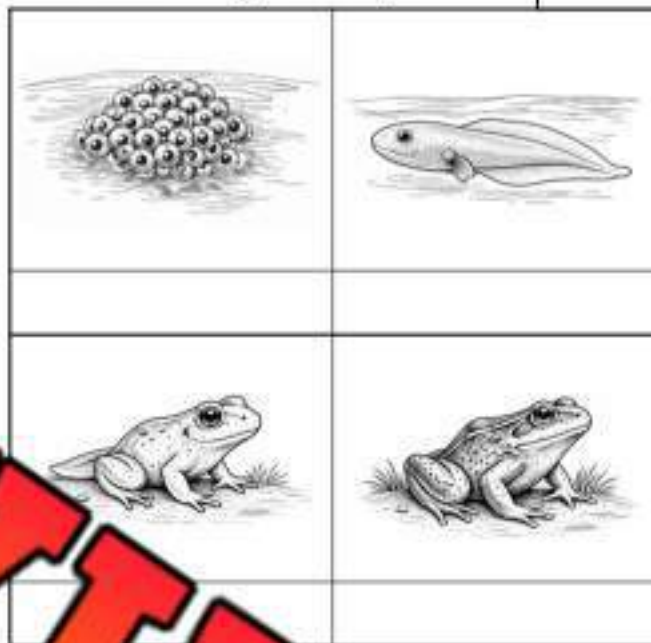
Label each frog life stage.



Name: _____

Mark

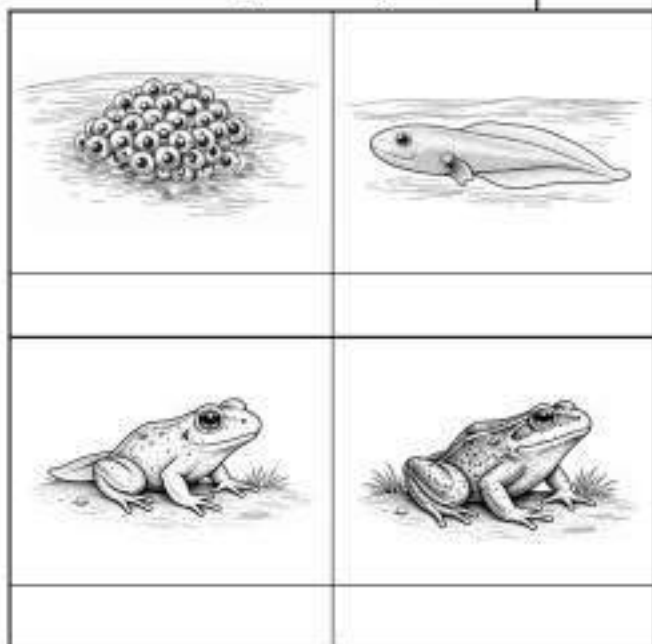
Label each frog life stage.



Name: _____

Mark

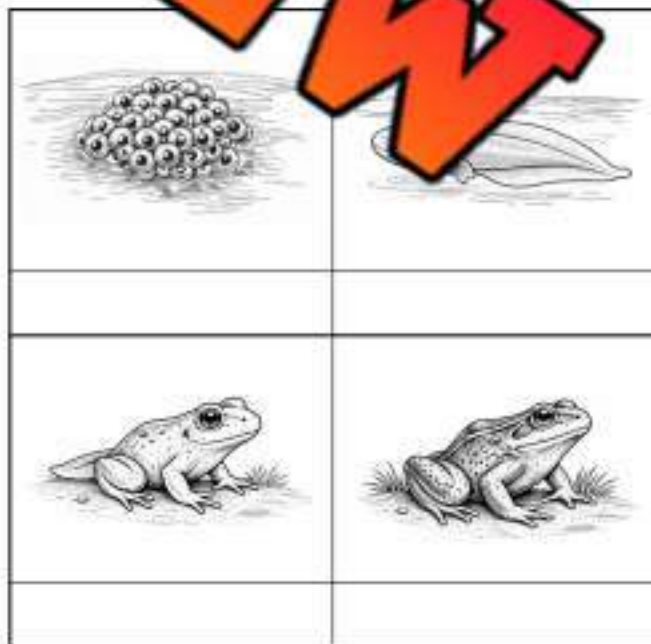
Label each frog life stage.



Name: _____

Mark

Label each frog life stage.



Types of Animals - Mammals

Mammals

A mammal is a type of animal. We know if an animal is a mammal if it can:

- Breathe air
- Has a backbone
- Grows hair or fur
- Give birth to live young
- Drink milk from their mothers



Mammals are the most common animals on earth. We are mammals. You were born from your mother, not from an egg. You are warm-blooded, and have a backbone. Almost all humans have hair and we all have the ability to make milk when we were babies.

Examples of Mammals

There are over 6,000 different types of mammals. Here is a list of some mammals: humans, gorillas, rats, mice, dogs, cats, whales, dolphins, lions, tigers, cows, bats, horses, and more!

Fill in the Blanks

Write the missing word in the line.

1. There are more than _____ types of mammals.
2. Mammals are the _____ animals on earth.
3. Mammals are born from their mothers, not from an _____.
4. Mammals are warm-blooded _____ animals.



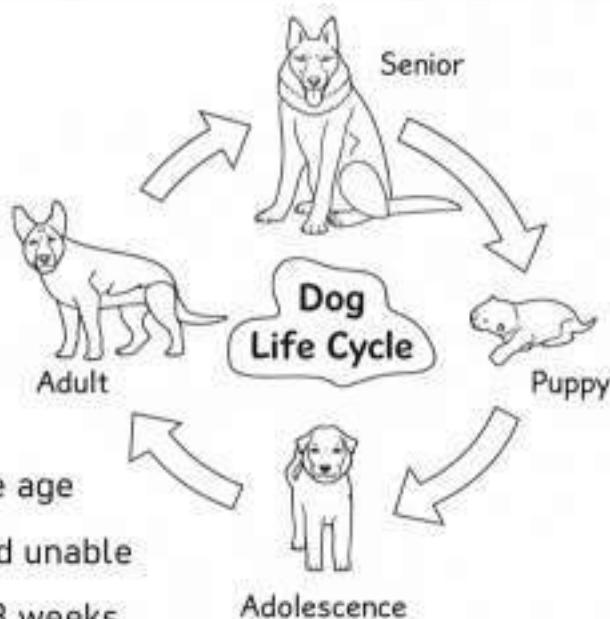
Making Connections

What does this reading remind you of in your life?

Dog Life Cycle

Dog Life Cycle

Dogs are mammals who are not born from eggs. Instead, mothers give birth to live young. Dogs go through a non-metamorphic life cycle that has four stages.



Stage 1: Puppy

The puppy stage starts at birth and lasts until the age of 6-18 months. Puppies are born blind, and unable to regulate their body temperature. At around 2-3 weeks, they begin to see and hear. They grow rapidly.

Stage 2: Adolescence

Begins around the age of 6-18 months. The hormones that cause the stage change a dog's behaviour. They will want to explore more during this stage. They may also begin to mark their territory. They are still growing.

Stage 3: Adult

A dog becomes an adult at the age of 1. This is much faster than humans, who become adults at the age of 18. Dogs will become more mature, as they begin to understand the world around them better. They do not grow as much in this stage.

Stage 4: Senior

The senior stage begins between 6 and 10 years of age. Dogs are fully grown by this stage. They may begin to have health issues that stop them from being as active.

True or False

Circle whether the statement is true or false

1) Dogs have 4 stages in their life cycle	True	False
2) Dogs undergo a metamorphic life cycle	True	False
3) Dogs grow a lot during their senior and adult stages	True	False
4) Dogs slow down in their senior stage of life	True	False
5) Adolescents listen well and do not like to explore	True	False

Color and label the stages in a dog's life cycle



Humans – Growth and Changes

How Humans Change

As we get older, some body parts change and grow and some do not. Check out some of the things about our bodies that change and some that do not.

What Changes

- ☒ We get taller
- ☒ We get older
- ☒ Our hands and feet grow
- ☒ We grow more teeth

What Doesn't Change

- ☒ Our eye colour
- ☒ The shape of our head, arms, and legs
- ☒ The number of organs we have:
1 heart, 2 lungs, 1 stomach, etc.

Yes or No

Is it true? (circle yes or no)



1) Do we grow more organs as we get older?	Yes	No
2) Do our hands and feet grow?	Yes	No
3) Do we grow more teeth as we get older?	Yes	No
4) Does our eye colour change as we get older?	Yes	No
5) Does the shape of our head change as we age?	Yes	No

Draw

Draw a kid and an adult version keeping in mind what you learned above

Kid	Adult

Humans – Growing Rate

Why Do We Grow Differently?

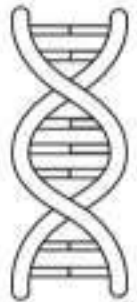
1) Everyone is different – Some people may be taller or shorter than others, and some people may develop muscles at different times in their lives.

2) We have different genes – Our genes tell our bodies how to grow.

Everyone has a different set of genes that they get from their parents. If your parents are tall, you will likely get their tall genes.

3) Eating healthy – A person who eats a healthy diet and exercises may grow faster than someone who doesn't eat healthy. But eating healthy doesn't mean you will grow tall though.

We are all different. Whether you grow fast or slow you grow, remember that you are special just the way you are.



Yes or No

Is the answer yes or no?

1) Can you eat healthy food and expect to grow tall?	Yes	No
2) Can you eat healthy food and expect to grow strong?	Yes	No
3) Can we change the genes we get from our parents?	Yes	No
4) If your parents are short, will you likely be really tall?	Yes	No
5) Are we all different?	Yes	No

Growing Rate

Answer the questions below about your growing rate

- 1) Are your parents short, tall or average height?
- 2) Do you eat healthy foods – fruits, vegetables, proteins?
- 3) Do you exercise for at least 60 minutes a day?
- 4) Are your grandparents, aunts, or uncles tall or short?

Human Life Cycle

Human Life Cycle

- **Baby (0-2 years):** When we are born, we are called babies. Babies drink milk and sleep a lot. They learn to crawl and then walk. They also learn to talk. 
- **Preschooler (2-5 years):** Next, we become preschoolers. Preschoolers can run, play, and talk. They go to preschool, daycare, or stay at home. They learn about colours, shapes, and numbers. 
- **Elementary Student (4-12 years):** After preschool, we become elementary students. This is when we go to a bigger school. We learn to read and do math. We make lots of friends and play fun games. 
- **Teenager (13-19 years):** Then, we become teenagers. Teenagers go to high school. They grow a lot and start looking like grown-ups. They learn about many things and start to figure out what they want to do when they grow up. 
- **Adult (18-65 years):** A teenager becomes an adult when they turn 18. It is a big age group. Young adults often go to school. As adults get older, they may start families where they take care of their children. They may get a job or stay home, or both. 
- **Senior (65+ years):** Finally, we become seniors. Seniors are older adults who have worked for many years. They might retire, which means they stop working. They enjoy their hobbies, spend time with family and friends, and share stories about their lives. 

True or False

Circle whether the statement is true or false

1) Babies learn to crawl and walk.	True	False
2) Preschoolers go to school when they are 2	True	False
3) Teenagers grow a lot	True	False
4) The adult stage is longer than the teenager stage	True	False
5) The adult stage is the last stage	True	False
6) Seniors are over 65 years old	True	False
7) Seniors often retire and stop working	True	False
8) Preschoolers stay home	True	False

Label

Label each stage of the life cycle

Word Bank

Senior

Teenager

Student

Preschooler

Baby



Exit Cards

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

Name: _____

Guess who I am and write the answer!

Baby	Student	Adult	Mark
Preschooler	Teenager	Senior	

1) I go to school to read, write, and learn math.

2) I like to play, run, and learn new things at home or daycare.

3) I drink milk, sleep a lot, and cannot walk yet.

4) I may have a job and take care of my family.

5) I am an older adult who may be retired.

Name: _____

Guess who I am and write the answer!

Baby	Student	Adult	Mark
Preschooler	Teenager	Senior	

1) I go to school to read, write, and learn math.

2) I like to play, run, and learn new things at home or daycare.

3) I drink milk, sleep a lot, and cannot walk yet.

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Name: _____

Guess who I am and write the answer!

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3) I drink milk, sleep a lot, and cannot walk yet.

4) I may have a job and take care of my family.

5) I am an older adult who may be retired.

Types of Animals - Reptiles

What are Reptiles?

Reptiles are vertebrate animals that share these things in common:

- Four legs (snakes do not, but use to)
- Most lay eggs but some have live young
- Are cold-blooded
- Have scales for skin, not fur or hair
- Breathe air with their lungs
- Have dry skin



What Do Reptiles Eat and Hunt?

Most reptiles are carnivores. They eat mostly insects. Larger reptiles like lizards and snakes will hunt birds and small mammals. Snakes kill their prey with venom before they eat them.

When some reptiles are in danger, they will hide or camouflage themselves to look like their surrounding environment. Chameleons can change the colour of their skin to hide from predators.

Examples of Reptiles

There are about 10,000 types of reptiles. Examples are lizards, turtles, snakes, crocodiles and alligators.



Search and Find

Follow the instructions below

1. Underline the word reptile in the text. How many times did you find it?
2. Put a circle around the food that reptiles eat? Write 3 things they eat.
1. _____ 2. _____ 3. _____
3. Put a box around the 6 things reptiles have in common. Write one thing you know.

Multiple Choice

Circle the best answer

1. Do reptiles have dry or moist skin?	Dry	Moist
2. Reptiles are cold or warm blooded?	Cold	Warm
3. Reptiles eat mostly...	Mice	Insects
4. There are how many types of reptiles?	2,000	10,000
5. Which animal changes their colour?	Snakes	Chameleons

Reptile Life Cycle - Snakes

Reptile Life Cycle

Most female reptiles lay eggs, meaning snakes are born from eggs. Check out the life cycle of a snake below.

Stage 1: Egg

Snake parents lay embryos in eggs. Eggs are often buried in the ground to keep them warm.

Stage 2: Hatchling

When a snake is ready to hatch, it will use an egg tooth to break through the shell of the egg. Once the shell is cracked open, the hatchling will stay in the shell for 12-48 hours. The little hatchling can defend itself and take care of itself at birth.

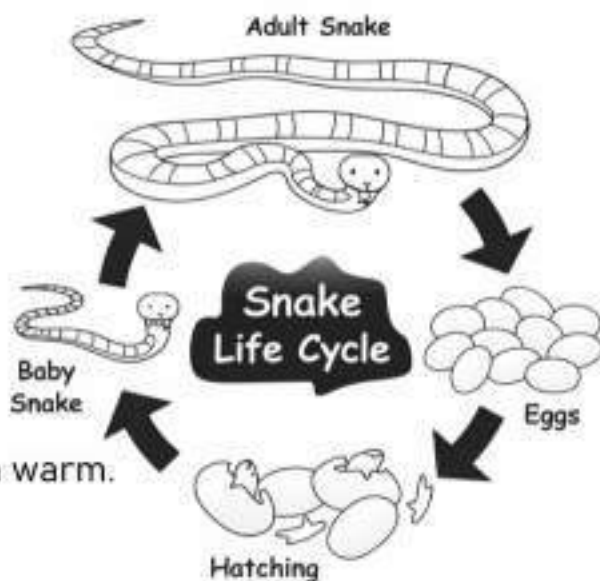
Stage 3: Baby Snake

Baby snakes look like small adult snakes. They grow up until they become adults, which can take about 2-4 years. A growing baby snake grows its skin up to 4 times a year!

Stage 4: Adult Snake

It can take a baby snake 2-4 years to become an adult snake. Adult snakes only shed their skin once a year. They do not grow as much as baby snakes as they have reached their full size.

Adult female snakes will lay about 10-15 eggs in shallow holes or under rocks. The female adult snake will guard the eggs and look after them until they hatch.



True or False

Circle whether the statement is true or false

1) Most female reptiles lay eggs	True	False
2) Most snakes are born out of eggs	True	False
3) When a snake hatches, it needs its mom to take care of them	True	False
4) Adult snakes grow the fastest	True	False
5) Adult female snakes lay about 10-15 eggs	True	False

Draw your own version of a snake life cycle

PREVIEW

Types of Animals - Fish

What are Fish?

Fish are animals that live in the water. Fish come in many different shapes and sizes. All fish have these things in common:

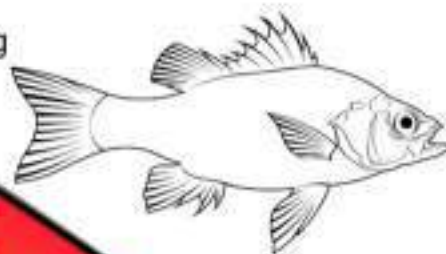
Cold-blooded	Vertebrates – have backbones	Have fins
Have scales, not fur	Breathe underwater using gills	Lay eggs

How Fish Breathe

All fish have gills that allow them to breathe water. When we breathe, we use our lungs to breathe oxygen. Fish use their gills to do the same thing. Fish still need oxygen to live, but they get their oxygen from the water.

Fun Fish Facts

- The longest fish is the whale shark which is over 40 feet long
- The smallest fish is the dwarf goby that is only 1/2 inch long
- Fish are great pets
- Whales can't swim backwards



Search and Find

Follow the instructions below to find

1. Underline the word breathe in the text. How many times did you find it?
2. What do fish use to breathe? _____
3. Fish are vertebrate animals. What does that mean they have? _____
3. What do fish need from the water to breathe? _____

Visualizing

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

Name: _____

Fish Life Cycle

Colour Colour the fish life cycle below

adult fish

juvenile fish

eggs

bryo

larva

PREVIEW

Types of Animals - Birds

What are Birds?

Birds are very cool animals that are a lot different than other animals. There are over 9000 different types of birds. Birds have these things in common:

- ✓ Have feathers
- ✓ Warm-blooded
- ✓ Lay eggs
- ✓ Have wings but not all birds fly
- ✓ Vertebrates – have backbones

How Do Birds Fly?

Almost all birds can fly because they have wings. Birds flap their wings to change the air pressure around their wings. This gives them lift, just like an airplane.

The peregrine falcon is one of the fastest birds. It can fly at speeds of over 160km per hour! Some birds like penguins can't fly.

Examples of Birds

- Parrots, penguins, hummingbirds, finches, toucans, swallows, herons, woodpeckers, eagles, owls and geese.



Search and Find

Follow the instructions below

- Underline the word birds in the text. How many times did you find it?
- What do all birds have that no other animals have? _____
- How fast does the peregrine falcon fly? _____ km per hour
- Put a box around the 5 things birds have in common. Write one thing below.

Multiple Choice

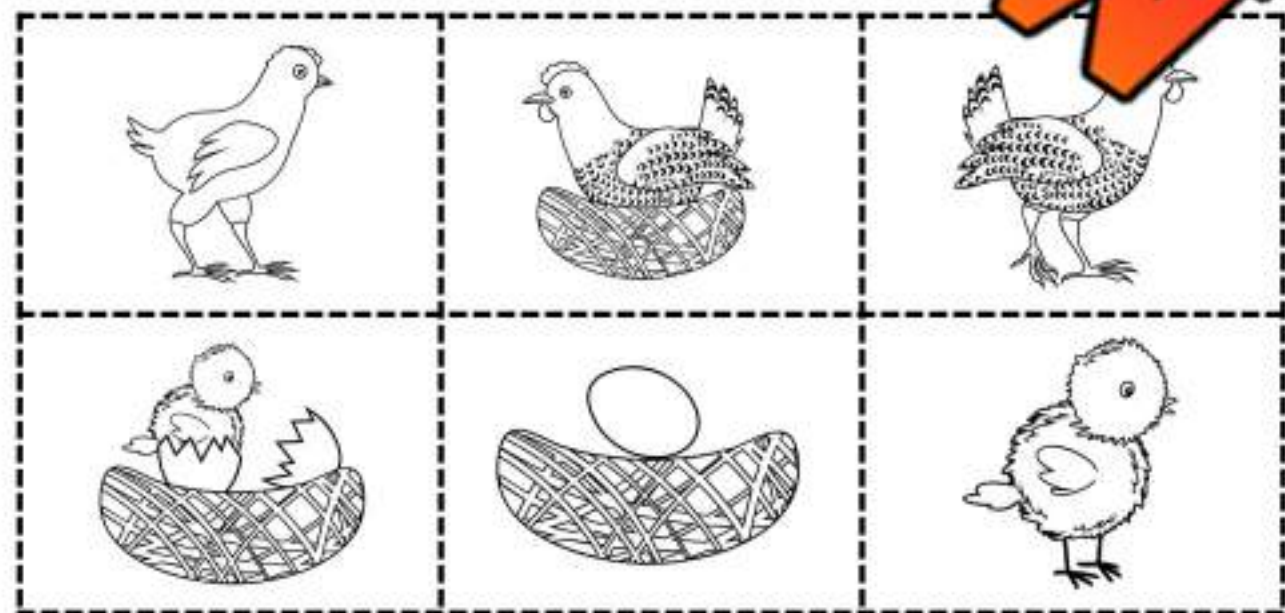
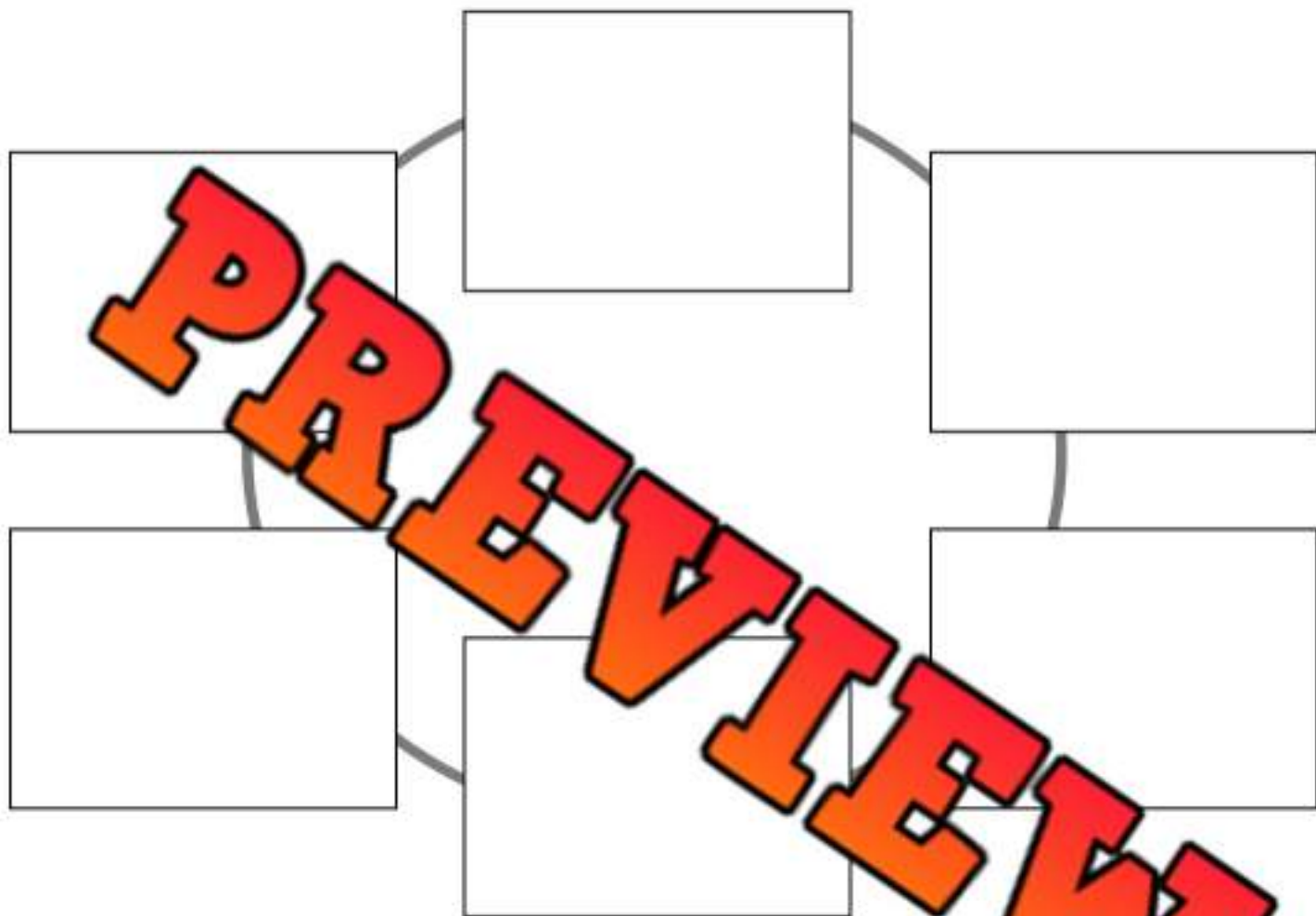
Circle the best answer

1) Which bird cannot fly?	Toucan	Penguin
2) Which bird is one of the fastest?	Peregrine Falcon	Eagle
3) All birds have	Feathers	Scales
4) All birds have	Fins	Wings
5) Birds can fly because of changing	Air pressure	Weather

Birds Life Cycle

Instructions

Cut and paste the stages of a bird's life cycle in the correct order



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 correct statements.

- ☐ Birds lay eggs.
- ☐ All birds can fly.
- ☐ Birds are warm-blooded animals.
- ☐ Birds breathe with gills.
- ☐ Birds have fur, not feathers.
- ☐ Birds have backbones.
- ☐ All birds have wings.
- ☐ The peregrine falcon flies very fast.

Name: _____

Mark

Check only the correct statements.

- ☐ Birds lay eggs.
- ☐ All birds can fly.
- ☐ Birds are warm-blooded animals.
- ☐ Birds breathe with gills.
- ☐ Birds have fur, not feathers.
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Name: _____

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Name: _____

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- ☐ Birds are warm-blooded animals.
- ☐ Birds breathe with gills.
- ☐ Birds have fur, not feathers.
- ☐ Birds have backbones.
- ☐ All birds have wings.
- ☐ The peregrine falcon flies very fast.

Groups of Animals - Invertebrates

What are Invertebrates?

Invertebrates are animals that do not have backbones. This means they have no spine or bony skeleton. Most of the animals in the world are invertebrates that have no spine. In fact, 97 percent of all animals are invertebrates.



Types of Invertebrates

Worms, insects, and spiders are the most common types of invertebrates. These animals are small and have no backbones. Insects make up the largest group of invertebrates in the world. There are over a million different types of insects.

There are also invertebrate animals living in water. Jellyfish, sponges, starfish, and corals are all types of invertebrates living in water.

Exoskeletons

Spiders, insects and scorpions have an **exoskeleton** is a skeleton on the outside of their bodies. It protects the animal's insides. It may seem like they have a backbone, but it's just the exoskeleton.



Search and Find

Follow the instructions below.

1. Underline the word invertebrate in the text. How many did you find? _____
2. How many different types of insects are there? _____
3. Circle the types of invertebrate animals living in water. Write one here: _____
4. Underline where it tells us what an exoskeleton is. _____

Multiple Choice

Circle the best answer

1. Spiders, insects, and scorpions have...	backbones	exoskeletons
2. Jellyfish are...	vertebrates	invertebrates
3. What percent of animals are invertebrates?	97	87
4. Invertebrates have no...	backbone	skeleton
5. The largest group of invertebrates are...	worms	insects

Invertebrates Animals

Backbone or Not?

Circle the invertebrate animals

Which animals are invertebrates (have no backbone)? Circle 2 for each question.

1)



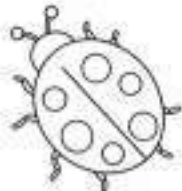
2)

PREVIEW

3)



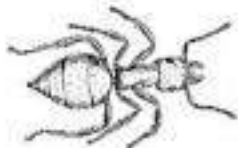
4)



5)



6)



7)



Experiment - Vertebrate or Invertebrates

Research Question

What are we learning more about?

Can invertebrates or vertebrates support more weight?



