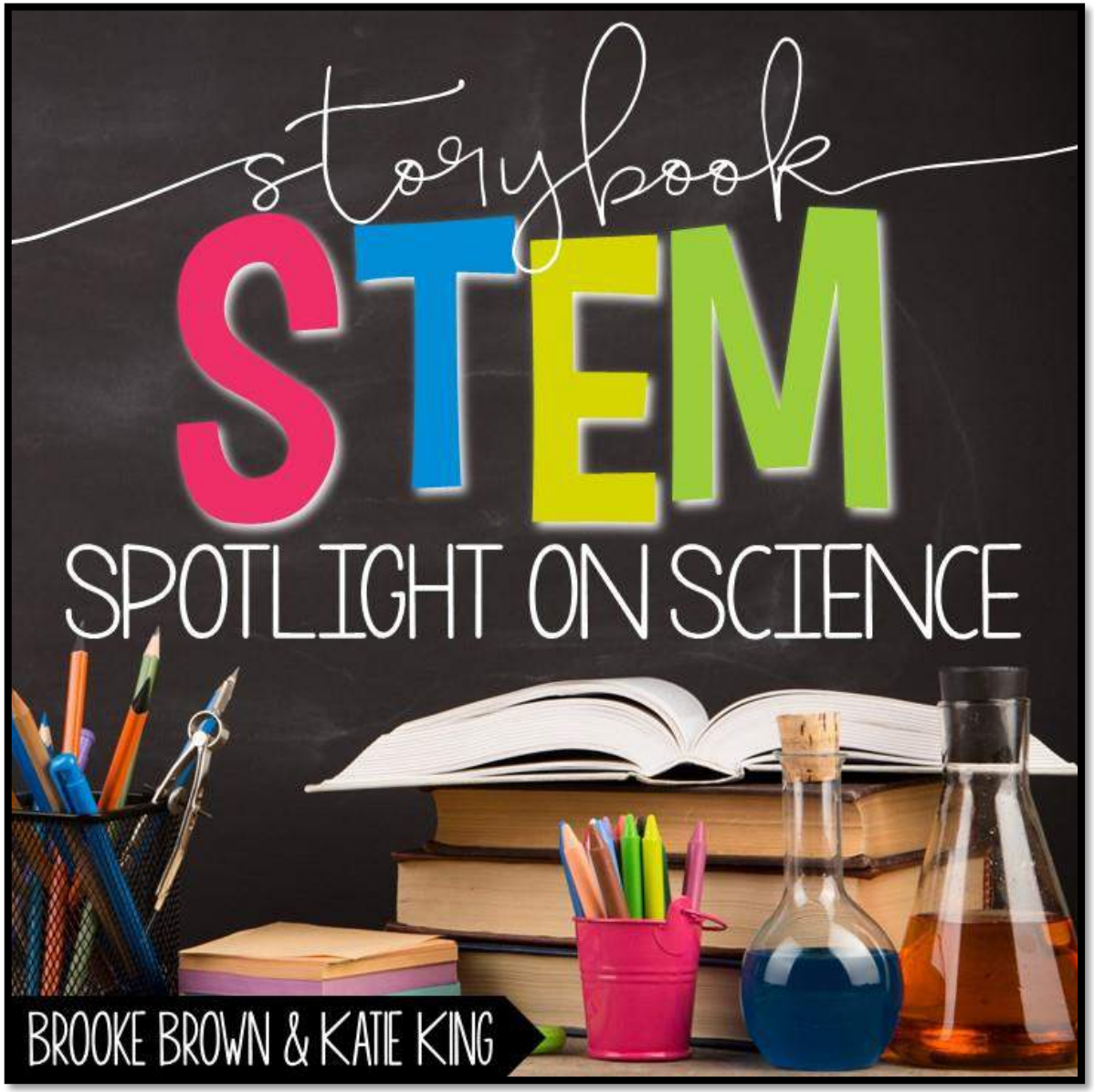
Love Storybook STEM?