Materials

What do we need for our activity?

- 1) Clay enough to make two animals
- 2) One pipe cleaner
- 3) Weights – wooden blocks will work



Method

How do we complete the experiment?

- 1) Make an animal like the one in the picture
 - i. Make 4 legs
 - ii. Make a body
 - iii. Attach the legs to the body
 - iv. Put a head on the body
- 2) Make another animal using the same steps as above
- 3) Put a pipe cleaner through the body to act as a backbone
- 4) Put one block on each animal and observe
- 5) Keep adding blocks until one of the animals collapses

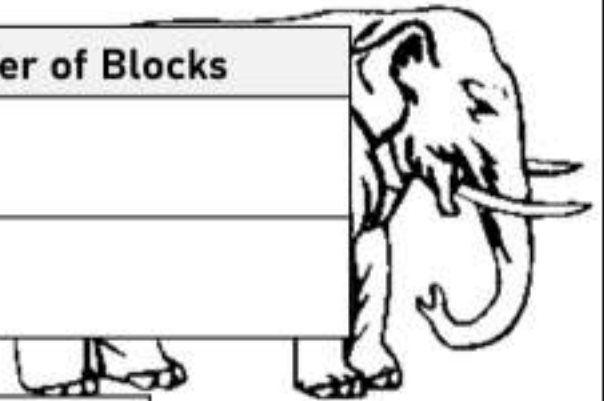


Observations

How many blocks did each type of animal hold?



	Number of Blocks
Vertebrates	
Invertebrates	



Respond by answering the questions below

1) Which type of animal carried more weight?

Vertebrates

Invertebrates

2) Which type of animals do you think are usually bigger?

Vertebrates

Invertebrates

3) Why do you think the bigger animals are usually vertebrates?

4) If an invertebrate animal gained a lot of weight, what could happen?

Butterfly Life Cycle

Butterfly Life Cycle

Stage 1: The Egg

A butterfly will begin its life cycle as an egg. It all starts when a female butterfly lays her eggs, usually on the leaves or stems of plants. Inside the egg is where caterpillars grow.

Stage 2: Caterpillar

When the egg hatches, the caterpillar will leave its egg home and begin its life in the outside world. A caterpillar's main job is to eat as much as they can. They will grow into the next stage. Caterpillars eat leaves from the plant that the egg was laid on.

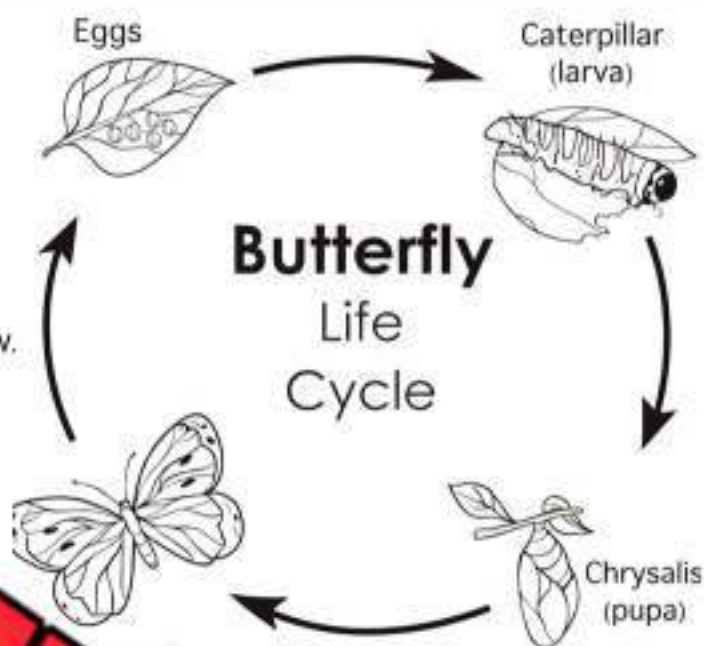
Stage 3: Pupa (Chrysalis)

One day, the caterpillar will stop eating because they have grown enough. They will hang themselves upside down from a twig or leaf and they spin the chrysalis. The chrysalis is almost like a blanket they wrap around themselves.

While the caterpillar is inside the chrysalis, they are turning themselves into a butterfly. They are growing organs, wings, legs, and antennae. The chrysalis protects the caterpillar while they change into a butterfly.

Stage 4: Butterfly (Adult)

When the butterfly has fully grown inside the chrysalis, they are ready to come out. The chrysalis will split open and the butterfly will hang upside down for awhile. They can't fly yet, as their wings are too wet, soft, and wrinkled. After their wings dry, the butterfly will fly around looking for food and other butterflies to mate with. This completes the cycle!



True or False

Circle whether the statement is true or false

1. Butterfly eggs have little caterpillars inside	True	False
2. During the chrysalis stage, the caterpillar eats lots of plants	True	False
3. A caterpillar eats a lot of plants and grows a lot too	True	False
4. A butterfly can fly as soon as it comes out of the chrysalis	True	False
5. A chrysalis protects the caterpillar as it grows into a butterfly	True	False

Diagram

each stage of a butterfly's life cycle

Eggs	Caterpillar (Larva)	Chrysalis	Butterfly

Questions

Use information from the text to answer the questions.

1) What are the different stages of a butterfly's life?

2) How does the butterfly grow so much? In what stage does it eat?

Ant Life Cycle

Ant Life Cycle

Stage 1: Egg

An ant's life begins as an egg. An ant egg is soft, oval and very tiny. It is about the size of a period at the end of a sentence! Not all ant eggs grow into adults. Some of the eggs are eaten by other ants for food.

Stage 2: Larva

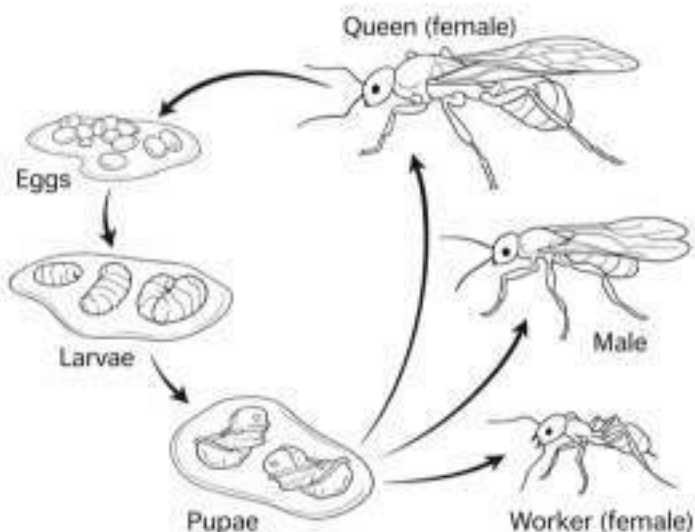
After a couple weeks, the egg hatches into a worm-shaped larva with no eyes or legs. The larva eat, eat, and then the mother ant feeds adult ants to regurgitate food for them to eat. Regurgitate means the adult ant eats the food and then bring it back up again (vomit) for the larva to eat.

Stage 3: Pupa

When the larva grows large enough, it turns into a pupa. It looks like an adult ant, but their legs and antennae are folded against their bodies. The pupa is wrapped in a silk-like cocoon around itself. The cocoon protects the pupa inside while it changes into an adult ant. The cocoon is usually built against a solid object, like a wall.

Stage 4: Adult

When the pupa has finally formed into an ant, it will come out of the cocoon. This can take anywhere from a few weeks to a few months. When they emerge from the cocoon, they are fully grown adults. Their exoskeletons stop them from growing larger. There are three types of adult ants: queen, worker, or male. Worker and male ants can live up to 7 years, while some queens live over 15 years.



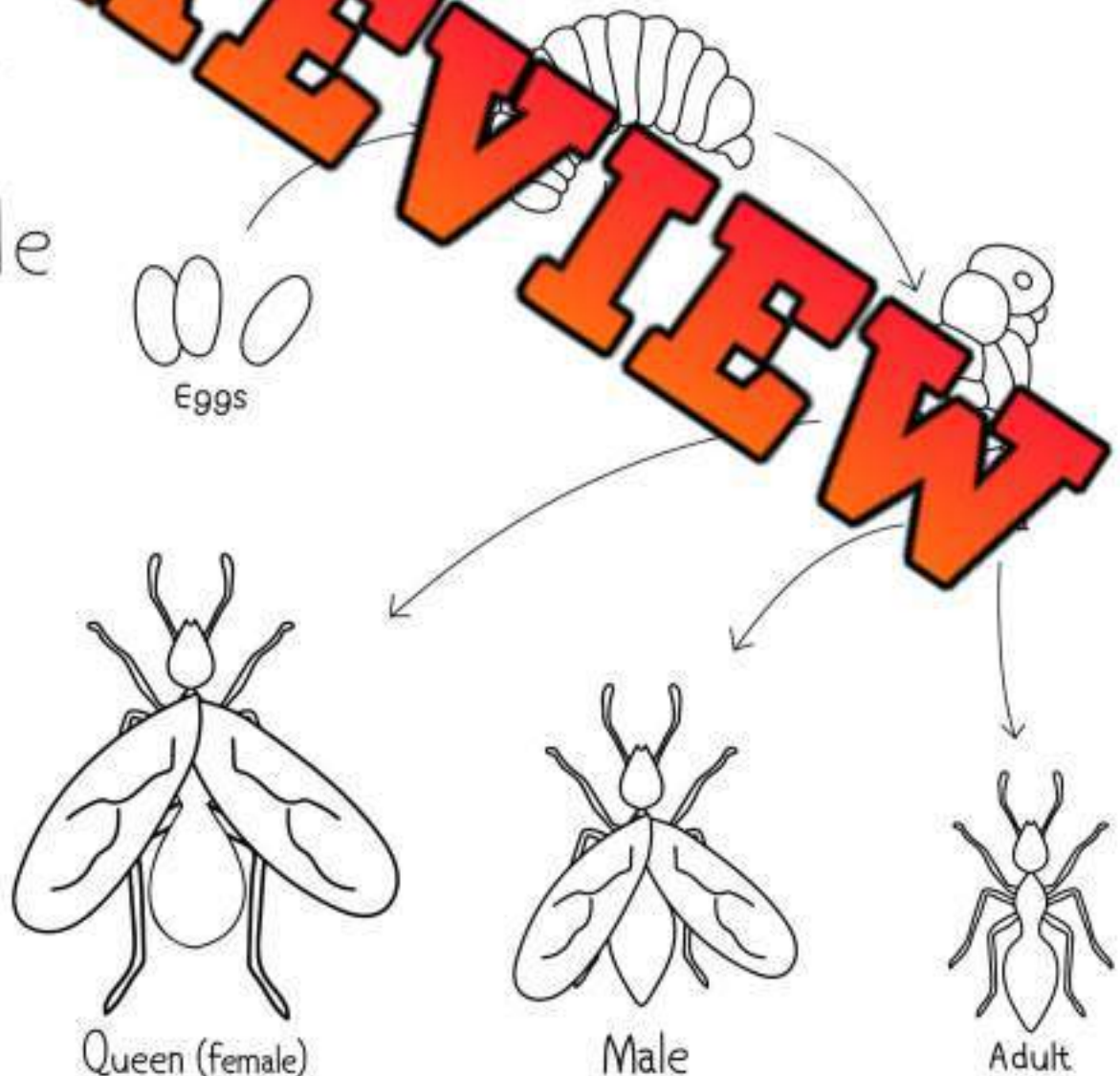
True or False

Circle whether the statement is true or false

1. Ant eggs will all become adult ants	True	False
2. A larva is shaped like a worm	True	False
3. A larva eats regurgitated food from adult ants	True	False
4. All adult ants are the same	True	False
5. Larva uses a cocoon to protect themselves while they change into an ant	True	False

Colour

the stages in an ant's life cycle

Ant
Life
Cycle

Types of Animals - Spiders

What are Spiders?

Spiders are small animals that are like insects because they both have exoskeletons. Spiders move differently than insects and have a different body. Read this list of things all spiders have in common:

8 Legs	Cold-blooded	Lay eggs	Invertebrates – no backbone, just an exoskeleton
--------	--------------	----------	--

Spider Webs and Spiders Hunt

A spider web is a structure that spiders make to trap their prey. Spiders mainly eat insects. When insects fly or crawl on the silk web, they get stuck and the spider eats them. Spiders spin silk to make webs. The strength of spider silk is stronger than steel when comparing the same amount of material.



Examples of Spiders

There are over 40,000 types of spiders, such as tarantulas, brown recluse spiders, and black widow spiders.

True or False

Is the statement true or false?

1. Spiders have no backbone, just an exoskeleton	True	False
2. All spiders have 6 legs	True	False
3. Spiders are warm-blooded	True	False
4. A spider's silk is stronger than steel	True	False
5. Spiders have the same bodies as insects	True	False

Questioning

Write two questions you have after reading the text

1)	
2)	

Spider Life Cycle

A spider goes through 4 stages in its life cycle. Use the word bank to fill in the blanks below. Then, draw pictures of each stage

Egg Sac

Adult

Eggs

Spiderlings



Draw

Draw a spider's life cycle below

PREVIEW

Life Cycle Activity – Making a Book

Choose an animal that you want to write a book about. You will write how the animal grows from its first stage to its last. You can choose an animal that undergoes a metamorphic or non-metamorphic change.

Plan

Fill in the plan below to make it easier to write your book

1) What animal did you choose?

2) Write the stages of the animal's life. Write what happens to the animal in each stage.

1

2

3

Plan

Fill in the plan below to make it easier to write your book

4

5

3) Draw pictures of each stage.

1)

2)

4)

5)

6)

Name: _____

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My Animal Life Cycle Book

PREVIEW

By: _____

Stage 1: _____

PREVIEW

Stage 2: _____

PREVIEW

Stage 6: _____

PREVIEW

Physical Characteristics of Animals

Word Search

Find the words from the word bank

☐ Animals	☐ Invertebrate	☐ Vertebrate	☐ Backbone	☐ Insects
☐ Mammals	☐ Reptiles	☐ Birds	☐ Worms	☐ Spiders

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

Word Scramble

Unscramble the words from the word bank

MMAAMLS		VBRETREATE	
AMINLAS		IECTNSS	
WROSM		BRDIS	
RLPTEIES		ITREAENRTBVE	
BBOACKNE		SDIRPES	

Story: Benny and the Farm of Changes

Benny and the Farm of Changes



Once upon a time, there was a little boy named Benny who lived on a big, bustling farm. Benny loved the farm with all his heart, especially the animals who lived there.

One morning, Benny woke up to a delightful surprise. His mother had given birth to a little calf. Benny named the calf Daisy. Daisy was so soft and fluffy with big, curious eyes. She was unsteady on her feet, but she always followed her mother, Bessie, around.

Benny loved to watch Daisy frolic around the farm. He also loved feeding Daisy from the bucket when she was resting. As weeks turned into months, Benny started noticing that Daisy was growing! She was no longer the small, wobbly calf that she used to be. Her legs were becoming strong, and she was getting bigger each day. By the end of the year, Daisy had become as big as Bessie. She had turned into a beautiful young cow.

On another part of the farm, Benny had a little chick named Goldie. Goldie was a fluffy, yellow chick who loved to peep and follow Benny wherever he went. Benny loved Goldie and enjoyed watching her chase after bugs in the grass.

As the months passed, Benny noticed that Goldie was changing. Her fluffy yellow feathers started to turn white, and she grew bigger and bigger. She no longer peeped but clucked instead. And one day, Goldie laid an egg! Benny had turned into a chicken.

Benny was amazed to see his animals grow and change. He understood that just like him, animals also grow up. This realization made Benny love his farm and his animals even more. Every day became a new adventure, watching and learning about the amazing changes in his farm animals.



And so, life on Benny's farm was always full of wonder and discovery, reminding us all that change is a part of life, and it's a beautiful thing to witness.

True or False

Circle whether the statement is true or false

1) Animals don't change much	True	False
2) A calf will grow into a cow	True	False
3) A chick will grow into a horse	True	False
4) A calf has strong legs	True	False
5) A chick has yellow feathers, and they turn white	True	False

Diagram

Draw each animal below

Chick	Chicken	Calf	Cow

Question

How did Benny's animals change?

Name: _____

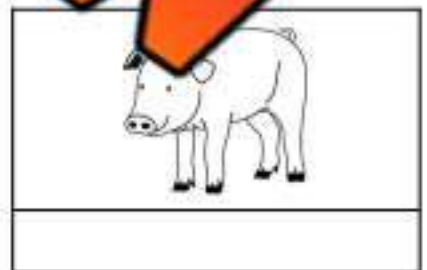
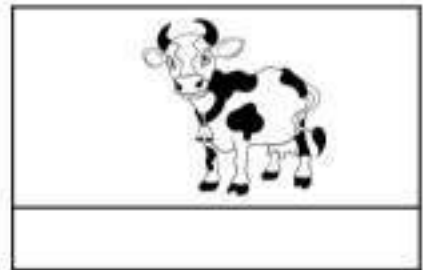
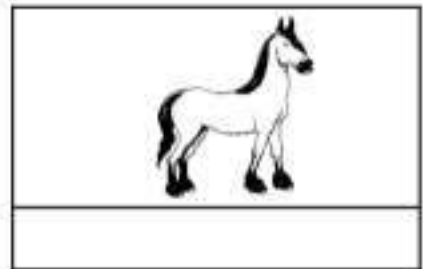
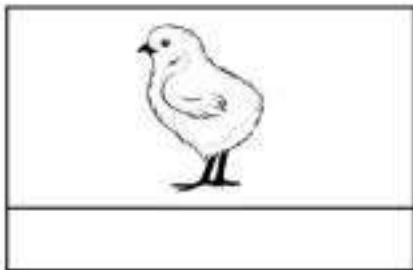
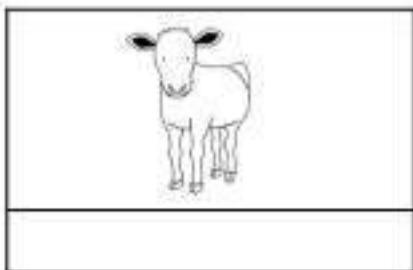
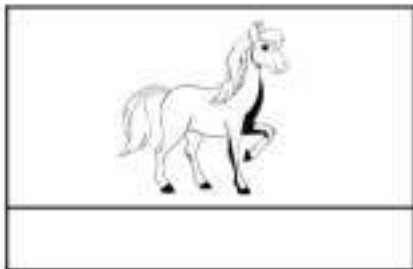
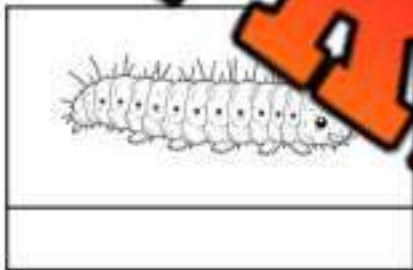
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Curriculum Connection
L5.3

Changing Animals

Matching Label the names of the animals and draw a line matching the baby to the adult

Pig	Larva	Cow	Chick	Piglet	Chicken	Horse	Calf	Butterfly	Foal
-----	-------	-----	-------	--------	---------	-------	------	-----------	------



Name: _____

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Curriculum Connection
L5.3

Matching Label the names of the animals and draw a line matching the baby to the adult

Duck

Puppy

Sheep

Frog

Duckling

Dog

Tadpole

Kitten

Lamb

Cat

PREVIEW



Exit Cards

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

Name: _____

Mark

Sort the names into "Babies" or "Adults."

Items	
Tadpole	Chick
Sheep	Calf
Frog	Horse
Babies	Adults

Name: _____

Mark

Sort the names into "Babies" or "Adults."

Items	
Tadpole	Chick
Sheep	Calf
Frog	Horse
Babies	Adults

Name: _____

Mark

Sort the names into "Babies" or "Adults."

Items	
Tadpole	Chick
Sheep	Calf
Frog	Horse
Babies	Adults

Name: _____

Mark

Sort the names into "Babies" or "Adults."

Items	
Tadpole	Chick
Sheep	Calf
Frog	Horse
Babies	Adults

Seed Plant – Life Cycle

Seeds vs Bulbs

All plants begin their life as seeds, however, some plants will live underground in the form of a bulb. A **bulb** is a plant that lives underground and has its leaves grow up through the surface. Garlic is an example of a bulb. All other forms of plants are seed plants.



Most seed plants live one or two seasons and most bulb plants are perennials, which means they live for more than 2 seasons. This is because they have different life cycles.

Life Cycle of a Seed Plant

1. **Seed** - The seed will grow as a seed. The seed has a hard shell that protects the embryo.
2. **Germination** - The seed falls to the ground and absorbs the water and warmth from the air and the soil. This starts the process of germination, which is when a plant grows from a seed to a sprout. The seed will split in the soil and a sprout will form.
3. **Growth** - The plant will keep growing through the process of photosynthesis. The plant provides its own food and will grow if it receives its basic needs.
4. **Reproduction** - The flowers on a plant will produce seeds when they have been pollinated. In fruit producing plants, fruit will grow on the flowers at this stage.
5. **Spreading Seeds** - The seeds from the fruit or from the flowers will spread as animals eat them or as the wind blows them away. This begins the life cycle of a plant all over again!



Questions

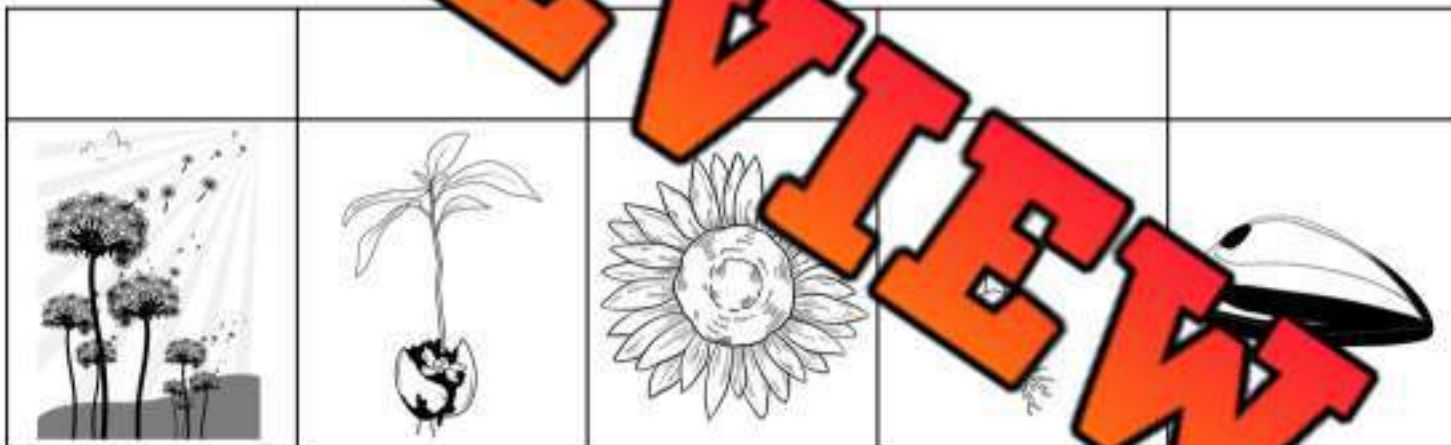
Use information from the text to support your answer

1) What is the difference between a bulb plant and a seed plant?

2) What does germination of a seed mean?

Ordering

Put the stages in order from first to last – 1 to 5

**True or False**

Circle whether the statement is true or false

1) Germination is when the seed coat splits open	True	False
2) A seed plant will continue to grow year after year	True	False
3) A perennial plant is a plant that grows for more than 2 seasons	True	False
4) A plant will continue growing even if it doesn't have its basic needs met	True	False
5) Only the wind spreads seeds on the soil	True	False

Seed Plant – Describe and Draw**Explain**

Describe each stage of a seed-plant's life cycle

Seed	
Germination	
Growth	
Reproduction	
Spreading Seeds	

Draw

Draw each stage of a seed-plant's life cycle

Seed	Germination	Growth	Reproduction	Spreading Seeds

Lab – Germinate Seeds on a Window

Research Question

What are we trying to learn more about?

Will a seed germinate (sprout) without soil if it is given sunlight and water?

Hypothesis

What do you think will happen?

Materials

What do we need for this experiment?

- Small plastic zipper bag
- Dried, uncooked beans or seeds
- Paper towels
- Water



Procedure

What do you need to do?

1. Cut the paper towel in half and fold it a few times so it can fit into the zipper storage bag
2. Soak the paper towel in water and slide it into the bag. Smooth it out so it lies flat
3. Put two beans or seeds about three centimeters from the bottom of the bag, on one side of the paper towel. Make sure they don't fall to the bottom of the bag or else they will sit in the water. You can roll up a piece of paper towel and put it on the bottom of the bag if the beans/seeds keep falling to the bottom.
4. Seal the bag part way, leaving an opening near the top so the growing plants can get some air
5. Tape the bag to the window so that the beans are facing indoors, so you can watch them grow.
6. Optional – do the same experiment but put the plastic bag in a dark closet. See if this grows better or worse.

Name: _____

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Curriculum Connection
LS.4

Observations

Write how many days it has been and draw what the seed looks like

Day	What is happening to the seed?

Day	What is happening to the seed?

PREVIEW

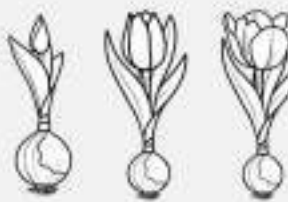
Bulb Plant – Life Cycle

Bulb Plants

A bulb plant lives through the winter inside the ground. A bulb will continue to grow year after year until it is harvested (pulled out of the ground). Bulb plants complete their life cycle underground.



Life Cycle of Bulb Plants – Stages

1) Dormant 	The bulb prepares for winter by forming roots in the ground. It gathers energy from the soil around it. The bulb is in the dormant stage. It is half-asleep as they don't grow in size or shape above ground. But, they do quietly work away at growing roots.
2) Waking Up 	As the temperature warms in the spring, the bulb begins to grow. You will see the shoot start to grow through the soil.
3) Bloom 	The bulb blooms after spending the winter and a few months gathering energy. It has rested and gotten enough light, water, and warmth to bloom. This means it will turn into a plant that we can see above the ground.
4) Falling Asleep 	The bulb plant will fade into the ground as the temperatures get colder. The bulb is not dying! It is saving and gathering energy so it can grow again next year.

Matching

Write the letter from the description beside each stage



	Dormant	a) The bulb feels the warmer weather. It will grow a shoot.
	Waking Up	b) The bulb prepares for winter. It is half asleep as it doesn't grow.
	Bloom	c) The plant grows bigger. The flower will open up.
	Falling Asleep	d) The bulb feels the cold air and the shorter days.

Questions

Answer the questions below

1) Where does a bulb plant grow during its life cycle?

Underground Above ground

2) What is the difference between a bulb plant and a seed?

Visualizing

What were you picturing in your head while you were reading?

Describe your picture

Where Animals Live

Where Animals Live

Every animal has a special home that is just right for them. These homes provide the food, water, and shelter that they need. Different environments are perfect for different animals.

Forest: In a forest, there are lots of trees and bushes. Animals like bears and squirrels love the forest. The trees give them a lot of food and places to hide.



Ocean: The ocean is a big body of water. Whales, and dolphins live here. They are great swimmers and can live for a long time.

Desert: Deserts are very hot and dry. Camels, snakes, and scorpions live here. They can handle the heat and don't need much water.

Polar Regions: Polar regions are very cold places. Polar bears, penguins, and seals live here. They have thick fur or blubber to stay warm.

Grassland: Grasslands are full of tall grasses. Lions, elephants, and zebras live here. They can find plenty of food and space to roam.

Rainforest: Rainforests are wet and warm. Monkeys, toucans, and frogs live here. They love the tall trees and plentiful rain.



Mountain: Mountains are tall and rocky. Goats, eagles, and bears live here. They are good climbers and can handle the thin air.

Choose

Circle the environment the animal lives in

#	Animal	Environment 1	Environment 2
1	Bear	Forest	Ocean
2	Whale	Desert	Ocean
3	Camel	Desert	Grassland
4	Penguin	Rainforest	Polar Region
5	Lion	Grassland	Ocean
6	Elephant	Grassland	Forest
7	Whale	Forest	Ocean
8	Monkey	Forest	Rainforest
9	Mountain Goat	Mountain	Rainforest
10	Zebra	Grassland	Mountain
11	Squirrel	Forest	Desert
12	Scorpion	Desert	Desert
13	Toucan	Rainforest	Polar Region
14	Seal	Polar Region	Rainforest
15	Deer	Forest	Grassland

Draw

Draw one animal that you would find in each of the environments

Forest	Ocean	Polar Region	Grassland	Desert	Mountain

Reducing, Reusing, Recycling, and Repurposing

Animals Love a Clean Home

Animals live in forests, oceans, and all around us. When we reduce, reuse, recycle, and repurpose, we keep their homes clean. This helps animals stay healthy and happy.

Reducing Waste

When we use less, we make less waste. This means fewer plastic bags that can harm bird nests or water where fish live. Fewer soda cans won't end up in places where small animals could get stuck.

Reusing Items

When we reuse items, like water bottles or shopping bags, we make less trash. This helps keep animals' homes clean. Animals don't mix trash for food.

Recycling Things

When we recycle, we give trash a new life. It can turn into new bottles, cans, or even playgrounds! This way, less trash goes into landfills or oceans where animals might eat it or get caught in it.

Repurposing Stuff

Repurposing is like recycling. It means using something old to do a new job. An old boot can become a plant pot. This way, less trash can hurt animals.



Write

Write about what is happening to this fish



Draw

Draw your own picture of an animal living in a polluted home

Think

What do each of the terms below mean?

Recycle	
Reduce	
Reuse	
Repurpose	

How Long Does Garbage Take To Decompose?



Questions

Answer the questions below

1) What surprised you about how long garbage takes to decompose?

2) How does this graphic show the importance of recycling? What happens when we don't?

Uninvited Guests: New Plants and Animals

Uninvited Guests: New Plants and Animals

Just like we have our home, animals and plants have their own homes too. They are in special areas where they grow the best. But what happens when they move to a new place where they don't belong? Let's find out.

Plants That Move

Some plants can move to a place where they didn't live before. They can come from people who bring them from other countries. These plants can grow very fast and take up a lot of space, leaving room for the plants that were there before.

In Alberta, a plant called the reed canary grass from Europe and Asia has done this. It grows quickly and takes up space, making it hard for local plants to grow.

Animals Moving In

New animals can also be a problem. They might eat a lot of the same food, leaving none for the animals that lived there before.

In Alberta, the American bullfrog from the eastern part of North America is a problem. It eats so much that other animals, like local frogs and small mammals, don't have enough to eat.

Too Many Changes

When new plants or animals come to an area, they can change it a lot. This can make it hard for the original plants and animals to live.

In Alberta, the wild boar, a kind of pig from Europe, is causing trouble. It eats a lot of different foods and can damage the places where it lives.



True or False

Circle whether the statement is true or false

1) When plants and animals move, it is good for everyone	True	False
2) When animals move, they affect other animals and plants	True	False
3) The wild boar is from Alberta	True	False
4) The American bullfrog eats a lot of food	True	False
5) Animals move to new areas	True	False

Questions

Write 2 questions you have about the reading?

1)	
2)	

Questions

Use information from the text to answer the questions

1) How do you think animals move to new places?

2) What can happen when an animal moves to a new area?

Helping Animals

Fixing Up Natural Areas

Natural areas are places like forests, beaches, or deserts where plants and animals live.

Sometimes these places get hurt or sick, like when trees get cut down or trash is left behind. We can help them get better. This is called fixing up natural areas.



We can plant new trees, clean up trash, and make sure these places have clean water.

Protecting Natural Spaces

Protecting natural spaces is very important. It means keeping them safe from harm. These places will not be sold to anyone. They are the same for plants and animals to enjoy. Humans on this land should not

- ☒ Cut down trees or plants
- ☒ Build factories that pollute the water
- ☒ Make air pollution from cars

Making Parks

One great way to protect natural spaces is by making parks. Parks are places where we can go to enjoy nature. We can see trees, flowers, animals, and more in parks. Parks help keep nature safe, because people take care of them. People can't cut down trees or leave trash in parks.

Yes or No

Is the answer yes or no?

1) Can humans buy protected land?	Yes	No
2) Can humans cut down trees on protected land?	Yes	No
3) Is protected land left alone?	Yes	No
4) Do a lot of animals live on protected land?	Yes	No
5) Are people allowed to build on protected land?	Yes	No

Draw

near a park? Draw it and explain it.

-------------------------------------	--

Question

What would happen if we didn't protect land and if we let humans buy all the land in the world?

Humans Fighting For Animal Rights

Animal Rights

Humans have rights that need to be followed. For example, you have the right to use the bathroom, eat lunch, go to school, and feel safe. If someone took those rights away from you, you could call the police.

Other animals do not have the same rights. Animals are the property of humans. Animals are not free to live like humans.

Many organizations, including PETA, are fighting for more rights for animals. Here are some of the rights they want for animals.



- No experiments on animals
- No breeding and killing animals for clothes or medicine
- No use of animals for work (example: oxen to pull carts)
- No hunting
- No zoos or use of animals in entertainment



What You Can Do

If you want to help animals get the rights above, try some of the ideas below.

- Only visit zoos that have proper enclosures for the animals
- If you have a pet, treat them right! Feed them regularly and take care of them
- Consider eating more plants and less meat
- Do not feed wild animals human food
- Adopt pets from animal shelters to save them
- Do not use pesticides on your lawn that kill animals
- Don't wear or buy things made out of animals
- Spread the word about animal rights!



Questions

Use information from the text to support your answer

1) Do animals have the same rights as humans? Explain.

2) Do you think animals should have the same rights as humans?

True or False

Is the statement true?

1) Animals have the same rights as humans

True

False

2) If someone takes your rights away, you can call the police

True

False

3) Animals are property of humans

True

False

4) Humans will go to jail if they hunt and eat wild animals

True

False

5) Some zoos have small cages for animals

True

False

Making Connections

What does the reading remind you of in your life?

Coding – Deer Crossing



Direction

Code the deer across the highways to the bush using arrows



1st Move	2nd Move	3rd Move	4th Move	5th Move	6th Move

7th Move	8th Move	9th Move	10th Move	11th Move

Coding – Self Driving Car

Self-driving cars use codes to drive around obstacles. Many self-driving cars are on the road now. By 2040, it is possible that we will all enjoy safe, self-driving cars.



Direction

Code the car around the deer.

The car can only be in the passing lane for 3 spaces in a row



1	2	3	4	5	6	7	8	9	10

11	12	13	14	15	16	17	18	19

If Then Conditional Statement - Activity

Directions Follow the if/then statements to migrate the butterfly to warmer weather

1)	If a butterfly is a vertebrate	then	Move ↓ 4 spots
2)	If a lion is a mammal	then	Move → 2 spots
3)	If a horse has a backbone	then	Move ↓ 3 spots
4)	If a _____ is an invertebrate	then	Move → 2 spots
5)	If a _____ can survive	then	Move ↓ 3 spots
6)	If a snake is a vertebrate	then	Move ← 5 spots
7)	If an ant _____ is an _____	then	Move → 4 spots
8)	If a rabbit slithers	then	Move ↑ 4 spots
9)	If a crocodile is an amphibian	then	Move → 3 spots
10)	If a foal is a baby horse	then	Move ↓ 1 spots

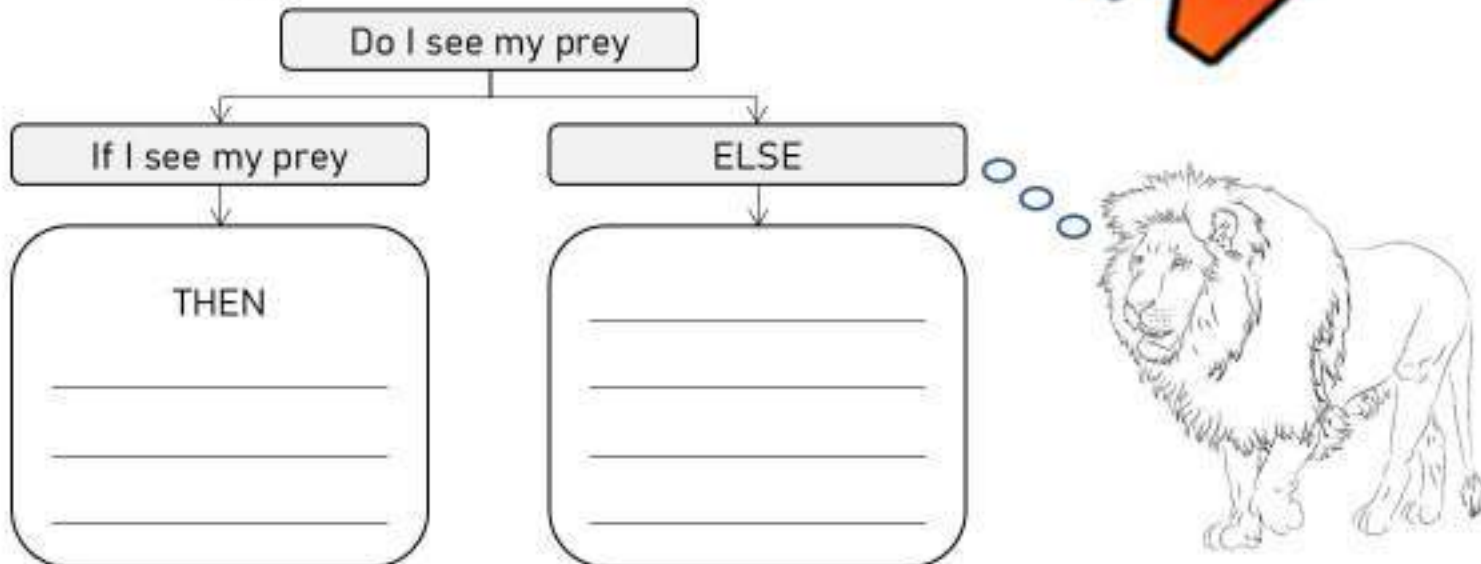


Coding – Else Statements

An **else** statement works like an if statement. When an if statement is false, we can have another command, instead of nothing happening.

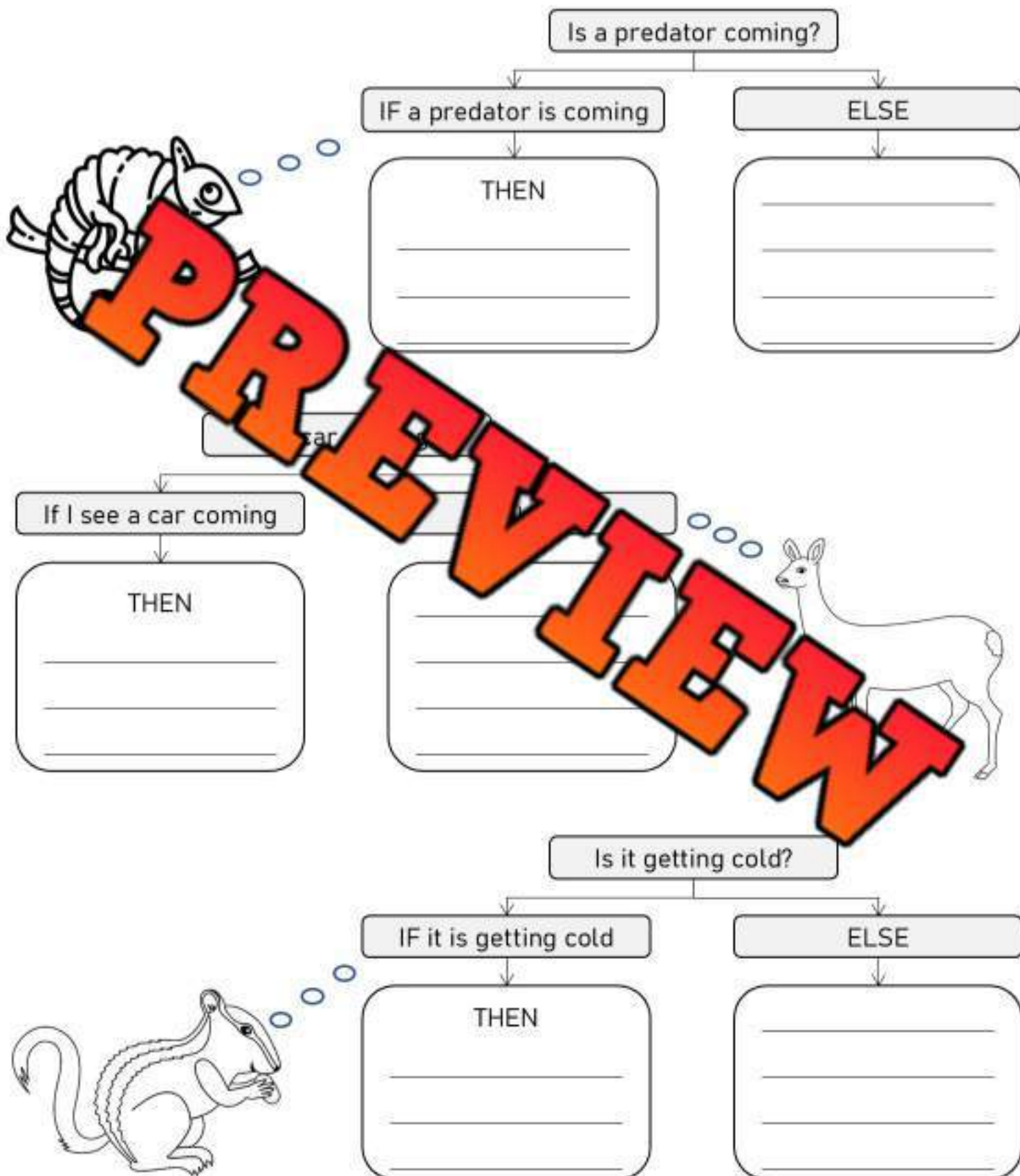


Directions: Use the IF/ELSE commands below with your own ideas



Directions

Fill in the ELSE commands below with your own ideas



Indigenous Groups – Sacred Animals

Why Animals are Sacred

First Nations, Métis, and Inuit are groups of people in Canada. They think animals are very important. Here's why:

- Animals are like presents from nature.
- Animals are like teachers, showing us how to live.
- Animals are in their stories.
- Animals are symbols. They represent ideas, like a turtle means patience.
- Animals live in a special place we can't see, called the spirit world.



Indigenous Groups - Sacred Animals

Each group has some animals they consider special:

- First Nations: There are over 600 First Nations in Canada. They do not all find the same animals sacred. Some First Nations consider the eagle and the bear are sacred. The eagle flies high and sees everything. The bear is strong and teaches us about power. Others believe the rabbit is part of created life.
- Métis: The Métis believe the bison as sacred. The bison gives many gifts like food and clothing. The Métis followed and hunted the bison for many years.
- Inuit: The Inuit believe the polar bear and the seal are sacred. The Inuit hunted these animals for food, clothing, and tools. They used polar bear fur for clothing, seals for meat and oil, and seal skin for kayak coverings.



True or False

Circle whether the statement is true or false

1) There is only one First Nation community	True	False
2) All First Nation communities find the same animals sacred	True	False
3) The bear shows patience	True	False
4) The Inuit find the polar bear to be sacred	True	False
5) The Métis see the bison as sacred	True	False

Draw and show an animal that each group finds sacred

Inuit	Métis	First Nations

Questions

Use information from the text to answer the questions

1) Name three indigenous groups in Canada.

2) Why are animals sacred to some groups of people?

Indigenous Methods for Classifying Living Things

Another Indigenous system for classifying plants and animals is to sort them as being totemic or non-totemic.

Totemic – A plant or animal that is sacred to an Indigenous group

Non-Totemic – A plant or animal that is not sacred to an Indigenous group

Directions: Decide whether the living thing below is totemic or non-totemic to you



Totemic	Non-Totemic
Evergreen Tree (Christmas)	



Totemic	Non-Totemic
Tree	



Totemic	Non-Totemic
Cat	



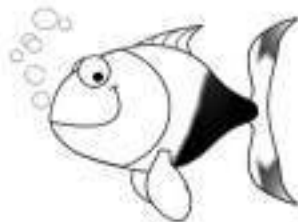
Totemic	Non-Totemic
Bunny	



Totemic	Non-Totemic
Sunflower	



Totemic	Non-Totemic
Bird	



Totemic	Non-Totemic
Fish	



Totemic	Non-Totemic
Roses	



Totemic	Non-Totemic
Dog	

Totemic – Indigenous Classification

Directions

Draw 3 totemic plants and 3 totemic animals that are important to you

Totemic Animals

Totemic Plants

Indigenous Groups Respect the Earth

Taking Only What is Needed

Indigenous groups show care for the land, plants, and animals by only taking what they need.

For example, the Nisga'a people of British Columbia have a rule about fishing. They only catch enough salmon for their community and let the rest go.



Using the Whole Animal

Another way to respect the Earth is using the whole plant or animal. Some people use every part of an animal for food, clothing, or tools.

For example, the Inuit people use every part of a seal – its meat for food, its skin for clothes, and its bones for tools.

Protecting Water and Soil

Water and soil are very important because they help things grow. We should keep them clean and safe.

For example, the Cree people in Alberta plant trees and bushes to prevent soil erosion and to protect the waterways. They also never use harmful chemicals that damage the water and soil.

Treating Land, Plants, and Animals as Relatives

Just like we care for our family, we can care for the land, plants, and animals. We can think of them as our big Earth family. This means being kind to them, taking care of them, and learning from them.

For example, the Haudenosaunee people think of the Earth as their mother and take care of it as they would take care of their own mother.

True or False

Circle whether the statement is true or false

1) The Inuit only eat seals and do not use their bones	True	False
2) The Inuit use seal bones for tools	True	False
3) The Nisga'a take more salmon than they need	True	False
4) The Cree use chemicals to keep their soil clean	True	False
5) The Haida believe the Earth is their mother	True	False

Visualizing Draw _____ were picturing while you were reading. Explain the picture

	_____

Question

Do the Indigenous take care of the Earth? Exp

Name: _____

Date: _____

Unit Test – Growth and Changes in Animals

Multiple Choice

/10

1. What is the first stage of an ant's life cycle? a) Larva b) Egg c) Pupa d) Adult	2. What is it called when you use something from the recycling bin? a) Recycling b) Repurposing c) Reusing d) Reducing
3. Which animal has a non-metamorphic life cycle? a) Lion b) Butterfly c) Frog d) Crab	4. Which animal does not care very much for their offspring? a) Cats b) Dogs c) Snakes d) Humans
5. An animal with no backbone is part of which group? a) Vertebrate animal b) Invertebrate animal c) Amphibian d) Mammal	6. Which of the following are part of which group? a) Vertebrate animal b) Invertebrate animal c) Amphibian d) Mammal
7. What animal is the baby of a horse? a) Lamb b) Foal c) Chick d) Calf	8. What animal is the baby of a sheep? a) Lamb b) Foal c) Chick d) Calf
9. What is the second stage in the life of a butterfly? a) Adult b) Larva (caterpillar) c) Eggs d) Chrysalis (pupa)	10. What is the name of a baby bird? a) Adult bird b) Chick c) Juvenile bird d) Senior bird

Diagram

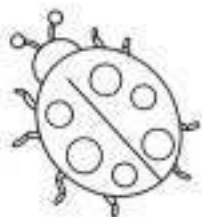
Draw the 4 stages of a butterfly's life cycle

Diagram

Draw the 4 stages of a frog's life cycle

Choose

Does the animal have a metamorphic or non-metamorphic life cycle?



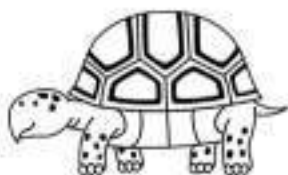
Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic



Metamorphic

Non-Metamorphic

Matching

Label the names of the animals and draw a line matching the baby to the adult

Pig

Larva

Cow

Chick

Piglet

Chicken

Horse

Calf

Butterfly

Foal





Workbook Preview



Grade 2 – Science Unit

Organizing Idea Matter: Earth Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.

Guiding Question: How can Earth's components and relationship to the Sun be understood?

	Learning Outcome - Students investigate Earth, its landforms, its bodies of water, and its relationship to the Sun.	Pages
M2.1	Components of Earth include land, water, air, plants, humans, and other animals	6 - 7
M2.2	At this time, Earth is the only planet known to support life. Scientists are looking for life on other planets and moons.	8 - 12
M2.3	A landform is a natural feature of Earth's surface. Alberta has many different landforms, such as plateaus mountains	48, 68
M2.4		61
M2.5	Water flows downhill from smaller bodies of water to larger bodies of water in the following ways: - small creeks flowing downhill and merging to form small streams - small streams merging to form larger streams and rivers - streams and small rivers merging to form larger rivers - large rivers merging into major waterways, such as oceans	62 - 64
M2.6	Water found on Earth can be either fresh or salt water. Freshwater bodies include glaciers most lakes wetlands rivers Saltwater bodies include oceans and seas.	49 - 50
M2.7	A year is the length of time it takes Earth to revolve around the Sun. A day is the length of time it takes Earth to rotate fully (on its axis). Earth's surface experiences day when it faces the Sun, and night when it does not face the Sun	69 - 85
Computer Science:		
CS.1	Students apply creativity when designing instructions to achieve a desired outcome.	13 - 19, 86

Preview of 75 pages from
this product that contains
139 pages total.

NAME: _____

LANDFORMS

PREVIEW



The Earth

Earth's Wonderful Parts

Earth is our home, and it's made up of many parts that help us live and grow. Let's learn about them!



Land

The land is the ground we walk on every day. It is made up of soil, rocks, and sand. We can find land everywhere - from mountains to flat plains. The land is where we build our houses, roads, and schools.

Water

Water is very important for all life on Earth. It covers about three-quarters of our planet! We find water in many places - in the oceans, lakes, rivers, and even falling from the sky. Plants and animals need water to survive.

Air

Air is all around us, even though we can't see it. We need air to breathe. Birds use the air to fly, and the wind helps to carry seeds from one place to another to grow new plants.

Plants, Humans, and Other Animals:

Plants, humans, and other animals are all part of Earth, too. Plants grow in the land and need water and air to live. Many animals live on land, in water, or can fly in the air.

Yes/No

Is the answer yes or no?

1) Is land made up of soil, rocks, and sand?	Yes	No
2) Do birds need air to fly?	Yes	No
3) Do humans need water to live?	Yes	No
4) Is there more land than water?	Yes	No
5) Do plants need water too?	Yes	No

Color the globe and map green (land) and blue (water)



Questions

Answer the questions below using evidence

1) What are the four parts of Earth that we read about?

2) Where do we find water on Earth?

Life on Earth

Our Earth

Earth is a very special place! It's the only planet we know that has life. It's not just people like you and me. It's also home to animals big and small, plants that grow tall, and tiny bugs we can barely see. Out of all the planets in the vast sky, Earth is the only one that is buzzing with life.

Scientists and Astronomers

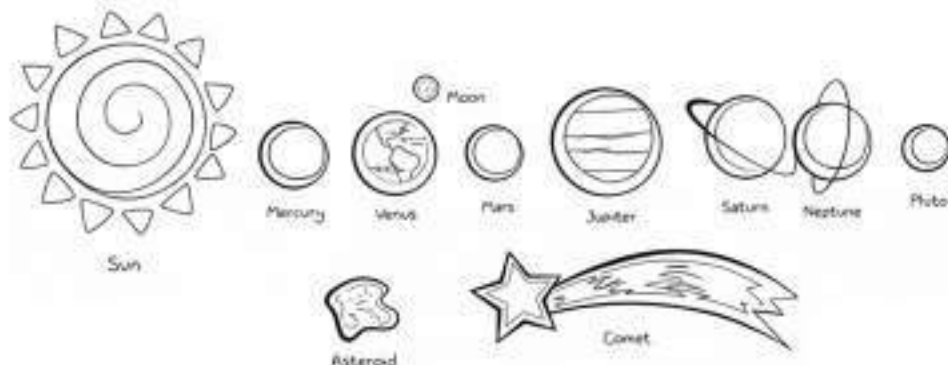
But, guess what? Scientists and astronomers are trying to find out if there is life on other planets. To find out, they use special tools like telescopes and space robots to look at other planets and moons. They are learning everything they can about these places, from what they are made of to what life is like there.

Searching for Signs of Life

Scientists are looking for signs that might mean there could be life on other planets. Maybe they'll find water, which all living things need. They will find certain chemicals that are signs of life. It's a hard job because space is so big.

Imagining More Life

How cool would it be if one day, we find life somewhere else? Maybe on a planet like Mars or a moon of Jupiter! Even if it's just tiny bugs, it would be super cool! It's like finding new friends in our big, beautiful universe.



Yes/No

Is the answer yes or no?

1) Have we found life on other planets?	Yes	No
2) Are we looking for life on other planets or moons?	Yes	No
3) Do scientists use just their eyes to look at other planets?	Yes	No
4) Do scientists use telescopes to look into space?	Yes	No
5) Does Jupiter have a moon?	Yes	No

Colour

Colour and label the planets below



Questions

Is there life on Earth? Is there life on other planets that we know about?

Mars Rover

Why Do We Want to Learn About Mars?

Mars is a planet far away from the Sun, and it's the fourth one if we start counting from the Sun. Venus, another planet, is closer to us than Mars, but it's too hot to visit. It's so hot because it's close to the Sun, and its air is thick with a gas called carbon dioxide.

Mars is interesting because it is like Earth in some ways. We think Mars might have had life like Earth once. That's why we want to learn more about it!

	Earth	Mars
Distance From Sun	149.6 million km	228 million km
Length of Day	24 hours 37 minutes	24 hours 37 minutes
Moons	One Moon	Two Moons
Average Temperature	13 Degrees Celsius	-62 Degrees Celsius
Size - Diameter	12,755 km	6,791 km
Water	71% of Earth covered in water	Only 0.0001% of Mars is covered in water. It's 1,000 times drier than Earth.

What Are Mars Rovers?

To help us learn about Mars, NASA has sent 5 special robots called rovers to the planet. These rovers have been going to Mars for the last 25 years. The first one was quite small and slow, but the newest one, called Perseverance, is bigger and faster. Perseverance also has a small helicopter buddy named Ingenuity!

Perseverance and Ingenuity work together to find clues of life. They also help us figure out if people can visit Mars one day. These rovers tell scientists what Mars is made of, what kind of air it has, and they even send back pictures of Mars.



Questions

Answer the questions below using evidence from the text

1) Which planet would be easier to live on – Mars or Venus? Explain.

2) Do you think people could live on Mars? What would you need to survive?

Visualizing

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

True or False

Is the statement true or false?

1) Mars is bigger than Earth	True	False
2) Mars has a lot of water, so maybe human life could survive there	True	False
3) It is warmer on Earth than on Mars	True	False
4) Mars is the closest planet to Earth	True	False
5) The Perseverance Rover is looking for life on Mars	True	False

Exit Cards

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

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Mars is closer to the Sun than Earth.

T

F

2) Mars has water covering most of its surface.

T

F

3) Perseverance is the smallest Mars rover.

T

F

4) A day on Mars is longer than a day on Earth.

T

F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Mars is closer to the Sun than Earth.

T

F

2) Mars has water covering most of its surface.

T

F

3) Perseverance is the smallest Mars rover.

T

F

4) A day on Mars is longer than a day on Earth.

T

F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Mars is closer to the Sun than Earth.

T

F

2) Mars has water covering most of its surface.

T

F

3) Perseverance is the smallest Mars rover.

T

F

4) A day on Mars is longer than a day on Earth.

T

F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Mars is closer to the Sun than Earth.

T

F

2) Mars has water covering most of its surface.