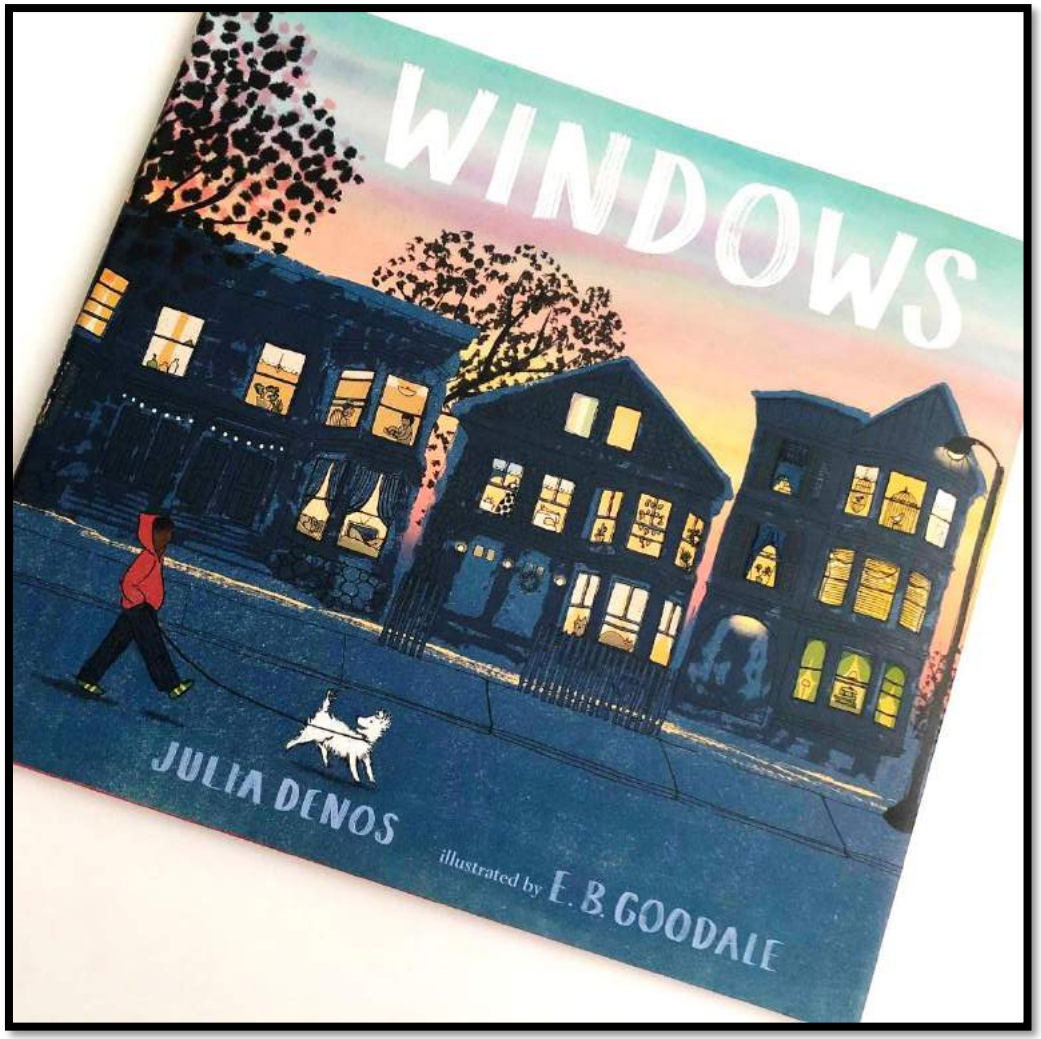
Save BIG with the Science Bundle!