T

F

3) Perseverance is the smallest Mars rover.

T

F

4) A day on Mars is longer than a day on Earth.

T

F

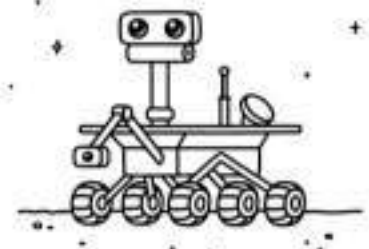
Coding - Driving the Mars Rover

Meet the Perseverance Rover

On July 30th, 2020, a special robot called the Perseverance rover started its big trip to Mars. By February 18th, 2021, it had landed in a place on Mars called the Jezero Crater. The Perseverance's job is to look for signs that there might have been life on Mars a long time ago. It also picks up samples to send back to Earth.

Driving the Rover

Vandi Vanderhaeghe is a scientist who helps drive the Perseverance rover. Even though she lives on Earth, she spends a lot of time thinking about how to drive rovers on Mars since 2008.



She also helped make the special team that lets Perseverance move around Mars by itself. This means it doesn't always need to wait for instructions from Earth. It can even find interesting rocks by itself.

Telling the Rover What to Do

To tell the rover what to do, Vandi and her team write special codes. They send these codes to Mars using a big communication system called the Deep Space Network.

Because Mars is so far away from Earth, it takes about 20 minutes for the codes to reach the rover. This can make things a bit tricky. The team on Earth might tell the rover to move a certain distance, like up to 100 metres. Then they have to wait 20 minutes to see if the rover is heading towards any dangers, like a cliff.

if rover sees an interesting rock

then define its location as

move to

then of

Yes or No

Is the answer yes or no?

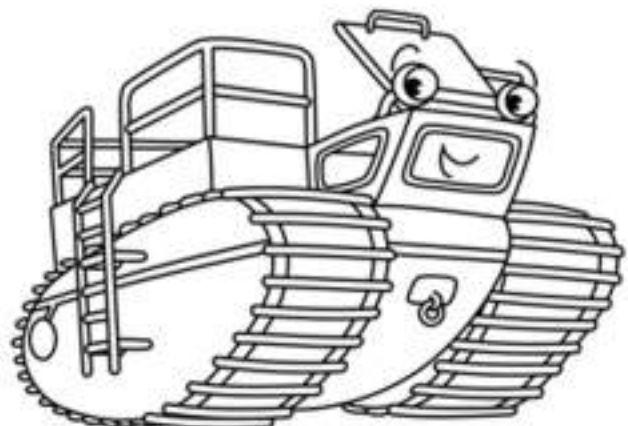
1) Can scientists control a rover on Mars?	Yes	No
2) Are codes sent to Mars right away?	Yes	No
3) Does VandI Verma drive the Mars rover?	Yes	No
4) Can the rover pick up samples from Mars?	Yes	No
5) Does it take four hours for codes to reach the rover?	Yes	No

Question: How does the Mars Rover? How do they do it?

PREVIEW

Directions

Read the program and follow the instructions to draw the output

If  is clickedcolour the tracks colour the body colour the ladder and rails colour the hatch colour the windows 

Coding - Driving the Mars Rover

The map below shows the Jezero Crater on Mars. There is a cliff in the front that the rover should not travel over, or it could break. The rover has found interesting rocks and defined those areas as rock1, rock2, rock3, rock4, rock5, and rock6.

Mapping

Use this map to write the code on the next page



Coding

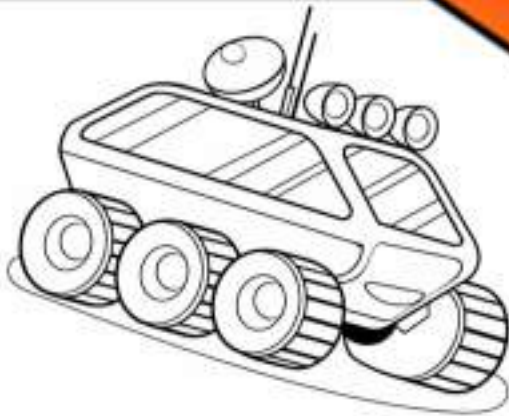
Write code that moves the rover to all 6 interesting rocks. Have the rover take pictures at each location.

Code



Example Code

- move to (2, 2)
- take 5 pictures of rock7
- move to (5, 5)
- take 3 pictures of rock7



Question

What would happen if the rover stopped working because of a crash?
How bad would that be?

STEM Assignment – Designing a Rover

Create your own rover that can explore a new planet. Consider the following questions.

What tools does your rover need?

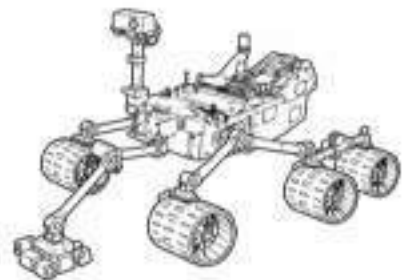
- camera, hatch to collect samples, propeller to fly, etc.

What is your rover capable of doing?

- Can it fly?
- Can it move quickly?
- Can it see in the dark?
- Does it have a vision allowing it to see living things?

What will your rover be designed to do?

- Will it check for other planets?
- Will it check for a planet humans could live in?



Questions

Answers

1) What is the name of your rover?

2) What tools will your rover have?

3) What can your rover do?

4) What will your rover be designed to do?

STEM Assignment – Coding My Rover

Write simple If/Then statements so that the driver of the rover can send instructions for the rover to follow. For example, to work a flashlight on the rover, the code could look like this.

If the flashlight button is pressed

THEN turn on the flashlight



IF/THEN statements for each tool that your rover has so that you can control the tools

If

THEN

If

THEN

If

THEN

If

THEN

If

THEN

If

THEN

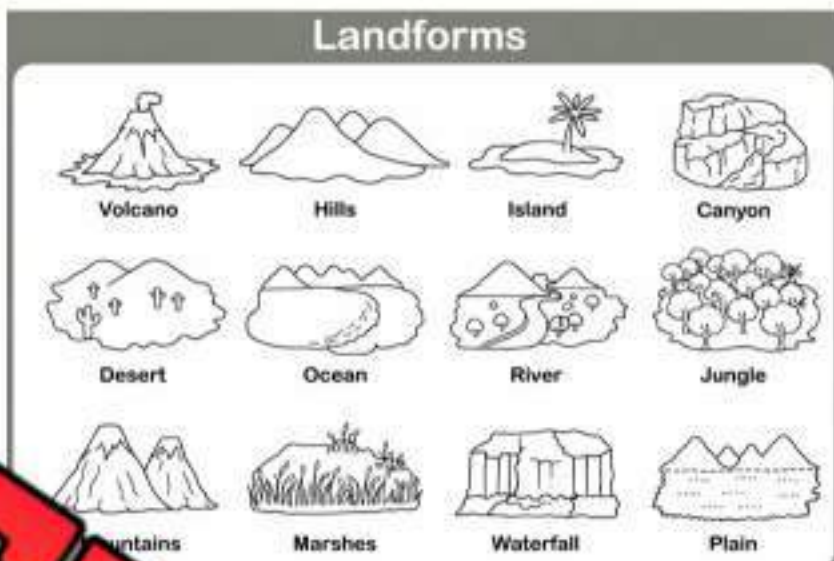
If

THEN

What are Landforms?

What are Landforms?

A landform is something on the Earth's surface that happens naturally, or without the help of humans. There are many different types of landforms that describe the shape of the land, or what it looks like.



Major Landforms in Alberta

There are many different types of landforms in Alberta. The major local landforms are mountains, hills, plateaus, valleys, rivers, lakes, glaciers, forests and badlands.

Interesting Facts About Landforms

- ☐ The landforms that we see today were different millions of years ago.
- ☐ Landforms are always changing, but it is a slow process that can take a few years or millions of years.
- ☐ Mountains are the highest landforms on earth. They take millions of years to form. Mountains are still growing today.
- ☐ Landforms are made because of volcanoes, earthquakes, tsunamis, tectonic plate shifts, and other weather patterns.
- ☐ People love visiting landforms. Alberta has beautiful landforms that people from all over the world come to visit.

True or False

Is the statement true or false?

1. Landforms are things that people plant or make in the world	True	False
2. Landforms happen naturally on earth without people making them	True	False
3. A mountain is a landform that takes millions of years to form	True	False
4. Landforms bring visitors from around the world to see them	True	False
5. A really big building is a landform	True	False

Making a Connection

What landforms do you live by?

Questions

Answer the questions below using evidence from the text.

1) What is a landform? What landforms are in Alberta?

2) What fact did you find interesting about landforms?

Exit Cards

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

Name: _____

Mark

Name & draw 2 Landforms.

Name: _____

Mark

Name & draw 2 Landforms.

Name: _____

Mark

Name & draw 2 Landforms.

Name: _____

Mark

Name & draw 2 Landforms.

Mountains

Mountain Landform

A **mountain** is a landform that rises high above the surrounding ground. Mountains are taller than 300 metres above the ground, otherwise they are called hills.

Mountains are made from rocks and earth.

Features of a Mountain

Mountains have two main features – a sloped side of the mountain and a summit.

The summit is the top of the mountain.

Mountains often form a series of peaks. A line that we call a mountain range. On a mountain range, there is one summit. The highest point is the top of all mountains. The mountain range will have several peaks, which are the tops of the mountains in the range.



Mountains in Alberta

- Mount Columbia - It's the tallest mountain in Alberta with a summit of 3,747m.
- Mount Alberta - This mountain is named after our province.
- Mount Athabasca - People like to climb this mountain to the top (3,491m)
- Mount Edith Cavell - Named after a brave woman named Edith Cavell.
- Mount Kitchener - This mountain has ice at the top all year round.
- Mount Hector This mountain has a glacier on it.
- Mount Assiniboine - The sixth tallest mountain
- Mount Temple - The third tallest mountain in Alberta

True or False Circle whether the statement is true or false

1) Mountains have to be at least 300 metres tall	True	False
2) The tallest mountain in Alberta is Mount Alberta	True	False
3) Mount Hector has a glacier on it	True	False
4) Mount Columbia is the shortest mountain	True	False
5) People can climb Mount Athabasca	True	False

Questions What questions do you have after reading the information?

1)	
2)	

Questions Use information from the text to solve your answers

1) What is a mountain?
2) What mountains have you seen before? Describe them.

Activity – Making a Mountain

Research Question

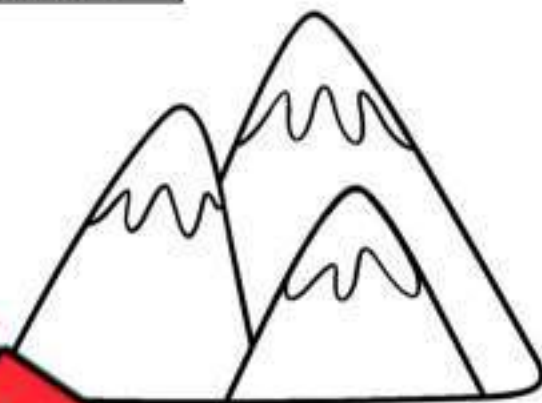
What are we learning about?

In this fun activity, you will create your very own mountain! You will learn how mountains are shaped and what they look like.

Material

What you will need for the experiment

- 1) Play dough or clay
- 2) A flat board
- 3) Paint and paintbrushes (optional)
- 4) Small pebbles or stones (optional)
- 5) Toy trees or grass (optional)



Method

How you will complete the experiment

- 1) Take a big piece of playdough or clay and put it on a flat board or tray.
- 2) Slowly start to shape the playdough or clay into a tall shape. The bottom is wider than the top - just like a real mountain!
- 3) Keep shaping until you are happy with your mountain. It should be tall with a pointy top.
- 4) If you have paint, you can paint the top of your mountain white to look like snow. The bottom can be brown or green.
- 5) If you have small pebbles or stones, you can stick them onto your mountain to make it look rocky.
- 6) If you have toy trees or grass, you can place them at the bottom of your mountain.

Plan

Draw your mountain below

**Results**

What happened? Answer the questions below.

1) What does your mountain look like?

2) Where is the snow on a mountain? Why is it up there?

The Rocky Mountains

Where Are The Rocky Mountains?

The Rocky Mountains are a big line of mountains in Canada and the USA.



How Do The Rocky Mountains Look?

The Rocky Mountains are very tall and pointy. They are covered with trees on the lower parts and are covered with white snow.

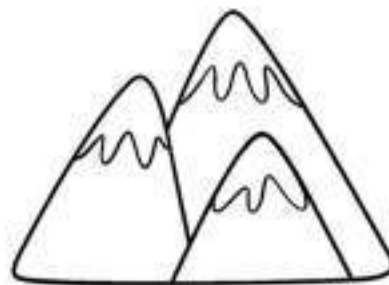
Summits – Top of the Mountain

The Rocky Mountains have many tall peaks. Here are some of them:

- Mount Elbert - This mountain is the tallest in the world. It is as high as 14,440 small toy cars stacked on top of each other.
- Mount Columbia - This mountain is the tallest in Alberta, Canada. It is as high as 12,293 toy cars stacked up.
- Mount Robson - This mountain is the tallest in the Canadian Rockies. It is as high as 12,972 toy cars stacked high.

Snow and Ice on the Mountains

The tops of many of these mountains are covered with snow and ice all year long because they are so high. These big chunks of ice are called glaciers. Some of them flow down the mountains, like slow, icy rivers.

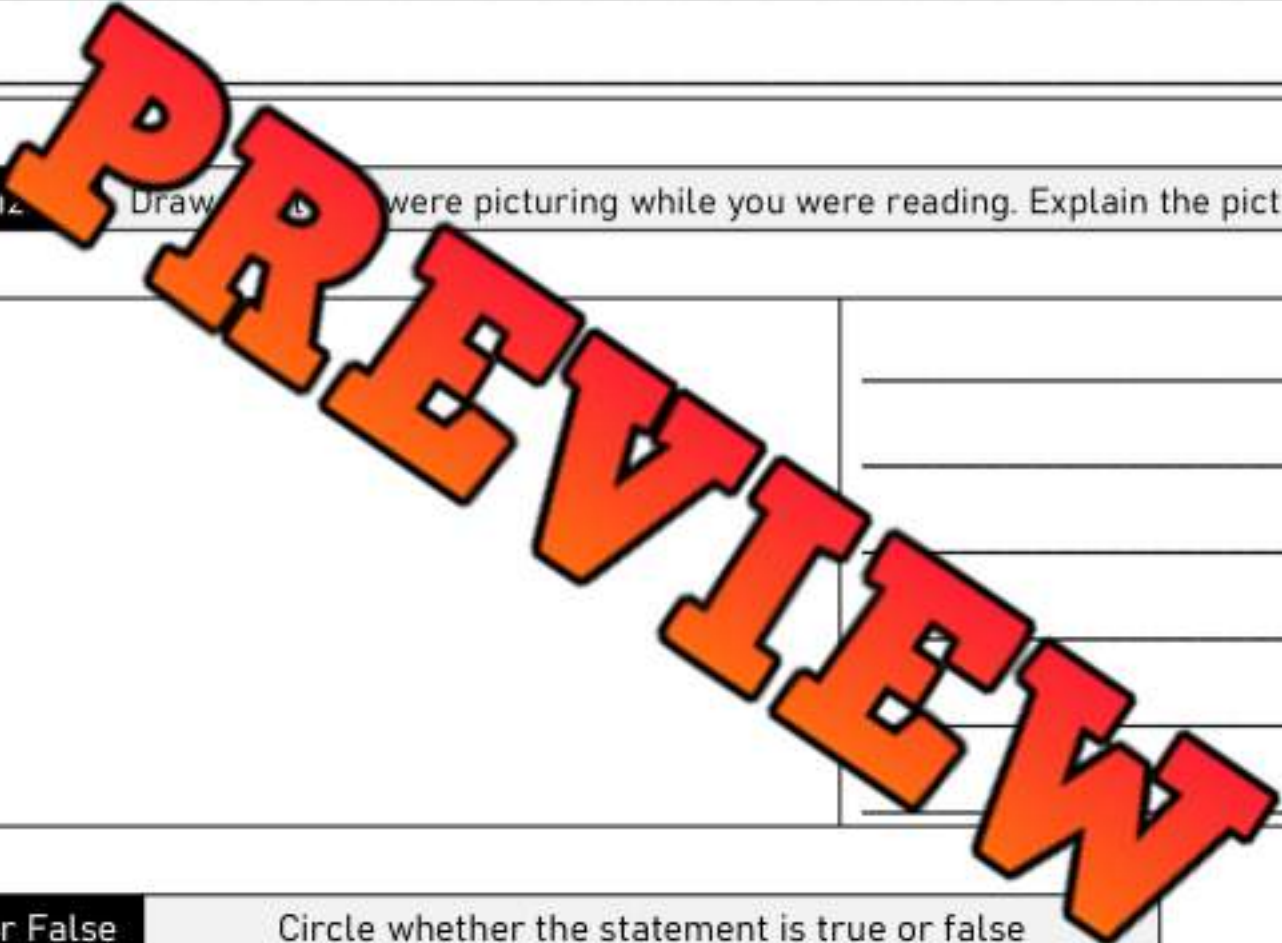


Question

What are the Rocky Mountains?

Visualize

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



True or False

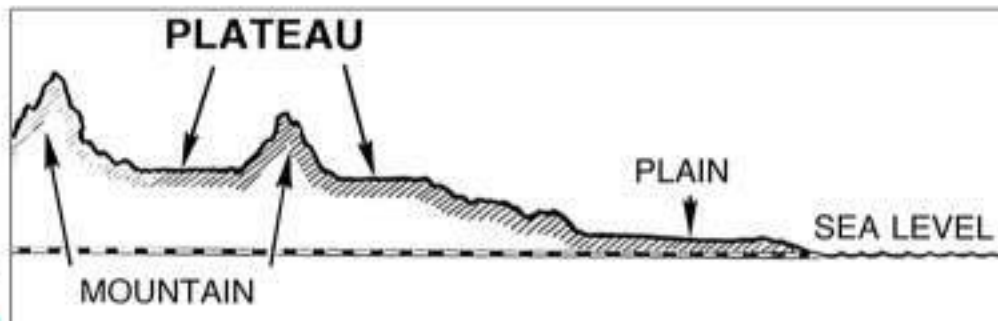
Circle whether the statement is true or false

1) Mount Elbert is the tallest mountain in Alberta	True	False
2) Mount Columbia is the tallest mountain in Alberta	True	False
3) Mount Robson is the tallest mountain in the Canadian Rockies	True	False
4) You can find glaciers at the top of some mountains	True	False
5) It is warmer at the top of mountains	True	False

Landform - Plateau

What is a Plateau?

A **plateau** is an area of land that is raised with a flat top. Picture a hill with the area of flat top of it.



Plateau is a massive one! Most the entire continent of Africa is a plateau because the continent is raised above sea level and it drops off sharply at the coast. That is why Africa is called the 'big brother' continent!

Ocean Plateaus and Continental Plateaus

The ocean has many plateaus that are under water. The largest plateau is in the South Pacific Ocean near Australia. The plateau is 10 million square kilometres! That is bigger than the entire province of Alberta!

A **continental plateau** is any plateau that is on land. About half of the Earth's land is a plateau.



Plateaus in Alberta

In Alberta, there's a special flat area called the Cypress Hills Plateau. It's in the southeast corner of Alberta. It's about as big as 2,500 football fields! The Battle and Milk rivers flow around this plateau. The rivers and the flat land make the area very nice.

Questions

Answer the questions below using evidence from the text

1) What is a plateau?

2) Why is it called the plateau continent?

Draw

Draw two plateaus and a mountain in the middle

**True or False**

Circle whether the statement is true or false

1) A plateau is a mountain	True	False
2) A plateau is a flat area of land that is above sea level	True	False
3) Plateaus are always small	True	False
4) Most of Africa is a plateau	True	False
5) There are no plateaus in Alberta	True	False

Activity – Making a Plateau

Research Question

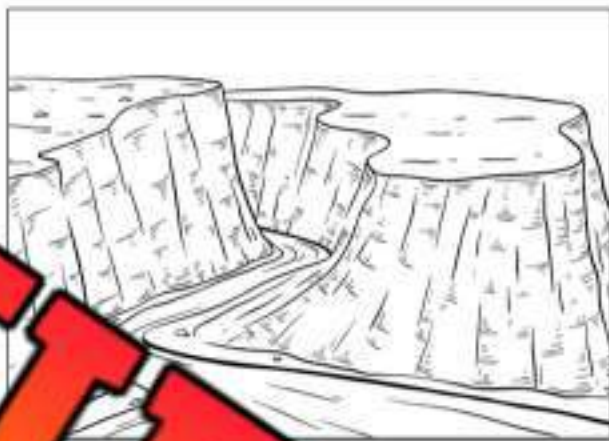
What are we learning about?

In this activity, you will make your own plateau! This will help you understand how plateaus are different from other landforms.

Material

What you will need for the experiment

- 1) Cardboard
- 2) Scissors
- 3) Glue
- 4) Green construction paper
- 5) Brown or grey paint and paintbrush (optional)



Method

How you will complete the experiment

- 1) Cut out a rectangle from the cardboard. This will be the base of your plateau. Your base doesn't have to be a perfect rectangle – it is up to you.
- 2) Cut out several smaller rectangles from the cardboard. These will be the top of your plateau.
- 3) Glue the smaller rectangles on top of the bigger ones. Remember, a plateau is like a flat-topped mountain!
- 4) Cover the top of the plateau with green construction paper to make it look like grass.
- 5) If you want, you can paint the sides of the plateau brown or grey to look like rocky cliffs.

Plan

Draw your plateau below

Results

What happened? Answer the investigation questions

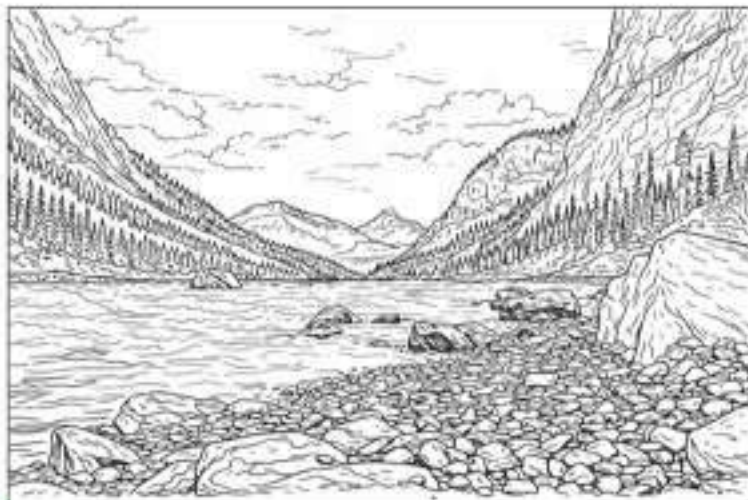
1) What does your plateau look like?

2) How is your plateau different from a mountain?

Landform - Valley

What is a Valley?

A valley is a low area between hills or mountains. It's like a big dip in the land. Valleys often have rivers or streams flowing through them because they flow downhill.



What Do Valleys Look Like?

Valleys can look like a big U shape between hills or mountains. The bottom of the valley, where the river flows, is flat. This flat area is called the valley floor. You might see water like a stream there. The sides of the valley, which go up to the hills or mountains, are called valley walls.

Valleys in Alberta

There are lots of valleys in Alberta because Alberta has many mountains and hills.

Bow Valley

The Bow Valley is a very special valley in Alberta. It's called the Bow Valley because the Bow River flows through it. This valley is in the Rocky Mountains. It looks like a big U between the mountains.

Red Deer Valley

The Red Deer Valley is another beautiful valley in Alberta. The Red Deer River, which is named because of all the deer in the area, runs through this valley. It has tall walls that look like the sides of a V.

Question

What is a valley? Where do you find them?

Draw

a picture of a valley. Label the valley walls and floor

Yes or No

Is the answer yes or no?

1) Are valleys between two mountains?	Yes	No
2) Are valleys tall?	Yes	No
3) Are there many valleys in Alberta?	Yes	No
4) Do valleys sometimes have rivers running through them?	Yes	No
5) Do valleys look like a U or a V?	Yes	No

Experiment – Making a Valley

Research Question

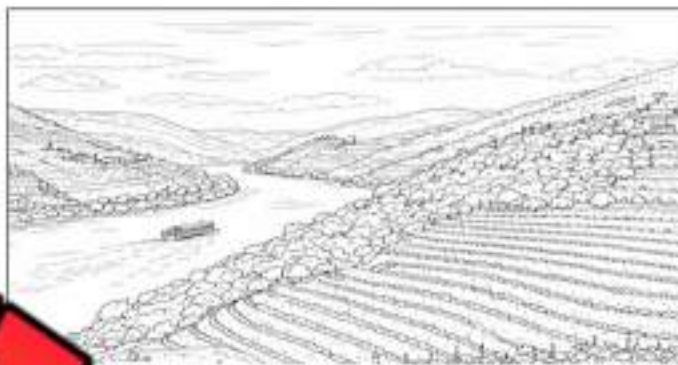
What are we learning about?

What is a valley? How do valleys change over time with the movement of water and sediment?

Material

What you will need for the experiment

- 1) Tray or container
- 2) Clay
- 3) Cylinder or stick
- 4) Water
- 5) Sand



Method

How you will create the experiment

- 1) Fill a large tray or container with clay to create a flat surface.
- 2) Slide the cylinder down the clay, making a riverbed. The cylinder acts as a glacier that is scraping the land, digging a valley.
- 3) Add some sand to it to the trench, simulating the bottom of the riverbed.
- 4) Pour a small amount of water on one side of the trench. Then rest of the one side of the container on something to tip it up. This should make the water run down the riverbed.
- 5) Observe how the water erodes the sand and the clay. Make notes on the back of the page.
- 6) Change the experiment by adding more water or tipping the container more, changing the flow of the water. Does this change the erosion?

Observations**What happened?**

1) What happened when you poured the water into the container?

2) Did the water sink into the sand or clay more? Why do you think that happened?

Results**What happened? Answer the questions.**

1) How did the valley change? What caused the change?

2) How do glaciers make valleys?

Landform - Plains

What Are Plains?

Plains are big, flat areas of land. They don't have many hills or mountains. Plains are like big, open fields where you can see far away.

Plains are very flat and wide. They can have grass, trees, and sometimes rivers. Plains are good for farming because the land is flat and easy to work on. In some places, plains stretch as far as you can see.

Plains in Alberta

Alberta has some beautiful plains to explore. Here are a few of them:



- **Edmonton Plain**

The Edmonton Plain is in the middle part of Alberta. It's flat and has rich soil, making it a great place for farming. Edmonton is on this plain.

- **Calgary Plain**

The Calgary Plain is another large plain in Alberta. It's close to the Rocky Mountains. The city of Calgary is on this plain. It's also a good place for farming because of its flat land.

- **Peace River Plains**

The Peace River Plains are in the northern part of Alberta. They are named after the Peace River that flows through them. These plains are good for growing crops because they have good soil.

Question

What are plains? What do they look like?

Draw or sketch a picture of a plain**Yes or No**

Is the answer yes or no?

1) Are the plains tall landforms?	Yes	No
2) Are the plains flat?	Yes	No
3) Are the plains good for farming?	Yes	No
4) Do the plains have any mountains?	Yes	No
5) Are the plains covered in grass?	Yes	No

Exit Cards

Cut Out

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

Name: _____

Use the word bank to write the name of the correct place or landform.

Edmonton Plain

Calgary Plain

Mark

Peace River Plains

plain

1) is a large, flat landform with few hills.

2) is the plain near the Rocky Mountains and Calgary.

3) is the plain where the city of Edmonton is located.

4) are the plains found in northern Alberta.

Name: _____

Use the word bank to write the name of the correct place or landform.

Edmonton Plain

Calgary Plain

Mark

Peace River Plains

plain

1) is a large, flat landform with few hills.

2) is the plain near the Rocky Mountains and Calgary.

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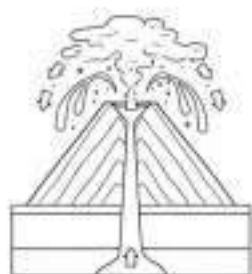
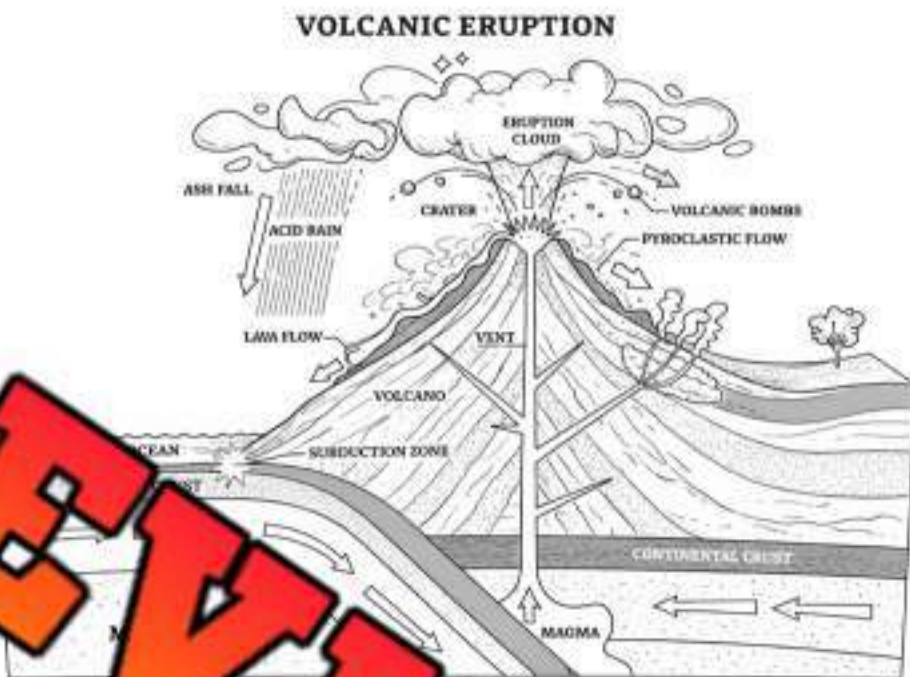
Volcanoes

What is a Volcano?

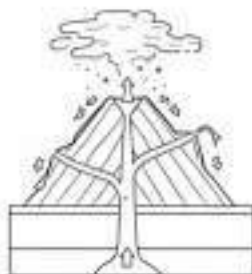
A volcano is a mountain with a hole at the top called a crater. Inside the volcano, there is hot molten rock called magma.

Sometimes magma builds up inside a volcano and the magma shoots out of the crater in a big explosion. This is called an eruption.

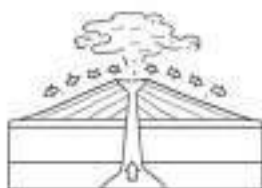
When the magma lands outside of the volcano, it is called lava. When it cools, it turns into rock and can build up around the volcano to make it bigger.



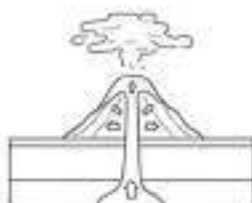
Cinder Cone Volcanoes



Composite Volcanoes



Shield Volcanoes



Lava Domes

Types of Volcanoes

There are different types of volcanoes, like shield volcanoes, which are made mostly of lava flows and have gently sloping sides.

Another type is cinder cone volcanoes, which are made mostly of volcanic ash and have steep sides.

True or False

Circle whether the statement is true or false

1) A volcano is a mountain with a hole on top	True	False
2) A crater is a hole on top	True	False
3) Magma comes from the ground	True	False
4) Lava is found under the ground	True	False
5) When lava flows, it turns to rock	True	False

Question

What is a volcano?

Draw

Draw a volcano. Label the vent, ash, crater, and lava.

Experiment – Making a Volcano

Research Question

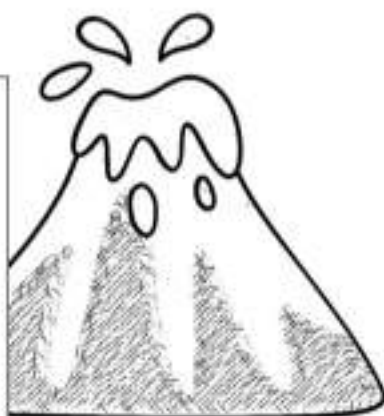
What are we learning about?

Can you make your favourite type of volcano? Can you make it erupt?

Materials

What you will need for the experiment

- 1) A small plastic bottle (such as a water bottle)
- 2) Clay or play dough
- 3) Baking soda
- 4) Vinegar
- 5) Food coloring (optional)
- 6) A tray, large plate, or baking sheet to catch any overflow



Method

How you will complete the experiment

- 1) Place the small plastic bottle on the middle of a tray or plate. You can cut the top off the bottle to make the volcano shorter.
- 2) Using the play dough or clay, make a volcano around the bottle. The bottle will be the inside of the volcano and the top of the bottle will be the crater.
- 3) Mix a small amount of baking soda and a few drops of food coloring (if desired) in a separate container.
- 4) Slowly pour the baking soda mixture into the volcano's crater.
- 5) Slowly pour vinegar into the volcano. The mixture of baking soda and vinegar will create a chemical reaction that will cause the volcano to "erupt."

Observations

What happened?

What happened to the volcano? Explain using the terms: magma, erupt, and lava

Res  happened? Answer the questions below.

1) What happens to the lava?

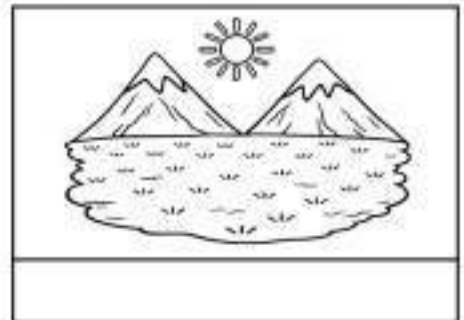
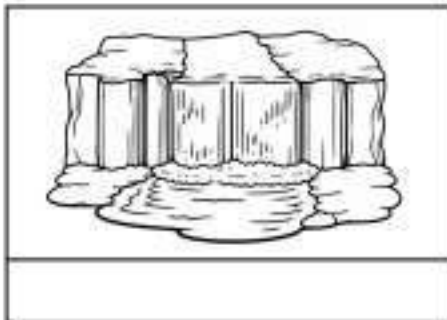
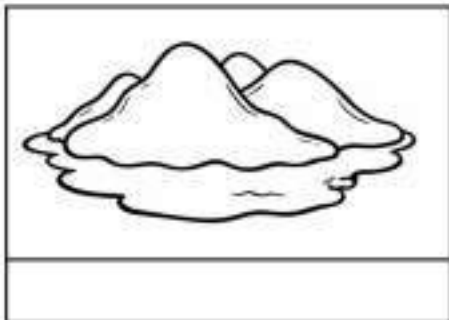
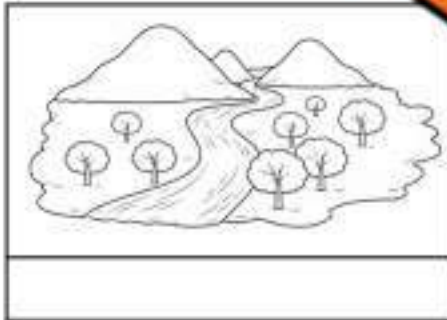
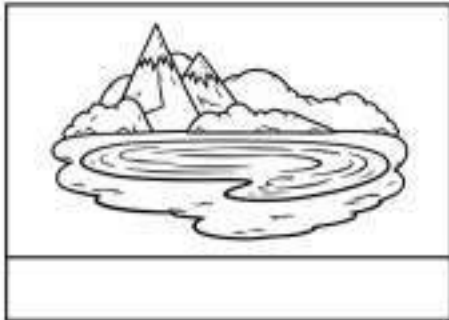
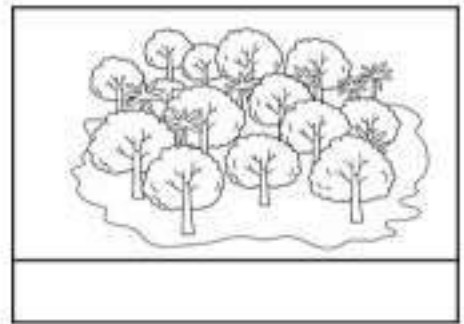
2) When lava overflows, what happens in real life?

3) Draw your volcano below.

Landforms - Review

Label Name the landforms using the word bank

River	Glacier	Island	Plateau	Jungle	Ocean
Hills	Waterfall	Valley	Mountain	Volcano	Lake



Label

Read the description and name the landform

River	Glacier	Island	Plateau	Jungle	Ocean
Hills	Waterfall	Valley	Mountain	Volcano	Lake

Description	Name
1) Is frozen ice that can carve out valleys and make rivers	
2) Is a place where a lot of plants and animals live	
3) The body of water made of saltwater	
4) A large stream that flows into a lake or an ocean	
5) A small mound of earth	
6) A small area of land with a wall all around it	
7) A body of water that is made of fresh water	
8) An area between two mountains	
9) When water pours down a steep rock	
10) A mountain that can erupt, pouring lava out of it	
11) A tall hill that forms when plates hit	
12) A flat area of land that is high above sea level	

Pick

Which landform is your favourite? Explain why.

Bodies of Water

Freshwater

Freshwater is water that is not salty. We find freshwater in many places. There are lots of freshwater lakes in Alberta.

Lakes: A lake is a body of water surrounded by land. In Alberta, we have Sylvan Lake, which is popular for swimming and boating.

Rivers: A river is a long, flowing body of water. It moves from high places to low places. The North Saskatchewan River flows through Edmonton, the capital city of Alberta.

Ponds: Ponds are like little lakes. They are smaller and deeper. Alberta has many ponds where ducks like to swim.

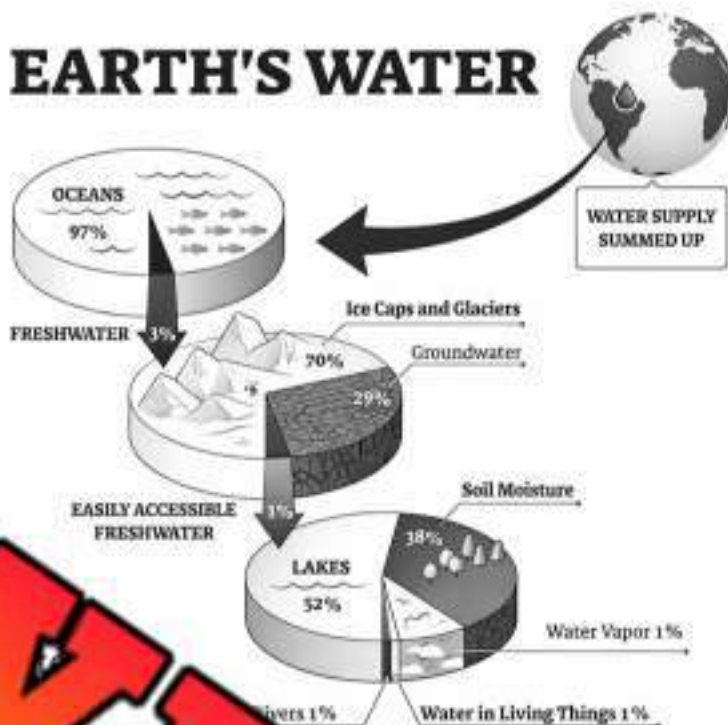
Saltwater

Saltwater is water that tastes salty. Oceans are big bodies of saltwater. There are no oceans in Alberta because it's far from the sea. But we can learn about them!

Oceans: Oceans are the biggest bodies of water on Earth. The Pacific Ocean and the Atlantic Ocean are two of them. They are filled with lots of different fish and sea creatures.

Seas: Seas are smaller than oceans, but they are also salty. An example is the Red Sea.

EARTH'S WATER



Name: _____

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Curriculum Connection
M2.6

Question

What is the difference between freshwater and saltwater?

Draw a lake, river, pond, ocean, and sea

--

Sort

Write the bodies of water under the correct heading

Lake	River	Pond	Ocean	Sea
------	-------	------	-------	-----

Freshwater	Saltwater

Wetlands in Alberta

Wetlands

Wetlands are very special places where the land is filled with water. Wetlands can be very different.

Wetlands are a little like a marsh. Plants and animals love wetlands because they have lots of food and places to hide.

TYPES OF WETLANDS



MARSH



BOG



SWAMP

Types of Wetlands

- **Marshes:** Marshes are wetlands that are very wet. They have lots of plants growing in them. Beaverhill Lake in Alberta is a marsh where lots of birds live. Frogs and turtles live there too.
- **Swamps:** Swamps are wetlands filled with trees. They are like a forest. Alberta has swamps in the northern parts where moose like to live. You could find raccoons, squirrels, and maybe even bears in swamps.
- **Bogs:** Bogs are a type of wetland that are very squishy. They are filled with moss. Alberta's bogs are home to special plants like the pitcher plant. It is a cool plant that catches bugs for food.
- **Fens:** Fens are wetlands that are like bogs but have more different kinds of plants. You can find fens in Alberta's parklands. Eagles and hawks live in fens.

Name: _____

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Curriculum Connection
M2.4

Question

What is a wetland?

Question

What animals/plants live in each of the wetlands?

Marsh	
Swamp	
Bog	
Fen	

Draw

Draw a swamp and a marsh below

Marsh	Swamp

Exit Cards

Cut Out

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

Name: _____

Mark

Draw a line from each word to its correct meaning.

Swamp ☐☐ A wetland that is always wet with plants**Marsh** ☐☐ A wetland with many different kinds of plants☐ A squishy wetland with moss and special plants☐ A wetland filled with many trees

Name: _____

Mark

Draw a line from each word to its correct meaning.

Swamp ☐☐ A wetland that is always wet with plants**Marsh** ☐☐ A wetland with many different kinds of plants**Bog** ☐☐ A squishy wetland with moss and special plants**Fen** ☐☐ A wetland filled with many trees

Name: _____

Mark

Draw a line from each word to its correct meaning.

Swamp ☐☐ A wetland that is always wet with plants**Marsh** ☐☐ A wetland with many different kinds of plants**Bog** ☐☐ A squishy wetland with moss and special plants**Fen** ☐☐ A wetland filled with many trees

Name: _____

Mark

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Activity – Create Your Own Wetland

Research Question

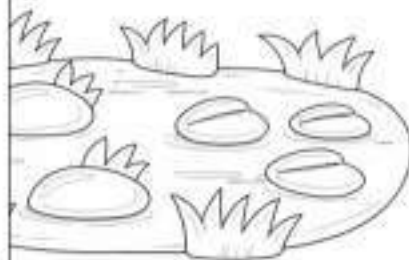
What are we learning about?

Let's create a wetland! Wetlands are important parts of our world. In this activity, you will make a model of a wetland to help you understand what it looks like and why it is important.

Materials

What you will need for the experiment

- 1) A shallow tray
- 2) Blue clay or Play-Doh
- 3) Green construction paper or felt
- 4) Small toy animals (like birds or insects)
- 5) Pebbles or small stones
- 6) Twigs or small sticks
- 7) Brown and green pipe cleaners (optional trees)



Method

How you will complete the experiment

- 1) Press blue clay or Play-Doh into the bottom of your tray to make a base. This will be your water.
- 2) Cut out small pieces of green construction paper or felt to look like grass and plants. Place these around the tray to create the wetland vegetation.
- 3) Scatter some pebbles or small stones around to look like rocks.
- 4) Place the twigs or small sticks to look like fallen logs or branches.
- 5) Place your toy animals in the wetland. Think about where they might live or hide.
- 6) If your wetland is a swamp, add toy trees or pipe cleaner trees.

Plan

Draw your wetland below

**Results**

What happened? Answer the questions below.

1) What does your wetland look like?

2) Did you make a swamp or a marsh wetland? Explain.

Rivers in Alberta

What Are Rivers?

Rivers are freshwater bodies that are always on the move. They start at a source, like a mountain or a lake, and flow all the way to a larger body of water, like an ocean or a lake. Rivers can be big and wide or small and narrow. They can flow slowly or very fast. Some rivers are deep and some are shallow.

Rivers in Alberta

In Alberta, we have many beautiful rivers. Here are a few of them:

- The North Saskatchewan River: This river runs through the city of Edmonton. It's a big river with lots of fish!
- The Athabasca River: This river starts in the Rocky Mountains. It's very long and important for many animals and plants.
- The Red Deer River: This river runs through the city of Red Deer. It's named after the red deer animals that live in Alberta.
- The Bow River: This river runs through Calgary. People like to fish and go boating here.

Rivers are important for animals and plants. They provide water to drink and a home for many kinds of fish. Birds also like to live near rivers because they can find food there.

Alberta's Watersheds



Question

Answer the questions below

1) What is a river?

2) Do you have any rivers? Write them below.

Diagram

Draw the outline of Alberta then label the rivers

Rivers in Alberta☐ North Saskatchewan River☐ The Athabasca River☐ The Red Deer River☐ The Bow River

Lakes in Alberta

What is a Lake?

A lake is a big pool of water. It is not like a river because it doesn't move, it stays in one spot. Lakes are like big puddles in the earth, filled with water.

Lakes in Alberta

There are many big lakes in Alberta. Let's learn about some of them.

Lake Louise

Lake Louise is a bright, blue lake in the Canadian Rockies mountains, and it is very beautiful. It is a special lake. This means it was made as a glacier melted. Many people go to Lake Louise to look at its amazing color.

Lake Athabasca

Lake Athabasca is one of the biggest lakes in Alberta. It is so big that it's like a sea! It has lots of fish which makes it a great place for fishing.

Lake Claire

Lake Claire is the third biggest lake in Alberta. It is near Lake Athabasca in the upper part of Alberta.

Lesser Slave Lake

Lesser Slave Lake is one of the biggest lakes in Alberta. It has a provincial park on its shores where people can go camping.



Question

Answer the questions below

1) What is a lake?

2) Do you have any lakes?

Diagram

Draw the lakes on the map. Label them

Lakes in Alberta☐ Lesser Slave Lake☐ Lake Athabasca☐ Lake Claire☐ Lake Louise

Water's Journey Downhill

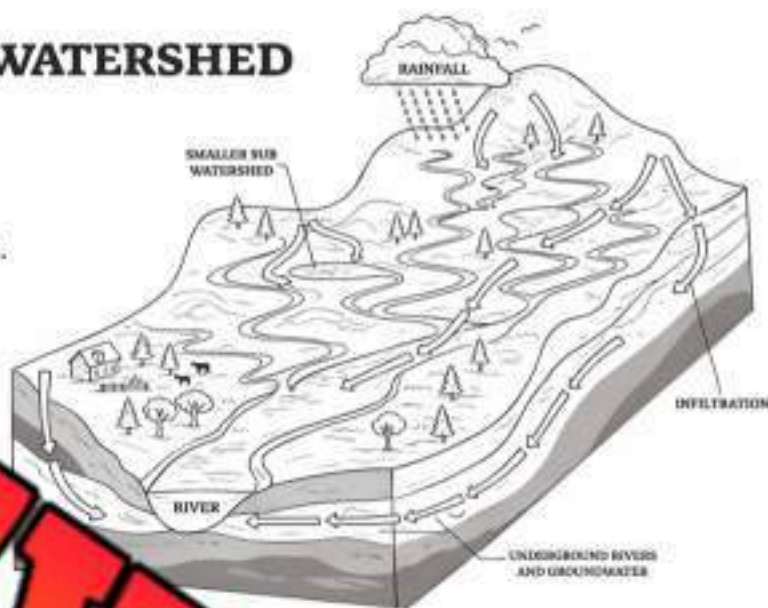
Water's Journey Downhill

Water loves to travel, and it always goes downhill! It moves from smaller places to bigger places. Let's see how this happens.

From Small Creeks to Big Rivers

Water starts in small creeks up in the mountains. As the water flows downhill, these small creeks join together. They become bigger and turn into small streams.

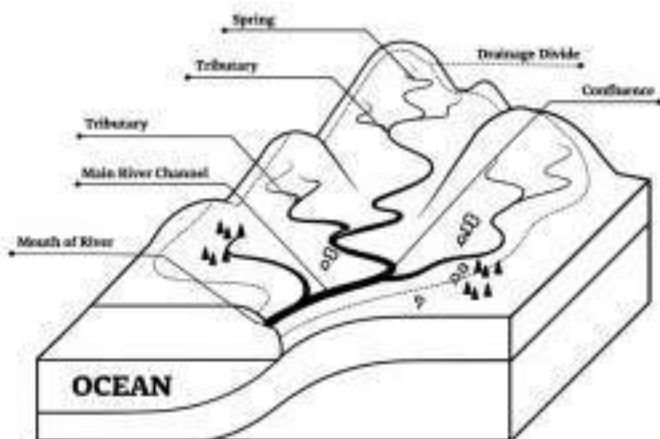
WATERSHED



From Streams to Bigger Rivers

As more and more small streams join together, they become bigger. They are not just streams anymore. They are big rivers!

DRAINAGE BASINS



From Big Rivers to the Ocean

Big rivers keep flowing downhill. They join even bigger rivers. At the end of their journey, these huge rivers flow into the biggest body of water, the ocean.

Just like a family, water bodies are all connected. From tiny creeks to massive oceans, they all work together.

Question

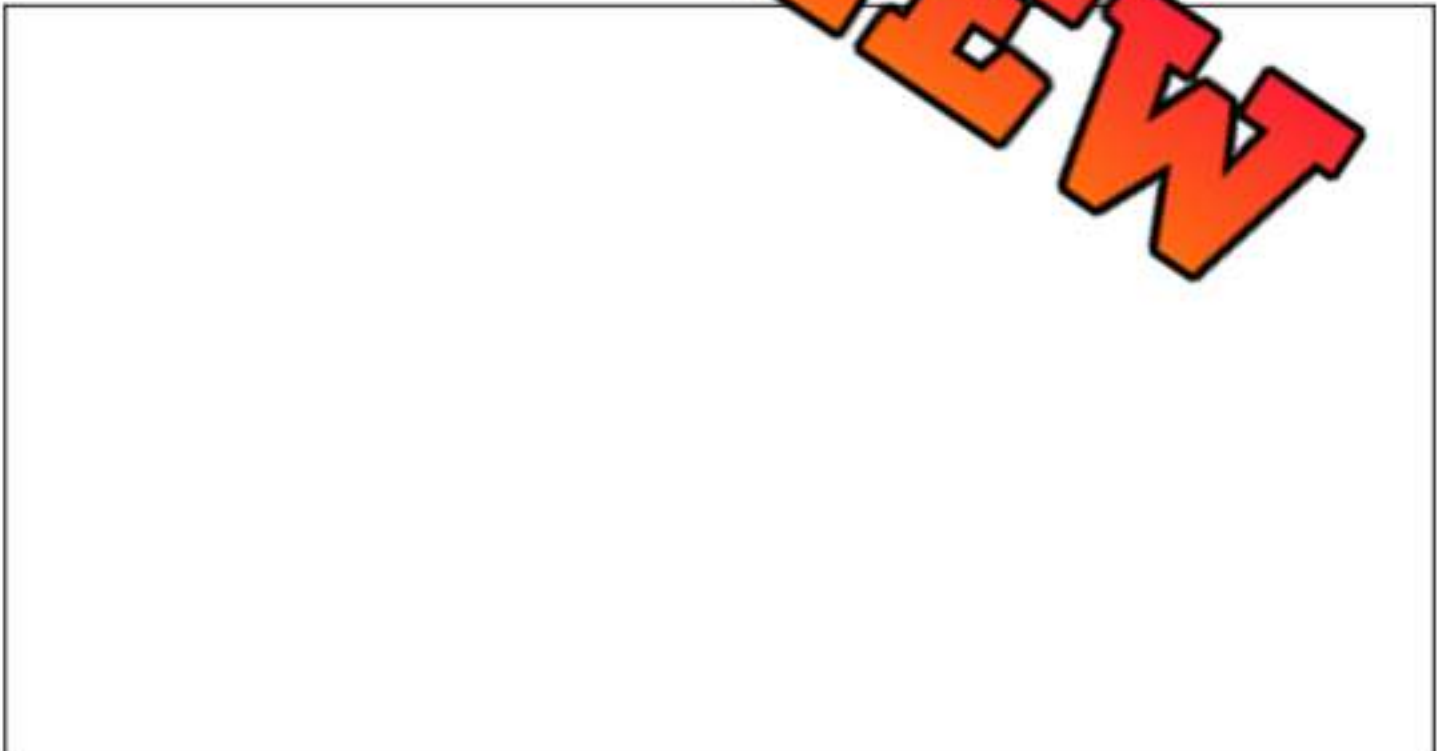
Answer the questions below

1) How does water move on Earth?

2) Do you have any creeks or streams? Where do they lead to?

Draw

Draw a diagram like the one on the next page. Have water moving from mountains in creeks, to streams that join to form rivers. Then have the river move into an ocean.



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 for each question.

1) Does water always move downhill?

Yes

No

2) Does water start its journey in the ocean?

Yes

No

3) Do small creeks join together to form streams?

Yes

No

4) Do rivers stop flowing once they reach lakes?

Yes

No

5) Are creeks, rivers, and oceans connected?

Yes

No

Name: _____

Mark

Circle Yes or No for each question.

1) Does water always move downhill?

Yes

No

2) Does water start its journey in the ocean?

Yes

No

3) Do small creeks join together to form streams?

Yes

No

4) Do rivers stop flowing once they reach lakes?

Yes

No

5) Are creeks, rivers, and oceans connected?

Yes

No

Name: _____

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No

3) Do small creeks join together to form streams?

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No

4) Do rivers stop flowing once they reach lakes?

Yes

No

5) Are creeks, rivers, and oceans connected?

Yes

No

Name: _____

Mark

Circle Yes or No for each question.

1) Does water always move downhill?

Yes

No

2) Does water start its journey in the ocean?

Yes

No

3) Do small creeks join together to form streams?

Yes

No

4) Do rivers stop flowing once they reach lakes?

Yes

No

5) Are creeks, rivers, and oceans connected?

Yes

No

Dinosaur Provincial Park

What is Dinosaur Provincial Park?

Dinosaur Provincial Park is a very special place in Alberta. This park is like a big outdoor museum full of dinosaur bones! It's a place where scientists have found a lot of old dinosaur fossils. This is why it is called Dinosaur Provincial Park.



Why is Dinosaur Provincial Park Special?

Dinosaur Provincial Park is special because it is protected by an organization called UNESCO. UNESCO makes sure that some places around the world are kept safe because they are very important. Dinosaur Provincial Park is one of these important places, known as a Heritage Site.

What does Dinosaur Provincial Park Look Like?

The park is a beautiful landform with many hills, called badlands. These badlands are full of different rocks and fossils. When you look at the park, it looks like a big, outdoor playground for dinosaurs.



Dinosaurs in the Park

A long time ago, many different kinds of dinosaurs lived in the park. Some of them were very big and others were very small. Scientists have found bones from over 40 kinds of dinosaurs in this park!

Name: _____

66

Curriculum Connection
M2.3

Question

Answer the questions below

1) What is Dinosaur Provincial Park?

2) Why is it a special place?

Draw

Draw the things below

The Badlands - Hills and Hoodoos

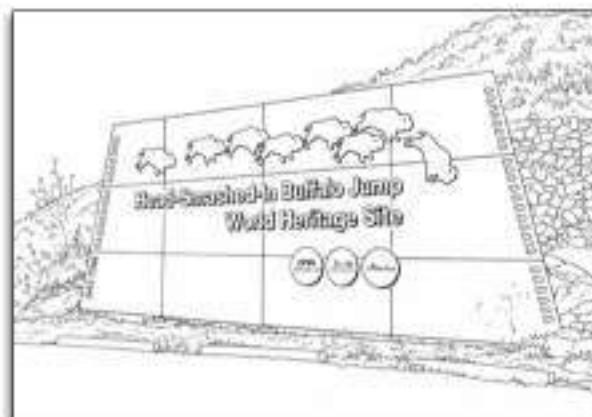
Four Bone

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Head-Smashed-In Buffalo Jump

What is Head-Smashed-In Buffalo Jump?

Head-Smashed-In Buffalo Jump is a special place in Alberta. It's not just a fun name, it's a place with a big, long history. It's where people long ago, used to hunt buffalo by making them fall off a cliff.



It is now a World Heritage Site by UNESCO. It is a heritage site in Alberta that will not be changed or sold.

What does Head-Smashed-In Buffalo Jump Look Like?

Head-Smashed-In Buffalo Jump has big cliffs, a flat land, and a steep drop-off, and it looks very pretty. There are big fields, and then, suddenly, there is a big drop-off. That's the cliff where the buffalo used to run off.



The Buffalo at the Jump

A long time ago, people used to use the land to help them hunt buffalo. They would get the buffalo to run straight toward the cliff. The buffalo would fall off and the people could use them for food and other things.

Question

Answer the questions below

1) What does the Head-Smashed-In Buffalo Jump look like?

2) How do you think it to hunt buffalo?

Draw

Draw the Head-Smashed-In Buffalo Jump



Earth's Rotation and Revolution

Did You Know?

The Earth is moving right now in two different ways.

- 1) It is rotating. This means it is spinning. It takes 24 hours for the Earth to do one full spin. For every spin, we get one day.
- 2) It is moving around the Sun. It takes 365 days for the Earth to move all the way around the Sun. We call this a revolution.

ROTATION

VS

REVOLUTION



24 / **1**
HOURS / **DAY**



NIGHT



365 / **1**
DAYS / **YEAR**



SEASONS

Activity

Draw a picture of the description below.

A basketball spinning like the Earth

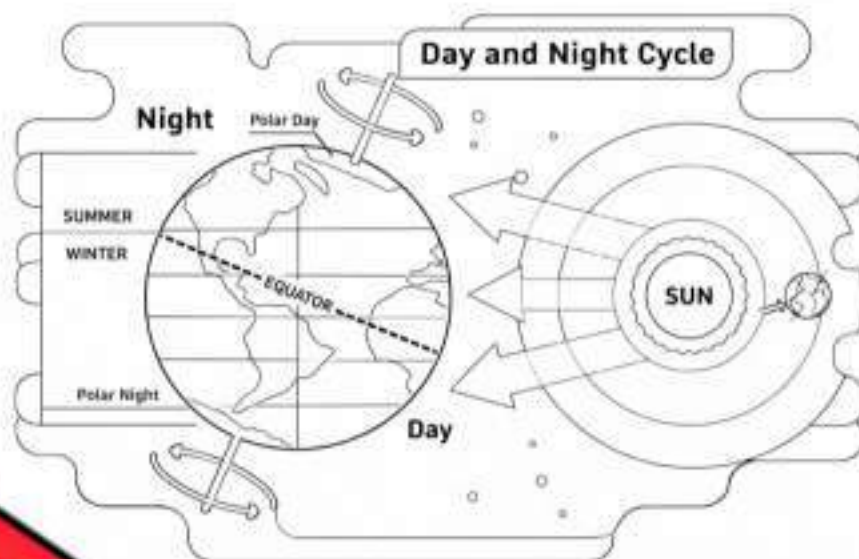
A race car moving around a racetrack like the Earth moves around the Sun

Earth's Rotation – Day and Night

Did You Know?

As the Earth spins, the places on Earth that are pointed at the Sun are lit up. This means it is daytime.

On the other side of the Earth, the Sun's light can't reach. This means it is night.



Activity

Circle whether it is night or day time ☀️

1) The Sun is pointed towards your town	☐	☐
2) The Sun is pointed away from your town	☐	☐
3) It is light on the other side of the world	☐	☐
4) It is dark on the other side of the world	☐	☐
5) It was light 24 hours ago	☐	☐
6) It was dark half a day ago	☐	☐
7) You are at school	☐	☐
8) You are in bed	☐	☐
9) You can't see the Sun anymore	☐	☐
10) It is sunrise	☐	☐

Experiment – Rotating Earth

Research Question

Why do we have day and night?

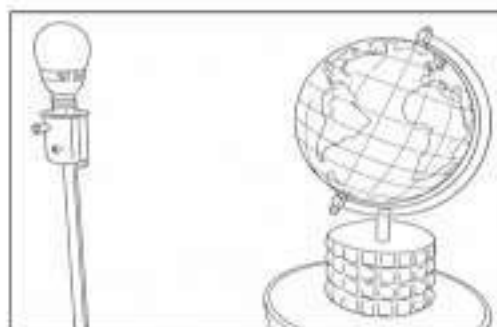
Why do we have a day with light and a night with no light?



Materials

What do we need for our experiment?

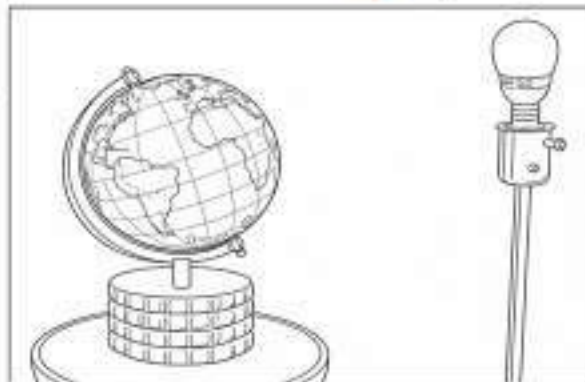
- 1) Globe
- 2) Lamp or flashlight
- 3) Dark room



Method

How do we complete the experiment?

- 1) Take the lamp shade off the lamp
- 2) Put the globe about 20 centimetres away from the light
- 3) Point the globe so that Canada is being lit up. Notice that half of the world are dark while Canada is light.
- 4) Spin the globe slowly. Notice if some parts are now a bit lit up and some places are now in the dark.
- 5) Keep spinning the globe until Canada is now in the dark. Which countries are now lit up?
- 6) Now switch the position of the lamp and the globe. Notice when you repeat the steps above that Canada is either further or closer to the Sun. This creates our seasons.



Observations

Answer the questions below

1) When it is light in Canada, which countries are in the dark?

1)

2)

3)

4)

5)

2) When Canada is positioned so that it is closer to the Sun, which season is it?

Summer

Winter

Fall

Spring

3) When Canada is positioned so that it is further away from the Sun, which season is it?

Summer

Winter

Fall

4) When the Sun's light can't reach Canada, it is...

Day

Night

5) When it is light in China, it is _____ in Canada.

Light

Dark

6) When it is light in the United States, it is _____ in Canada.

Light

Dark

What is a Cycle?

A cycle is when events happen over and over. For example, we all have a sleep and awake cycle. The two events repeat over and over. We sleep and then we wake up and then we sleep again and then we wake up. This is a cycle.



Night and day are two more events that happen over and over. It is daytime and then nighttime, and then daytime again. This cycle is repeated for a long time!

Cycle

Copy and paste words to fill in the cycle below

Evening

Sunrise

Noon

Sunset

Noon

Morning

Morning

Midnight



Day and Night

Question

Circle the correct answers below

1) During the day, it is...	Light	Dark
2) During the day, the sun	Rises	Sets
3) During the day, it is	Warmer	Colder
4) There is more daylight during the day	More	Less
5) During the day, you can see	Stars	The Sun
6) During the night, you can see	Stars	The Sun
7) During the night, you see the	Moon	The Sun
8) While it is daytime in Canada, it is	Daytime	Nighttime
9) Some animals are nocturnal and sleep during	Day	Night
10) Bats, foxes, and raccoons sleep during	Day	Night

Day and Night

Colour the daytime text yellow and nighttime text blue

Dark

Warmer

Sun

Owls

Sunlight

Light

Playing

Colder

Bedtime

Fox

Humans Sleep

Stars

Lamps

Telescope

Raccoon

School

Moon

Lightbulbs

Questions

Cut and paste the night and day pictures under the right category

Day



Night



PREVIEW



Day and Night – Fill in the Blanks

Fill in the blanks

Which word is missing?

1. The sun shines during the _____.
day/night

2. We can see the _____ at night.
sun/moon

3. It gets warmer during _____.
day/night

4. It gets _____ during the night.
warmer/cooler

5. At night, we can sometimes see _____.
stars/the moon

6. We can't always see stars at night because _____.
clouds

7. During the day, it is _____.
light/dark

8. We eat _____ at night.
lunch/dinner

9. We eat _____ during the day.
lunch/dinner

10. The sun has _____ during the day.
risen/set

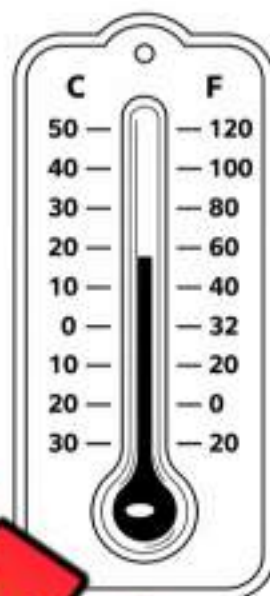


Activity – Measuring Temperature

A **thermometer** measures temperature. They can be used to measure the temperature of the air. Use a thermometer to measure the air temperature in the morning, midday, and afternoon to see if the air gets warmer as the sun comes up.

Measure _____ Use a thermometer to measure the temperature at the times below

Time	Temperature (°C)
Morning	
Midday (Noon)	
Afternoon	



Results

Answer the questions below

1) Did the temperature get warmer or colder as the day went on?

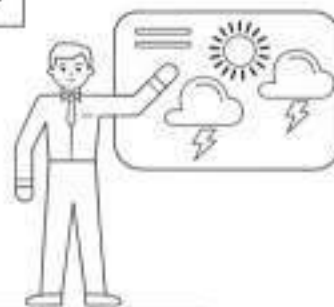
Warmer

Colder

2) Why do you think it got warmer as the day went on?

Activity – Weather Report

A **meteorologist** is able to guess what the weather will be like. Their job is to make weather reports that tell us what the temperature will be throughout the day and whether we will get rain or snow. They can also tell us if it will be windy.



Research Look up the local weather report and fill in the hourly data

Time	Temperature (°C)
9:00 am	
10:00 am	
11:00 am	
12:00 pm	
1:00 pm	
2:00 pm	
3:00 pm	
4:00 pm	

Time	Temperature (°C)
5:00 pm	
6:00 pm	
7:00 pm	
8:00 pm	
9:00 pm	
10:00 pm	
11:00 pm	
12:00 am	

Results

Answer the questions below

1) What time is the warmest of the day?

2) What time is the coldest of the day?

Investigate – Local Weather

Weather Reports

A weather report is a prediction of what the skies will bring an area. The weather report uses tools and data to measure the air pressure, wind speed, and movement of weather fronts.

The data from these tools give meteorologists the ability to make strong predictions of the upcoming weather. The weather report predicts the short-term forecast (usually 36 hours) with a higher accuracy than the 14-day forecast.

We will fill in the information about your local weather

Weather Reports	Information
Temperature	
Relative Humidity	
Wind Speed and Direction	
Probability of Precipitation (POP)	



Questions

Answer the questions below

1) How does the weather look for the next couple of days?

2) Is there any extreme weather coming in the next 14 days – snowstorms or lightning?

Writing Code – Weather Reports

When data is collected from supercomputers, codes are used to display predictions about the weather. Check out the example below.

Input
dark clouds full of rain are coming
winds are strong, over 100 kph
the temperature is 2° C

Output
It will rain today
It will be windy and a tornado is possible
The temperature is cool, almost freezing

Coding Write a code that goes with the inputted data

Input	Outputs
There are no clouds in the sky	
The wind is 0kph	
The temperature is 25° C	

Input	Outputs
Lightning clouds are on the way	
The wind is weak at 5kph	
The temperature is 20° C	

Input	Outputs
Clouds full of water are coming	
The wind is 15kph	
The temperature is -30° C	

Name: _____

Date: _____

Unit Test - Landforms

Multiple Choice

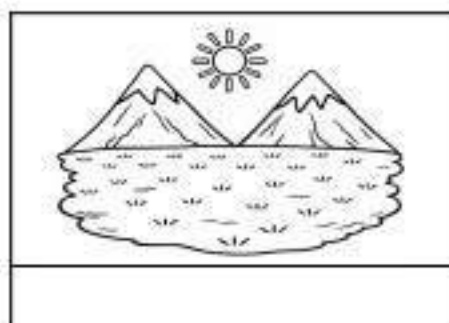
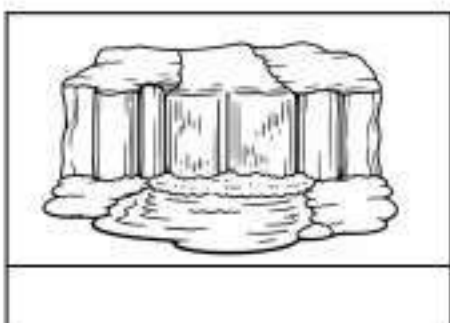
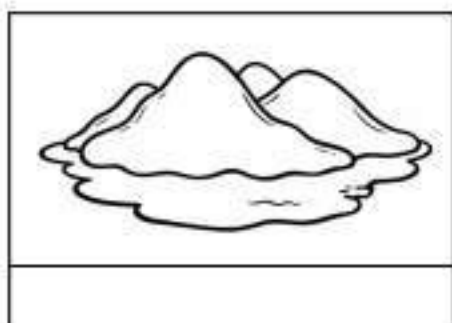
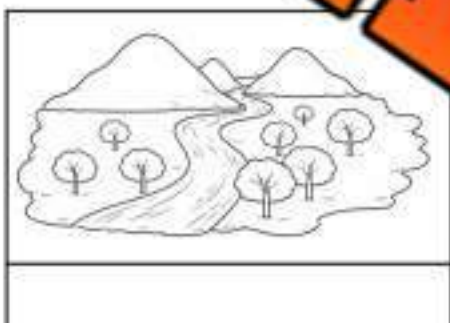
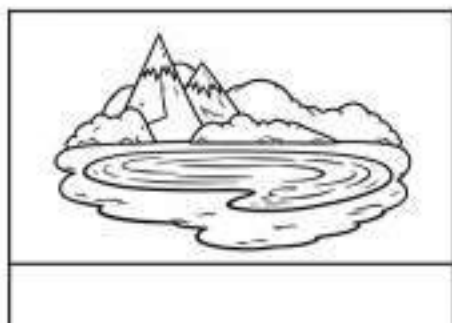
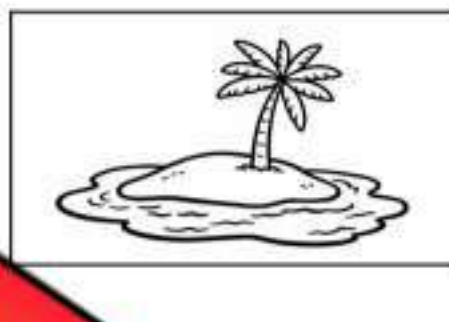
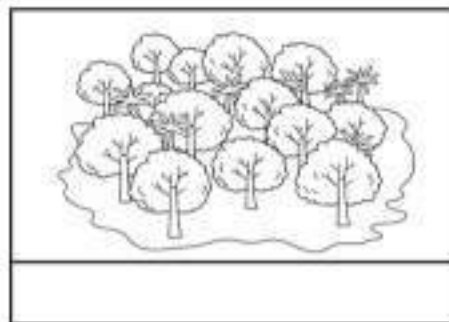
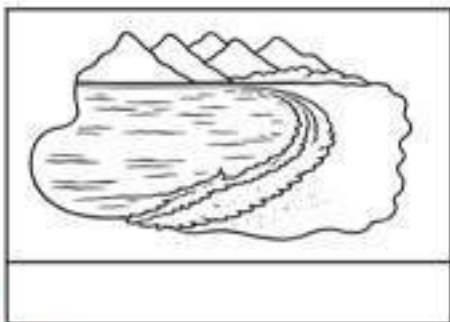
/10

1. A flat, high area of land above the land around it a) Mountain b) Hill c) Valley d) Plateau	2. A tall and steep landform that is over 300 metres high a) Mountain b) Hill c) Valley d) Plateau
3. An area of land with mountains or hills. The top of a plateau is flat. a) Mountain b) Hill c) Valley d) Plateau	4. Which of the following is not a landform? a) Hill b) River c) Tree d) Mountain
5. Which planet has life on it? a) Mars b) Venus c) Jupiter d) Earth	6. What is the name of the newest Mars Rover? a) Perseverance b) Curiosity c) Inger d) Discovery
7. Which landform is the flattest? a) Plains b) Hills c) Valleys d) Plateaus	8. Which body of water is the largest in Alberta? a) Pond b) Lake c) River d) Sea
9. Which wetland has trees? a) Marsh b) Bog c) Swamp d) Fen	10. Which lake is biggest in Alberta? a) Lake Claire b) Lake Athabasca c) Lesser Slave Lake d) Lake Louise

Label

Name the landforms using the word bank

River	Glacier	Island	Plateau	Jungle	Ocean
Hills	Waterfall	Valley	Mountain	Volcano	Lake



Questions

Answer the questions below. Each question is worth 3 marks.

1) How does water move on Earth?

2) Why do we have seasons on Earth?

3) Are we looking for life on other planets? Explain.



Workbook Preview



Grade 2 – Science Unit

Organizing Idea Matter: Matter: Understandings of the physical world are deepened by investigating matter and energy.

Guiding Question: How can the suitability of materials be determined for specific purposes?

	Learning Outcome - Students investigate direction, pathway, and speed of moving objects and animals.	Pages
M2.1	Materials are used to make objects	6 – 12, 43 – 59, 68 – 69
M2.2	Properties of materials that can be tested include:	33
M2.3		40
M2.4	the land, or the sky. Processed materials are made by humans	– 74
M2.5	An object can be made from different materials; e.g., a canoe can be made from wood or aluminum. Examples of objects made from natural materials that are created and used by First Nations, Métis, and Inuit are Dene birchbark baskets travois Red River carts canoes Inuit scrap	77 – 83
M2.6	Knowledge of the properties of materials and their purposes is important in many occupations and roles, such as carpenter engineer designer Knowledge Keeper or Elder First Nations, Métis, and Inuit use of materials is informed by traditional knowledge time of year availability taking only what is needed respect for the land	75 – 76
Computer Science:		
CS.1	Students apply creativity when designing instructions to achieve a desired outcome.	41, 60 – 67

Preview of 75 pages from
this product that contains
154 pages total.

NAME: _____

OBJECTS AND MATERIALS



Materials

Materials are used to make things we use. The chair you are sitting in is made of materials. Chairs are often made of metal, wood, and plastic. Common building materials are:

				
Wood	Plastic	Fabric	Glass	

Matching

Draw a line from each thing made to the material it is made of



Wood



Wood



Metal



Metal



Plastic



Plastic



Fabric



Fabric



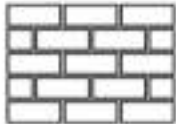
Glass



Glass

Materials**Matching**

Write the letter from the example beside the material

Material		Example
1)	Rubber	A) 
2)	Elastic	B) 
3)	Wood	C) 
4)	Stone	D) 
5)	Fabric	
6)	Glass	
7)	Metal	G) 
8)	Brick	H) 
9)	Wool	I) 
10)	Leather	J) 

Natural or Human Made Materials

We use materials to make the things we need. Some of the materials we use are found naturally in our environment. These are materials you can look outside and see. Other materials are made by humans. These materials you would never see in nature without a human making it and putting it there.

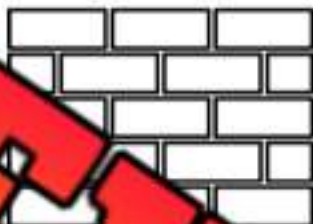
Directions: Circle whether the material is natural or human-made



Natural

Human-Made

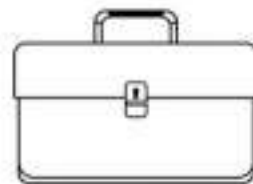
Wool



Natural

Human-Made

Brick



Natural

Human-Made

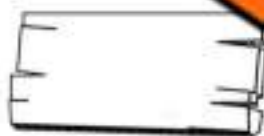
Steel



Natural

Human-Made

Clay



Natural

Human-Made

Wood



Natural

Human-Made

Leather



Natural

Human-Made

Stone



Natural

Human-Made

Glass



Natural

Human-Made

Plastic

Describing Materials

Directions

Circle adjectives that describe the material



Material		Example			
1)	Rubber	Strong	Weak	Flexible	Rigid
		Hard	Soft	Heavy	Light
2)	Paper	Strong	Weak	Flexible	Rigid
		Hard	Soft	Heavy	Light
3)	Wood	Strong	Weak	Flexible	Rigid
		Hard	Soft	Heavy	Light
4)	Stone	Strong	Weak	Flexible	Rigid
		Hard	Soft	Heavy	Light
5)	Fabric	Strong	Weak	Flexible	Rigid
		Hard	Soft	Heavy	Light
6)	Glass	Strong	Weak	Flexible	Rigid
		Hard	Soft	Heavy	Light
7)	Metal	Strong	Weak	Flexible	Rigid
		Hard	Soft	Heavy	Light

Exit Cards

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

Name: _____

Mark

Circle whether the material is natural or human-made

			
Natural	Human-Made	Natural	Human-Made
Cotton Plant		Paper	
			
Natural	Human-Made	Natural	Human-Made
Tire (Rubber)		Sand	

Name: _____

Mark

Circle whether the material is natural or human-made

			
Natural	Human-Made	Natural	Human-Made
Cotton Plant		Paper	
			
Natural	Human-Made	Natural	Human-Made
Tire (Rubber)		Sand	

Name: _____

Mark

Circle whether the material is natural or human-made

			
Natural	Human-Made	Natural	Human-Made
Cotton Plant		Paper	
			
Natural	Human-Made	Natural	Human-Made
Tire (Rubber)		Sand	

Name: _____

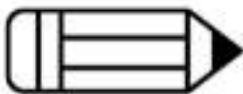
Mark

Circle whether the material is natural or human-made

			
Natural	Human-Made	Natural	Human-Made
Cotton Plant		Paper	
			
Natural	Human-Made	Natural	Human-Made
Tire (Rubber)		Sand	

What are Objects?

Objects are the things we see in our lives. Objects can be touched. Some objects are made of just one material, while others are made of more than one material. Check out the examples below.

 	 
One Material Objects	More Than One Material Objects

Directions

Decide whether an object is made of 1 or more than 1 material



1

More Than 1



1

More Than 1



More Than 1



1

More Than 1



1

More Than 1



1

More Than 1



1

More Than 1



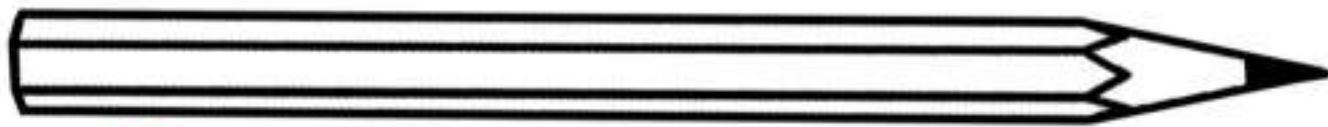
1

More Than 1

Objects Made of Materials

Directions

Look at the object and circle the materials it is made of



Metal

Wood

Glass

Rubber

Graphite



Metal

Wood

Rubber

Cloth



Metal

Wood

Plastic

Rubber

Cloth



Metal

Wood

Plastic

Rubber

Cloth

Directions

What materials are the objects in your life made of?

1) Your shoes



Cloth

Rubber

Stone

Metal

Wood

Plastic

2) Your school



Brick

Rubber

Stone

Metal

Wood

Plastic

3) Your desk or table



Cloth

Rubber

Glass

Metal

Wood

Plastic

4) Your chair



Cloth

Rubber

Stone

Metal

Wood

Plastic

5) A playground



Cloth

Rubber

Stone

Metal

Wood

Plastic

Experiment - Objects Sink or Float?

Research Question

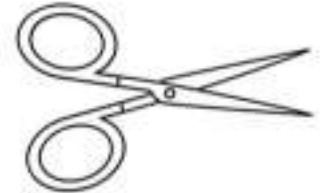
Will the objects sink or float?

If we put the object in water, will it sink or float?

Materials

What do we need for our experiment?

- 1) One bucket of water
- 2) 8 objects: scissors, eraser, paper ball, plastic water bottle, rock, pencil
- 3) Recording sheet

**Method**

How do we do the experiment?

- 1) One at a time, place the object in the bucket of water
- 2) Record whether it sinks
- 3) Answer the questions

**Hypothesis**

Will the object float or sink?

Objects You Will Test	Will it float or sink?
Scissors	
Pencil	
Eraser	
Plastic Block	
Rock	
Stick	
Water bottle	
Paper Ball	

Observations

Did the object sink or float?



Objects	Float or Sink
Scissors	
Pencil	
Eraser	
Clay Block	
Water Bottle	
Paper Ball	

Results

Answer the questions below

1) Do heavy or light objects float?
Heavy Light
2) Do metal objects float or sink?
Sink Float
3) Do wood objects sink or float?
Sink Float
4) Do plastic objects sink or float?
Sink Float

Research - Things That Float

Objects

Write down 5 objects that float

1)	
2)	
3)	
4)	
5)	

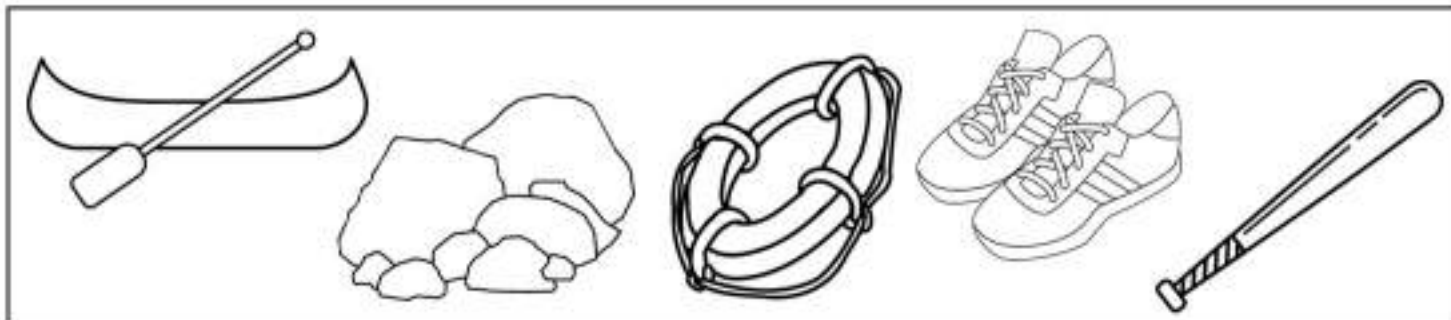
Materials

Write down 5 materials that float

1)	
2)	
3)	
4)	
5)	

**Colour**

Colour the objects that float



Sink or Float

Sink or Float?

Will the object sink or float? Circle your answer.



Sink

Float

Sink

Float



Sink

Float

Sink

Float

Sink

Float



Sink

Float

Sink

Float

Sink

Float



Sink

Float

Sink

Float

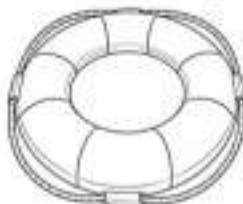
Sink

Float

Life Preserver

A life preserver is something that floats that saves people. There are two types.

- 1) The ones we wear – life jackets
- 2) The ones we throw – life rings



The first life preserver was made by the scientist Leonardo da Vinci. He made his out of cork and wood. Life preservers weren't used until the year 1855. In 1864, John B. Kisbee made a cork life belt.

Colour

the life ring and life jackets below

Life Ring

Life Jacket



Draw

Draw your own life ring and life jackets below

Life Ring

Life Jacket

Questions

When would you use a life jacket or life ring?



1) You see someone in the water sinking	Life Jacket	Life Ring
2) You are going to go swimming in a lake	Life Jacket	Life Ring
3) You are going in a pool and can't swim well	Life Jacket	Life Ring
4) You see someone in a pool who can't swim	Life Jacket	Life Ring
5) You're in a hot tub and can't swim	Life Jacket	Life Ring

Making Connections

Have you used a life preserver before?

I used a life _____

_____**Draw**

Draw a picture of you using a life preserver

A large, empty rectangular box with a black border, intended for a student to draw a picture of themselves using a life preserver. A small illustration of a life preserver is visible in the top right corner of the box.

Stretchy Materials

Stretchy materials can stretch and bend easily. They're like rubber bands, but they can be used to make all sorts of things.

For example, you might have a pair of stretchy pants that you can wear when you're playing sports. The pants are made of a stretchy material that allows you to move around better.

Stretchy materials are also used to make things like elastic bands and gloves. Stretchy materials are good because they can be stretched and then go back to their shape.

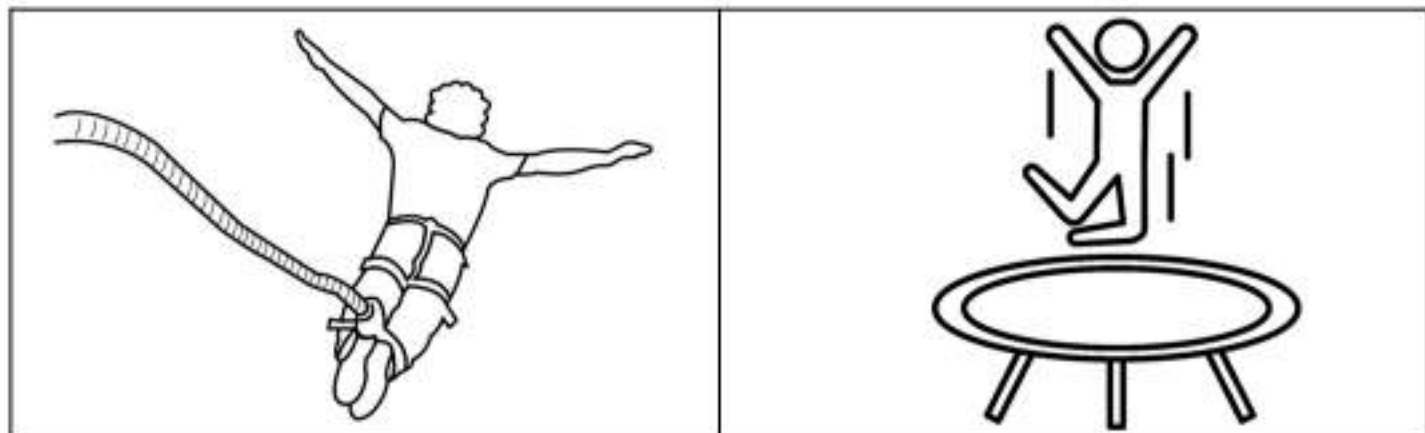
**Draw**

Draw 2 stretchy objects made of stretchy materials

--	--

Draw

Colour the stretchy objects below



Exit Cards

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

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Stretchy materials can stretch and bend easily.	T
	F
2) Stretchy materials are used to make elastic bands.	T
	F
3) Sports clothing can be made from stretchy materials.	T
	F
4) Stretchy materials are only used for clothing.	T
	F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Stretchy materials can stretch and bend easily.	T
	F
2) Stretchy materials are used to make elastic bands.	T
	F
3) Sports clothing can be made from stretchy materials.	T
	F
4) Stretchy materials are only used for clothing.	T
	F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Stretchy materials can stretch and bend easily.	T
	F
2) Stretchy materials are used to make elastic bands.	T
	F
3) Sports clothing can be made from stretchy materials.	T
	F
4) Stretchy materials are only used for clothing.	T
	F

Name: _____

Mark

Is the statement true (T) or false (F)?

1) Stretchy materials can stretch and bend easily.	T
	F
2) Stretchy materials are used to make elastic bands.	T
	F
3) Sports clothing can be made from stretchy materials.	T
	F
4) Stretchy materials are only used for clothing.	T
	F

Can You Poke a Hole In a Balloon?

Hypothesis

Can you poke a hole in a balloon without popping it?

Yes

No

Materials

What do we need for our experiment?

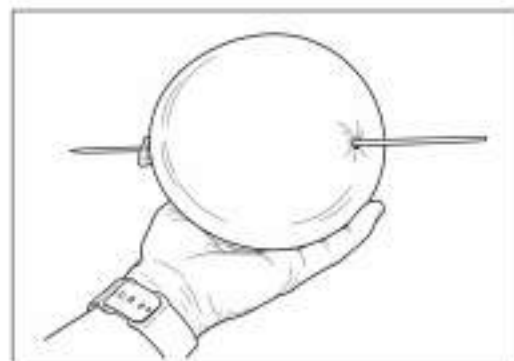
- 1) Balloon
- 2) Vaseline or Lip Chap
- 3) Wooden skewer



Method

How do you perform the experiment?

- 1) Blow up the balloon about 1/2 way
- 2) Tie the balloon
- 3) Dip the pointy end of the skewer in the vaseline or rub lip chap on the pointy end
- 4) Stick the pointy end into the area near the knot that isn't fully stretched. The area will be darker.
- 5) Pull out the skewer
- 6) Try sticking the skewer into the opposite side of the balloon where there is a dark spot.
- 7) Stick the skewer right through the balloon and into the knot on the other side



Results

Answer the questions below

1) What happened when you poked the balloon?

2) If you poked the balloon in another place, what would happen?

3) Why didn't the balloon pop? Choose the correct answer.

- a) The balloon is stiff and won't stretch.
- b) The balloon is stretchy in those areas so it didn't pop when the stick touched it.
- c) The balloon is stretchy so the hole opens up and stays open.

4) Draw a picture of the balloon with the stick through it

Waterproof Materials

Waterproof materials keep water out. They are used in things like raincoats and boots to keep us dry. Waterproof materials are made in a special way that doesn't allow water to pass through them.

The rain will slide off a raincoat made of waterproof materials. You'll stay dry. Waterproof materials are also used in rainboots to keep water out. If water could get into a rainboot, it would be a problem.

Rubber is a waterproof material. Most rainboots are made of rubber. Water cannot get through rubber!



Yes/No

Is the answer yes or no?

1) Is rubber a waterproof material?	Yes	No
2) Is cotton a waterproof material?	Yes	No
3) Are raincoats made of fabric?	Yes	No
4) Are rainboots made of rubber?	Yes	No
5) Do waterproof materials let water in?	Yes	No

Draw

Draw 3 pictures of objects made of waterproof materials

--	--	--

Objects that Absorb or Repel Water

Solids that Absorb or Repel Water

When a solid gets wet, it will either absorb or repel water. Some solid materials repel water well and others absorb water well. **Repel** means that water does not get into the solid very well. **Absorb** means water gets into the material.



Solids that Absorb Water

- Sponges
- Paper towel
- Paper
- Face cloth
- Sock
- Cotton ball



Solids that Repel Water

- Raingear – raincoat or rubber boots
- Steel or metal
- Wax paper
- Styrofoam



True or False

Is the statement true or false?

1) Repel means to let water in	True	False
2) Absorb means to let water in	True	False
3) Rocks absorb water	True	False
4) Rubber boots repel water	True	False
5) A sponge absorbs water	True	False

Draw

Draw a solid that repels and a solid that absorbs water

--	--

Absorb or Repel?**Absorb or Repel?**

Will the object absorb or repel water? Circle your answer.



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel

Exit Cards

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

Name: _____

Mark

Will the object absorb or repel water? Circle your answer.

			
Absorb	Repel	Absorb	Repel
Sponge		Umbrella	
			
Absorb	Repel	Absorb	Repel
Paper Towel		Raincoat	

Name: _____

Mark

Will the object absorb or repel water? Circle your answer.

			
Absorb	Repel	Absorb	Repel
Sponge		Umbrella	
			
Absorb	Repel	Absorb	Repel
Paper Towel		Raincoat	

Name: _____

Mark

Will the object absorb or repel water? Circle your answer.

			
Absorb	Repel	Absorb	Repel
Sponge		Umbrella	
			
Absorb	Repel	Absorb	Repel
Paper Towel		Raincoat	

Name: _____

Mark

Will the object absorb or repel water? Circle your answer.

			
Absorb	Repel	Absorb	Repel
Sponge		Umbrella	
			
Absorb	Repel	Absorb	Repel
Paper Towel		Raincoat	

Experiment - Absorb or Repel

Research Question

What objects absorb or repel water?

What materials will absorb water and what materials will repel it? Today, we will test the materials below.

Hypothesis

Will the material repel or absorb water?

Write your hypothesis under the material

Stone	Sock	Hand Towel	Glass or Plastic Cup	Cardboard

Materials

What do we need for the experiment?

- 1) Spray bottle filled with water
- 2) Materials to test
 - 1) Stone
 - 2) Rubber band
 - 3) Sock
 - 4) Hand towel
 - 5) Plastic or glass cup
 - 6) Cardboard



Method

How do we complete the experiment?

- 1) Students should predict whether each material will repel or absorb water
- 2) Working in groups or as a whole class demonstration, spray each material
- 3) Notice after you spray if the water soaks into the material or if it stays on the outside
- 4) Write down if the material absorbed or repelled the water

Observations

Did the material absorb or repel water?

Write absorb or repel under the material

Stone	Rubber Band	Sock	Hand Towel	Glass or Plastic Cup	Cardboard

Results Answer the questions below

1) Draw the materials that absorb water.

2) Draw the materials that repel water.

3) If you were cleaning up a mess of water, what materials would you use from the experiment? Which materials would you not use?

I Would Use**Not Use**

Materials – Catching Bubbles

Hypothesis

Which materials do you think will catch bubbles?

Sharp

Smooth

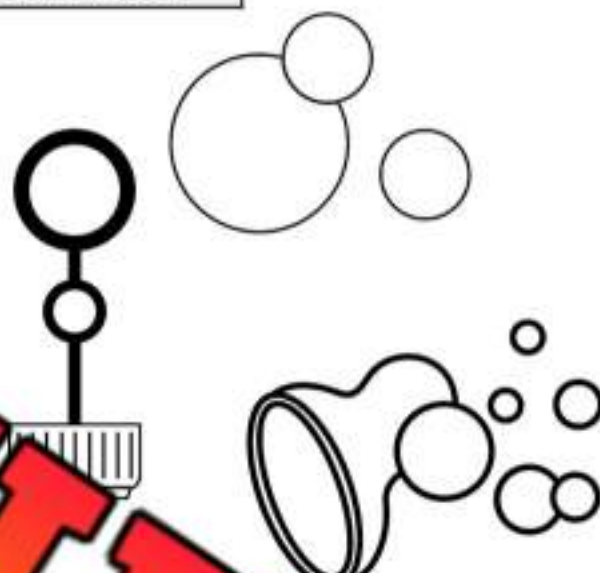
Waterproof

Absorbent

Materials

What do we need for our experiment?

- ✓ Bubble solution
- ✓ Blow tube to make bubbles with
- ✓ Paper towel
- ✓ Materials to test bubbles on
 - 1) Wax
 - 2) Aluminum foil
 - 3) Paper
 - 4) Plastic wrap
 - 5) Cardboard
 - 6) Pavement – bumpy surface



Method

How do we complete the experiment?

- 1) Setup your first material by putting it on a table or on the ground
- 2) Blow bubbles gently on to the material
- 3) Did the material catch the bubble or did the bubble break?
- 4) Record your results on the back of the page
- 5) Before trying the next material, use the paper towel to dry the area
- 6) Repeat the steps above for each of the materials



Observations

Which materials caught the bubbles?

Material	Yes	No
Wax Paper	Yes	No
Paper	Yes	No
Aluminum Foil	Yes	No
Plastic Wrap	Yes	No
Cardboard	Yes	No
Cement	Yes	No

Results

Answer the questions below.

1) Which materials were the best at catching bubbles?

Sharp

Smooth

Waterproof

2) What happened when the bubbles touched a bumpy material?

3) What happened when the bubbles touched a surface that sucked up the water?

Reflective Materials

What is a Reflective Material?

When something is shiny and light bounces off it, we say it is **reflective**. Reflective things work like mirrors - they let us see ourselves! They do this because they are smooth and clean, and they send the light right back to our eyes.

Reflective Materials/Objects

Mirror: We use mirrors to see ourselves. It is very reflective!

Foil: Shiny material we use to wrap food is also reflective.

Puddles: After it rains, puddles are shiny and reflective, like a mirror.

Shiny Metal: Things made from metal like a spoon or a car are reflective.

Reflective Tape: This special tape is used to make things like bike helmets and safety vests extra shiny so people can see them even in the dark.



Yes/No

Is the material reflective?

Material		
1) Glass	Yes	No
2) Wood	Yes	No
3) Rubber	Yes	No
4) Foil	Yes	No

5) Mirror	Yes	No
6) Spoon		No
7) Rock		No
8) Tire	Yes	No

Draw

Draw 3 pictures of objects made of reflective materials

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Experiment – Transparency of Materials

Objective

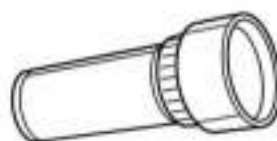
What are we learning about?

We are learning about materials that are transparent. **Transparent** materials are materials that let light pass through. This means we can see through transparent materials.

Materials

What do we need for our experiment?

- 1) Different objects of various materials:
Paper, Plastic, Cardboard,
Aluminum, Glass, Wood,
Fabric
- 2) Flashlight



Method

How do we complete the experiment?

- 1) Before you start the activity, explain what transparent means. Say, "Something is transparent if you can see through it, like a glass window!"
- 2) Have the students gather around a table with all the materials.
- 3) Let each student take turns picking up an object and predicting if they think it's transparent or not. They can say, "I think I can see through this," or, "I think I can't see through this."
- 4) After they make a prediction, they can test it out by shining the flashlight through the object. If light passes through and they can see the light clearly on the other side, the object is transparent. If no light comes through, it's not transparent.
- 5) Have the students record their findings on the back of this page.
- 6) After testing all the objects, discuss the findings as a group. Talk about why some materials let light through and others don't.

Observations

Is the material transparent?



Objects	Transparent – Yes or No?
Paper	
Plastic Wrap	
Cardboard	
Aluminum Foil	
Glass	
Water	
Fabric	

Results

Answer the questions below.

1) What colour are see-through materials?

2) Draw see through materials/objects below.

Which Object Has More Mass?

Mass is the amount of matter in an object/material. Objects with more mass have more weight.

Questions

Circle which object you think has more mass

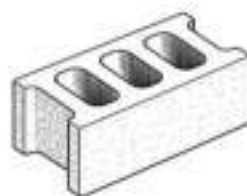
1)



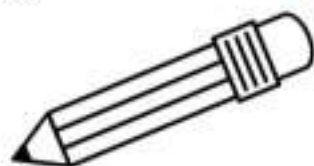
2)



VS



3)



VS

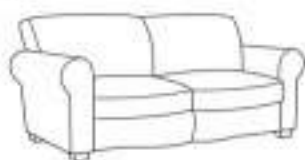
4)



VS



5)



VS



6)



VS



7)



VS



8)



VS



9)



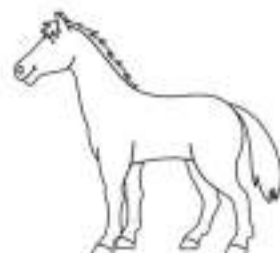
VS



10)



VS



Non-Standard Units - Mass

Any object can be used as a non-standard unit of measurement for mass. However, it is better to use common objects that most people know the mass of. Here are some objects you can try: paperclips, marbles, bricks.

Part 1 Order the object's mass from least (1) to greatest (3)

Paperclips	Bricks	Marbles
------------	--------	---------

Part 2 What would you use to measure the mass of the objects below?

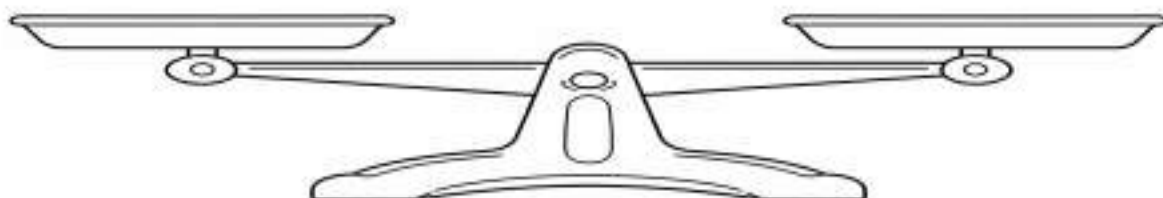
Objects - What would you use to measure the mass?	Paperclip	Marble	Brick
1) Pencil	Paperclip	Marble	Brick
2) Ruler	Paperclip	Marble	Brick
3) Calculator	Paperclip	Marble	Brick
4) Chair	Paperclip	Marble	Brick
5) Apple	Paperclip	Marble	Brick
6) Glue stick	Paperclip	Marble	Brick
7) Empty pencil case	Paperclip	Marble	Brick
8) Desk	Paperclip	Marble	Brick
9) Water bottle	Paperclip	Marble	Brick
10) One paper	Paperclip	Marble	Brick

Non-Standard Units - Paperclips

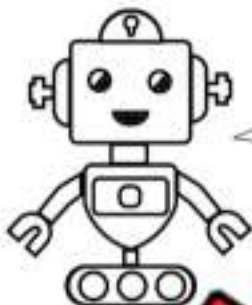
Directions

- 1) Estimate the mass in paperclips of each object.
- 2) Use a pan balance to measure the mass in paperclips of each object.

Object	Estimate - # of Paperclips	Mass - # of Paperclips
1) Pencil		
2) Ruler		
3) One paper folder		
4) Pencil Sharpener		
5) Scissors		
6) Glue stick		
7) USB flash drive		
8) Marker		



Coding – Making Materials



Hi, my name is Levi. My job is to take things from our environment and make materials from them. Can you help me by coding directions for me to get my work done?

Directions Write the order of the code for making paper

Step Number	Code – Instruction
	Take the leaves off the tree
	Cut the tree into small pieces called pulp
	Cut down trees
	Spread the pulp and press it in sheets
	Cut off the branches

Directions Write the order of the code for making yarn

Step Number	Code – Instruction
	Turn the cotton balls into yarn
	Pick the cotton ball off the plant
	Dye the yarn to make it different colours
	Clean the cotton balls
	Use the coloured yarn to make clothing

Activities - Materials

Word Search

Find the words from the word bank



Rubber	Plastic	Wood	Fabric	Stone
Glass	Metal	Brick	Wool	Leather

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

Word Scramble

Unscramble the words from the word bank

REBBUR		FBAIRC	
SNOTE		WODO	
PTASILC		GALSS	
LHAETER		WLOO	
BICRK		MTAEL	

Recognizable Object in the World

Questions

Answer the questions below



1) It looks _____

2) Why do you think stop signs are red?

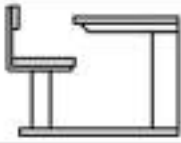
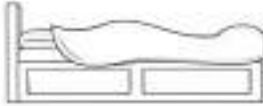
3) What shape are each of the signs? How many sides do they have?

4) Why do stop signs look the same in different countries?

Purpose of Object

Matching

Write the letter of the object beside the purpose

Purpose		Object
1)	To brush your teeth with	A) 
2)	To step on	B) 
3)	To drink	C) 
4)	To keep you cool	D) 
5)	To keep you dry in the rain	
6)	To eat with	
7)	To hold your pencils	G) 
8)	To tell cars when to stop and go	H) 
9)	For birds to live in	I) 
10)	To write on	J) 

Object – Different Types of Chairs

Objects are made for different purposes. Check out these examples:

- A chair used in school is different than a chair used at home
- Rainboots are different than running shoes
- A gym floor is different than a classroom floor

Question Answer the questions below

1) Circle above the chairs where they would be used.

Home

School

Home

School



2) Circle the materials the chairs are made of?

Plastic

Fabric

Metal

Plastic

Fabric

Metal

Wood

Stone

Rubber

Wood

Stone

Rubber

3) Use your senses to describe the chairs below.

Hard

Soft

Comfortable

Hard

Soft

Uncomfortable

Big

Small

Supportive

Big

Small

Supportive

4) What are the benefits of both chairs?

Object – Different Types of Shoes

Questions

Answer the questions below

1) Circle above both pairs of shoes which environment they would be used

Dry

Wet

Dry



2) Circle the materials shoes are made of?

Plastic

Fabric

Metal

Plastic

Fabric

Metal

Wood

Stone

Rubber

Wood

Stone

Rubber

3) Use your senses to describe the shoes below

Hard

Soft

Comfortable

Hard

Soft

Comfortable

Big

Small

Uncomfortable

Big

Small

Uncomfortable

Shiny

Heavy

Light

Shiny

Heavy

Light

4) When would you use both pairs of shoes?

Purpose of Objects

Questions

What is the purpose of the objects below?

Draw a picture of a bed	1) What is the purpose of a bed? _____ _____
	2) What are good building materials for a bed? _____ _____
	3) Describe the bed you drew using your senses _____ _____
Draw a picture of a table	1) What is the purpose of a table? _____ _____
	2) What are good building materials for a table? _____ _____
	3) Describe the table you drew using your senses _____ _____

Questions

What is the purpose of the objects below?

Analyse The Chair Below



1) What is the purpose of the chair? Notice the wheels

2) What materials is the chair made of?

3) Describe the chair using your senses

Analyse The basketball



1) What is the purpose of the basketball?

2) What materials is the basketball made of?

3) Describe the basketball using your senses

Testing Objects

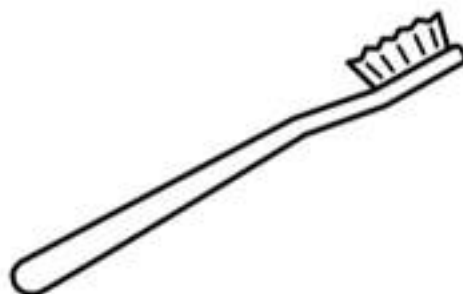
Research Question

What are we learning about?

When we have a job to do, we should choose the best object or tool for the job. Choosing the right tool will allow us to finish the job better. Today you will use three different tools for three different jobs.

Jobs

- 1) Sweeping floor
- 2) Scrubbing
- 3) Mopping a



Materials

What materials do we need for the experiment?

- 1) A small mop
- 2) A small broom or handheld broom
- 3) A toothbrush
- 4) 3 different materials to make a mess (options below)
 - I. Washable paint for the sink
 - II. Shredded paper for the floor
 - III. Washable paint for the floor

Method

How do we complete the experiment?

- 1) Create one mess at a time
- 2) Try all three tools for each job/mess
- 3) Discuss which tool works the best
- 4) Fill in the backside of this page



Observations

What did you notice?

Which tool was best for which job?

Job	Tool
Mess in Sink	
Shredded Paper on the Floor	
Mess on the Floor	

Results

Answer the questions below

1) Which tool is best for scrubbing a mess?

2) Which tool is best for picking up a wet mess?

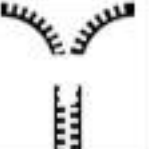
3) Which tool is best for picking up a dry mess?

4) Draw each of the tools below

Broom	Mop	Toothbrush

Fasteners

Fasteners are used to hold things together. When an object is made, materials are put together. The fastener that is chosen to hold the materials depends on the purpose. For strong objects, nails and screws are chosen. For weaker objects, glue or tape could be used.

						
Glue	Nail	Paperclip	Tape	Button	Zipper	Rope

Matching

Draw a line from the object to the fastener used to make it



Glue



Screw



Buttons



Zip



Rope



Tape



Nail



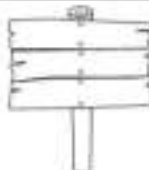
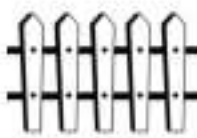
Zipper



Fasteners - Matching

Matching

Write the letter from the example beside the material

Material		Example
1)		A) 
2)	Butt	B) 
3)	Rope	C) 
4)	Nail	
5)	Screw	E) 
6)	Paperclip	F) 
7)	Tape	G) 
8)	Zipper	H)  Stickers

Exit Cards

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

Name: _____

Mark

Circle the fastener that is best used to hold the object together.

1) A jacket needs to open and close.

Zipper

2) Wood is used to make a chair.

Nail

3) A gift box needs to be closed but opened later.

Tape

4) A shelf needs to be very strong and stay in place.

Screw

Tape

Name: _____

Mark

Circle the fastener that is best used to hold the object together.

1) A jacket needs to open and close.

Nail

Zipper

2) Wood is used to make a chair.

Tape

Nail

3) A gift box needs to be closed but opened later.

Tape

Screw

4) A shelf needs to be very strong and stay in place.

Screw

Tape

Name: _____

Mark

Circle the fastener that is best used to hold the object together.

1) A jacket needs to open and close.

Nail

Zipper

2) Wood is used to make a chair.

Tape

Nail

3) A gift box needs to be closed but opened later.

Tape

Screw

4) A shelf needs to be very strong and stay in place.

Screw

Tape

Name: _____

Mark

Circle the fastener that is best used to hold the object together.

1) A jacket needs to open and close.

Nail

Zipper

2) Wood is used to make a chair.

Tape

Nail

3) A gift box needs to be closed but opened later.

Tape

Screw

4) A shelf needs to be very strong and stay in place.

Screw

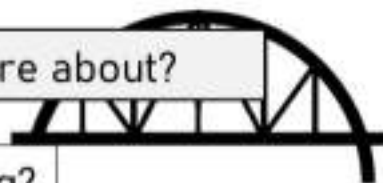
Tape

Experiment - Triangles

Research Question

What are we trying to learn more about?

Are triangles the strongest shape to use when building?



Hypothesis

Will a rectangular object or triangular object be stronger?

Materials

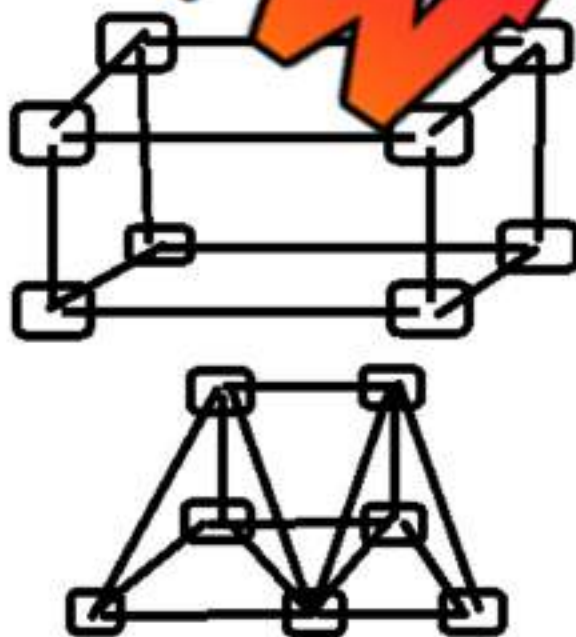
What you will need for this experiment

- Gummies – as fasteners
- Toothpicks
- Weight – books, wood blocks, anything that can be placed on the object

Method

How you will complete the experiment

1. Create a rectangular object using the toothpicks and gummies
2. Rest one weight on the object. Add weight and record how much the object supported
3. Create an object using triangles. You will need to keep adding triangles until the object can support a weight



Observations

What happened?

Which object held more?

Triangle

Rectangle

Results

Answer the questions below

1) Was your hypothesis correct or incorrect? Explain.

2) Which shape is the strongest?

Triangles

Rectangles

3) Draw diagrams of your objects

Activities - Fasteners

Word Search

Find the words from the word bank



Tape	Glue	Button	Zipper	Nail
Screw	Rope	Staple	Cement	Paperclip

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

Word Scramble

Unscramble the words from the word bank



ZPIPRE		GULE	
CNEEMT		SLPATE	
TPAE		NALI	
PPLIARCEP		BOTTUN	
SCWER		REOP	

Building Objects

Questions

Which materials and fasteners would you use to build the objects?

1a) If you were making a poster with cut up drawings on the poster, which materials would you use?

Wood (Paper)

Metal

Fabric

Stone

b) Which fasteners would you use?

Nails

Zipper

Glue

Tape

Buttons

Staples

2a) If you were building a bridge across a stream of water, which materials would you use?

Wood

Fabric

Stone

b) Which fasteners would you use?

Nails

Zipper

Glue

Tape

Buttons

Screws

3a) If you were building a desk, what materials would you use?

Wood

Metal

Fabric

b) Which fasteners would you use?

Nails

Zipper

Rope

Tape

Buttons

Screws



4a) If you were making a small shelter in the woods that you were only using for one night, which materials would you use?

Wood

Metal

Fabric

Stone

b) Which fasteners would you use?

Nails

Zipper

Glue

Tape

Rope

Screws

Coding - Making Objects

Directions

Follow the code to design a hot air balloon

run program

cut out all the shapes

paste the balloon in the middle

paste the stripes on the balloon

paste the clouds on the top of the page

paste the ropes below the balloon

paste the top to the balloon

paste the top of the balloon



Balloon



Stripe



Top



Ropes



Cloud

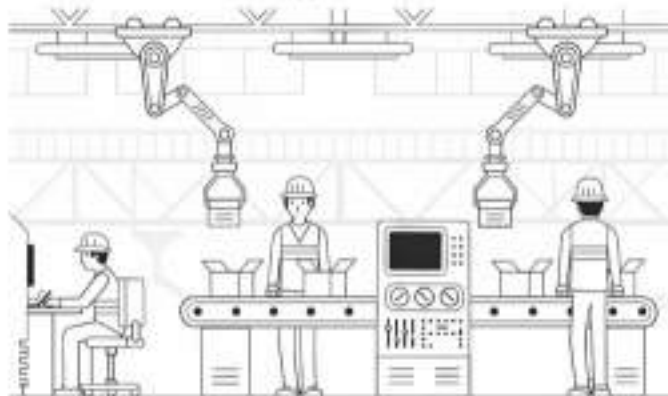


Cloud

Coding – Robot Assembly Lines

Today, code is used to program robots to do work. Assembly lines use robots to do boring work. Robots are good at:

- ✓ Working hard – they do not get tired
- ✓ Lifting heavy
- ✓ Working day and night
- ✓ Doing dangerous work



We still need people to fix the robots. When a robot breaks, a human fixes the robot. People also make sure they are working.

Fill in the Blanks

Use the words to fill in the blanks

Word Bank	
night	hurt
robots	hard



- 1) _____ is written so robots know what to do.
- 2) Robots are good at working _____.
- 3) Robots can work all day and all _____.
- 4) Robots don't get _____ so they can do dangerous work.
- 5) Robots can lift _____ things.
- 6) We need humans to fix _____.

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 for each question.

1) Are robots programmed using code to work?	Yes
	No
2) Do robots get tired while working all day?	Yes
	No
3) Can robots do dangerous work safely?	Yes
	No
4) Do humans still need to fix robots sometimes?	Yes
	No

Name: _____

Mark

Circle yes or no for each question.

1) Are robots programmed using code to work?	Yes
	No
2) Do robots get tired while working all day?	Yes
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3) Can robots do dangerous work safely?	Yes
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Name: _____

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3) Can robots do dangerous work safely?	Yes
	No
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	No

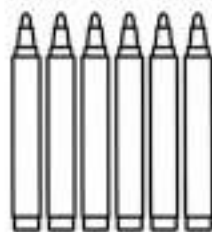
Activity – Making a Pencil Holder

You can build a pencil holder out of many different materials. Choose materials that you have to make a pencil holder that can stand on its own and hold pencils inside.

Materials

What do we need for our activity?

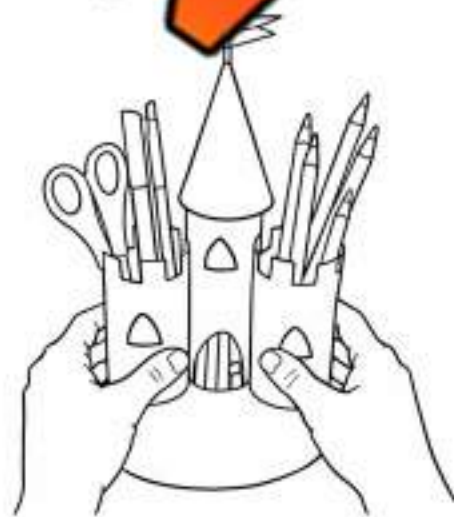
- ✓ Materials for the frame of the holder. The options below will work
 - ✓ Toilet paper rolls
 - ✓ Marshmallows
 - ✓ Plastic bottle – soda or juice
- ✓ Paper to cover the frame
- ✓ Glue, tape, or hot glue to secure paper to the frame
- ✓ Materials to decorate
 - ✓ Ribbons
 - ✓ Stickers
 - ✓ Markers, crayons, paint



Method

How do we complete the activity?

- 1) Bring materials in and let students see what they have to work with
- 2) Look up pictures of homemade pencil holders to help the planning phase
- 3) Make a plan on the back of this page of what materials you will use
- 4) Make a rough copy of the design you will use on the back of the page
- 5) Begin construction!



Plan

Plan your pencil holder below

1) What materials will you use to make your pencil holder?

Cardboard	Paper	Glass	Wood	Plastic	Other
-----------	-------	-------	------	---------	-------

2) Are the materials strong enough to hold pencils up?

3) Draw a drawing of your pencil holder.



Where Materials Come From

Directions

Write the materials that are found in the pictures below

Cloth

Rubber

Stone

Metal

Wood

Paper



Cloth

Rubber

Stone

Metal

Wood

Plastic



Cloth

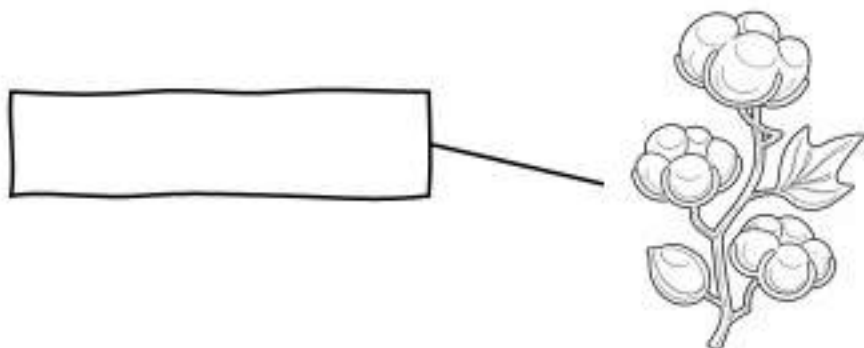
Rubber

Stone

Metal

Wood

Paper



Materials – Wood and Paper Products

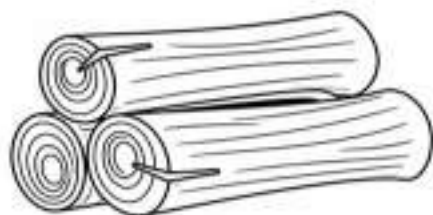
Directions

Fill in the flowchart below by drawing pictures

Trees



Logs



Firewood

Lumber

Pulp



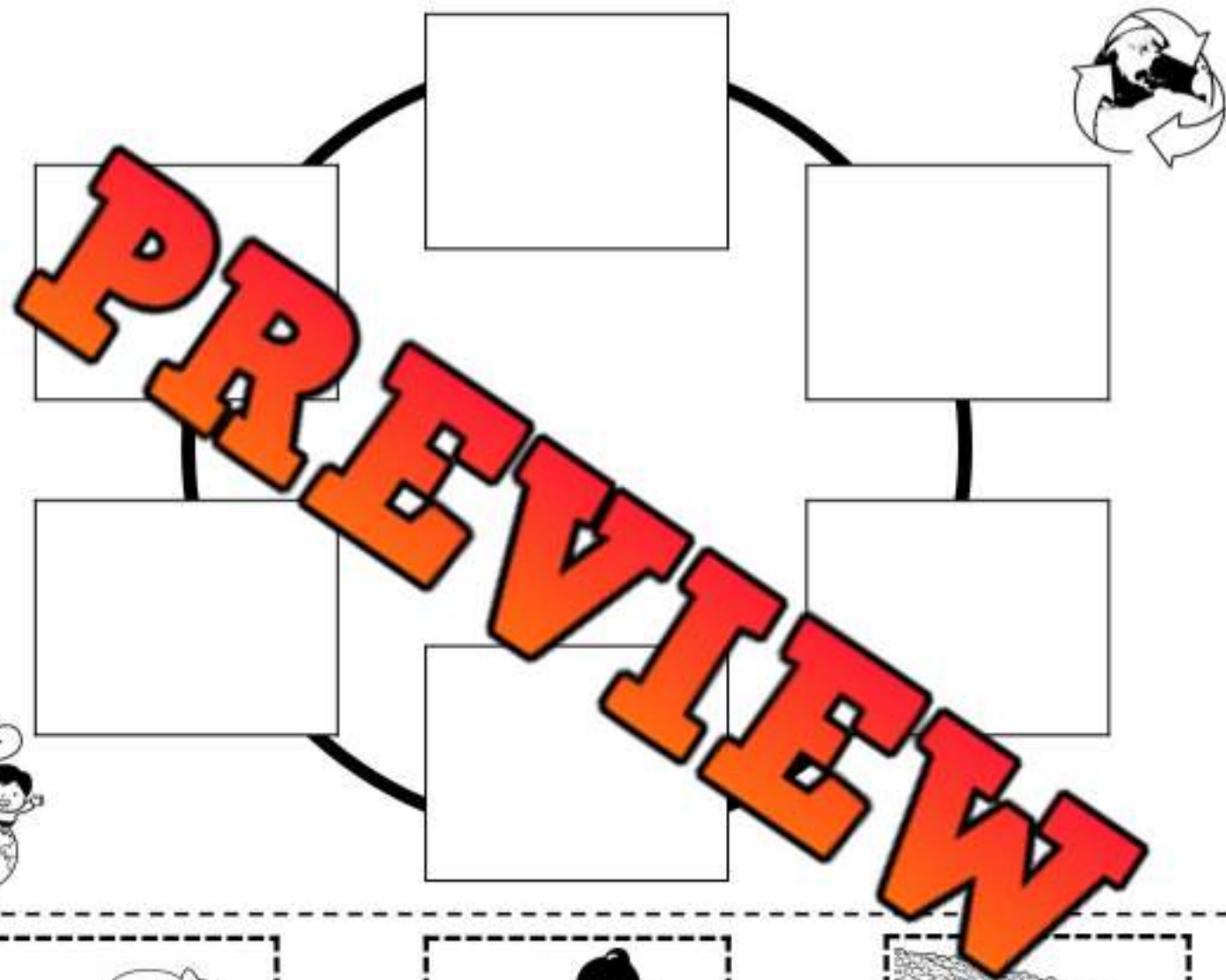
Cardboard

Paper

Recycling - Paper

Cycle

Copy and paste the recycling process of paper products



Materials - Plastic

Plastic is made of fossil fuels. Oil and natural gas are fossil fuels found in the ground. They are used to make the plastics we use everyday.

To make plastic, oil and natural gas are heated. The plastic made is formed into water bottles, food packaging, auto parts and medical tools. Plastic is hard to last. It takes the average plastic item between 10 to 1000 years to decompose. That is why it is best to recycle plastic when we are done with it. If we recycle, the plastic can be used again.



Fill in the Blank. Write the missing word?

Bar		
Food	Oil	Recycle
Water Bottles	Natural Gas	Identified



- 1) Plastic is made from heating _____.
- 2) Plastic is also made from _____.
- 3) Natural gas and oil are found _____.
- 4) Plastic is used to make _____.
- 5) A lot of the _____ we buy is packaged in plastic.
- 6) Plastic lasts a long time, so we should _____ it.

Recycling - Plastics

Facts

How do you feel about the fact? Draw a happy or sad face

Facts		 
1)	10 million tons of plastics are dumped into our oceans each year.	
2)	Humans use 100 kilograms of plastic in their lifetimes.	
3)	There will be more plastic in the oceans than fish by 2050.	
4)	A clean-up organization pulled over 100 kilograms of plastic from the ocean.	
5)	If you eat fish, you are eating plastic.	
6)	When you recycle plastic, it is used to remake things. This keeps the plastic out of the oceans.	
7)	There are between 50 to 75 trillion pieces of plastic in the oceans.	
8)	Canada has joined the Zero Plastic Waste program. The program is hopeful to stop plastic waste.	

Professionals Working With Materials

Why Materials Matter: Learning about Jobs

Materials are all around us! They're in our homes, our schools, and the things we play with. Some people have jobs where they need to know a lot about materials. Let's explore a few!

- Carpenter: A carpenter is a person who builds things with wood, like tables and chairs. Carpenters need to know which woods are strong for building furniture and which woods are best for carving nice designs.
- Engineer: An engineer is a person who designs and builds things like bridges, cars, and even airplanes! They need to know about different materials to pick the best ones for their projects. For example, they need to know that steel is strong for building bridges and plastic is used for making parts of a car.
- Designer: Designers create things like clothes, websites, and even whole rooms! If they're designing clothes, they need to know about different fabrics: like cotton is good for making t-shirts and silk can make a pretty dress.
- Knowledge Keeper or Elder: Knowledge Keepers or Elders are very respected in many Indigenous cultures. They know a lot about the natural materials from the Earth, like stone, wood, and animal skins. They use this knowledge to teach others about making tools, clothing, and shelters.



Question Which job would you want that works with materials? Explain.

Yes/No Give the answer yes or no?

1) Do engineers work with materials?	Yes	No
2) Do carpenters work with materials?	Yes	No
3) Do engineers build structures like bridges?	Yes	No
4) Do designers make clothes?	Yes	No
5) Do elders keep their knowledge to themselves?	Yes	No

Colour Colour the professionals working with materials.

Exit Cards

Cut Out

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

Name: _____

Mark

Draw a line from each word to its correct meaning.

Engineer ☐☐ Builds things using wood, like tables and chairs**Carpenter** ☐☐ Designs and builds things like bridges and cars**Elder** ☐☐ Creates clothes and chooses fabrics for projects**Designer** ☐☐ Teaches others using natural materials from the land

Name: _____

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Draw a line from each word to its correct meaning.

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How Indigenous Groups Use Materials

Respect for Land and Materials

First Nations, Métis, and Inuit have special ways to use materials from the land. They make things like clothing, tools, and homes using what nature gives them. Let's see how they do it:



- Traditional Knowledge: They use the knowledge passed down from their ancestors. Elders tell the children how to use materials properly. The same knowledge has been passed down for thousands of years!
- Time of Year: They know that different times of the year are good for collecting different materials. For example, in the fall they might gather birch bark because it peels off the trees easily.
- Availability: They look around to see what materials are available. If they live in a forest, they might use a lot of wood. If they live near a river, they might use a lot of clay or stone.
- Taking Only What is Needed: They respect nature and only take what they need. For example, if they need birch bark for a basket, they only take enough bark for that one basket.
- Respect for the Land: They thank the land for its gifts. This can be done by saying a prayer or doing a ceremony. They always make sure to leave the land as they found it, so it can be used for many years.



Question

Do the Indigenous waste natural materials? Explain.

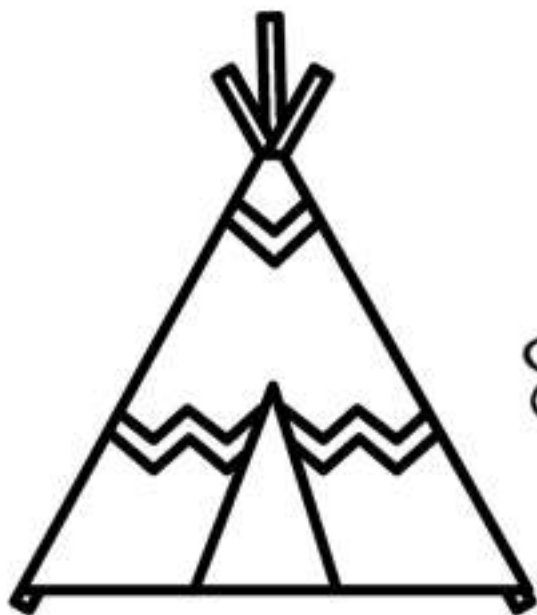
Yes/No

sw yes or no?

1) Do the Indigenous use natural materials?	Yes	No
2) Do the Indigenous take what they need from the land?	Yes	No
3) Are the same materials available now?	Yes	No
4) Does birch bark peel easier in the spring?	Yes	No
5) Do elders share information with kids?	Yes	No

Colour

Colour the Indigenous objects below.



Dene Birchbark Baskets

Dene Birchbark Baskets

The Dene people, who are a First Nation in Canada, are known for making beautiful baskets using birchbark. Here is how they do it:

- 1) Find a Tree: The Dene look for a birch tree. Its bark is strong and can bend.
- 2) Get the Bark: They peel the bark off the tree. They are careful and take only what they need.
- 3) Prepare Bark: They clean the bark and let it dry. If needed, they dip it in water to make it more bendy.
- 4) Cut the Bark: They cut the bark into shapes for the basket. It can be round or square.
- 5) Join the Basket: They use roots or bark strips to sew the bark pieces together.
- 6) Decorate the Basket: They decorate the baskets. They might carve pictures into the bark or use natural dyes to dye it.

Think

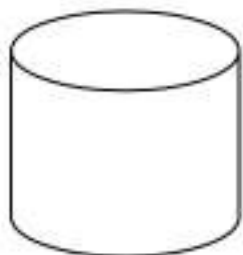
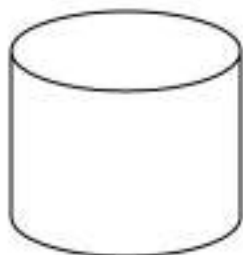
Number the steps below in order from 1 to 6

Answer	Steps
	The Dene cut the bark into shapes for the basket.
	They use roots or bark strips to sew the bark pieces together.
	They clean the bark and let it dry.
	The Dene look for a birch tree.
	They peel the bark off the tree.
	They decorate the baskets.



Colour

Colour the birchbark baskets below

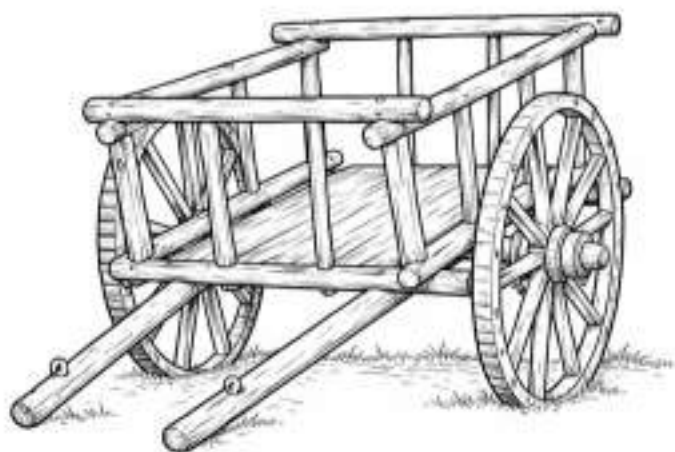


Red River Carts

Red River Carts

Once upon a time, people of the Métis community in Canada made something really useful called Red River carts.

These carts were special because they were made from natural materials!



Making the Cart

The Métis people used wood to build these carts. They used strong wood from oak trees to make the frame and wheels of the carts. The big wheels were often covered with buffalo hide or a layer of skin from a large animal, to make them stronger. Even though they were strong, they made a loud squeaking noise when they moved!

Using the Cart

Red River carts were very important for moving things around. They were like big, strong shopping carts that could carry lots of things! People used them to carry food, furs, and even their families over long distances.

Why they were Important

These carts were so important because they were very strong and could travel on rough paths. They could even cross rivers! This made it easier for people to travel and trade things with others.

Question

What were Red River Carts? Who made them?

Yes/No

Answer yes or no?

1) Could these carts be used on a road?	Yes	No
2) Were the wheels made of animal skin?	Yes	No
3) Could the carts carry a heavy load?	Yes	No
4) Did the carts make a lot of noise?	Yes	No
5) Did they use only use natural materials?	Yes	No

Draw

Draw your own Red River Cart Below



Activity – Making a Canoe

Objective

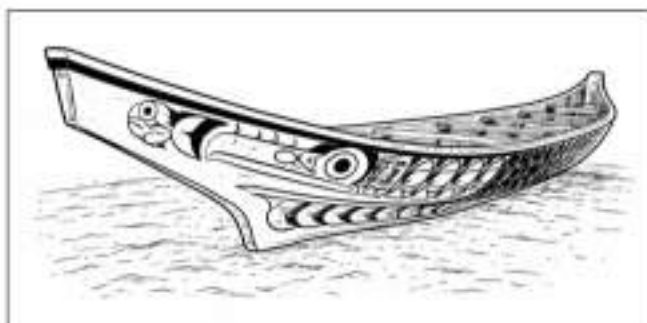
What are we learning more about?

Students will learn about how canoes were made by Indigenous groups in Canada out of natural materials.

Materials

What do we need?

- ✓ Cardstock or thick paper
- ✓ Markers, colored pencils or crayons
- ✓ Glue or tape
- ✓ Canoe template



Method

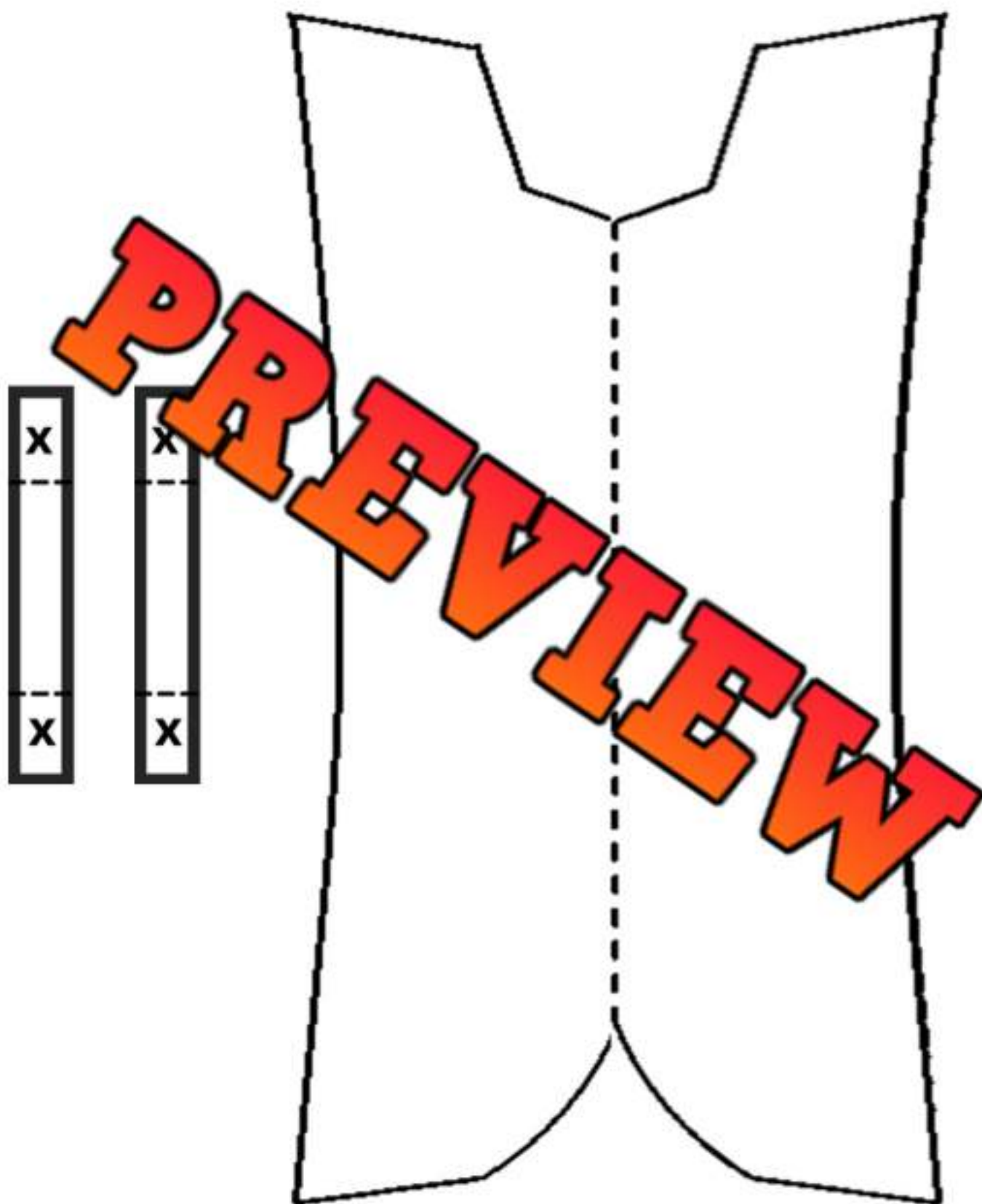
How do we make the canoe?

- 1) Print the template on thick paper or cardstock.
- 2) Have the students colour the canoe (both sides). Encourage them to look at Indigenous art and designs for inspiration, but also to be creative with their own ideas.
- 3) Instruct the students to carefully cut out the canoe template along the lines.
- 4) Have the students fold the paper along the folding line, creating the shape of the canoe.
- 5) Paste or tape the bottom edges of the canoe together (do not paste the top of the canoe together). This should allow the canoe to hold its shape.
- 6) Cut the seats out (two rectangular pieces). They should be coloured brown.
- 7) Use tape or glue to secure the seats to both sides of the inside of the canoe. The seats will help hold the canoe together.
- 8) Let the canoe dry before displaying it.

Name: _____

90

Curriculum Connection
M2.5



Unit Test – Materials, Objects, Structures

Matching

Draw a line from the thing made to the material it is made of







● Wood

● Metal

● Plastic

● Fabric

● Glass







● Wood

● Metal

● Plastic

● Fabric

● Glass

Directions

Circle whether the object is made of 1 or more than 1 material



1	More Than 1
---	-------------



1	More Than 1
---	-------------



1	More Than 1
---	-------------

Absorb or Repel?

Will the object absorb or repel water? Circle your answer.



Absorb Repel



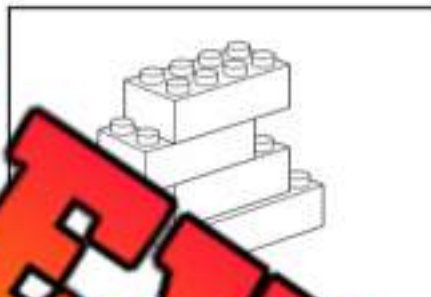
Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel



Absorb Repel

Questions

What is the purpose of the object below?

Analyse The basketball



1) What is the purpose of the basketball?

2) What materials is the basketball made of?

3) Describe the basketball using your senses

Questions Which materials and fasteners would you use to build the structure?

1) If you were making a large bridge that went across a wide river, which materials would you use?

Wood	Metal	Fabric	Stone
------	-------	--------	-------

2) Why would you use that material?

3) Which fasteners would you use?

Nails		Tape	Buttons	Screws
-------	--	------	---------	--------

Think

Are the materials transparent? Are they reflective?

Objects	Transparent – Yes or No?	Reflective – Yes or No?
Paper		
Plastic Wrap		
Cardboard		
Aluminum Foil		
Glass		
Wood		
Mirror		