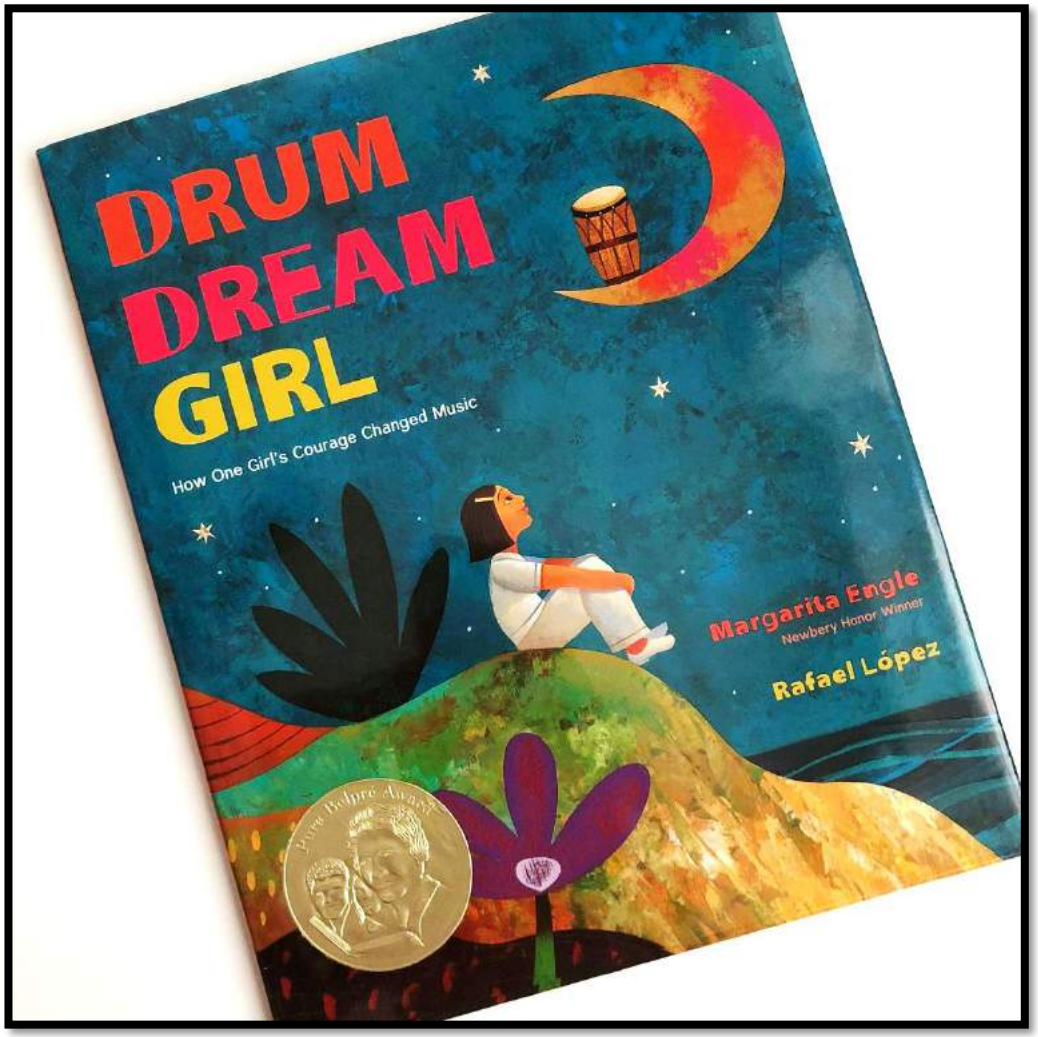
Click Here!



Light and Sound
BOOK SELECTIONS

Click the pictures below to purchase each book through affiliate links on my website.





CONTENTS

WINDOWS BY JULIA DENOS

DRUM DREAM GIRL BY MARGARITA ENGLE

Dig Deeper Into the Text!

Teacher Questions for WINDOWS

*What kind of a community does the boy live in? What kind of home does he have?

*Is it really a neighborhood of paper lanterns? What was he referring to?

*How can you tell that the mom cares about the boy by the illustrations?

*What can you tell about the people in his neighborhood from the illustrations?

*If someone walked by where you live, what might they see through your windows?

*Do you have an after dinner routine with your family? What is it like?

*Why is the boy going for a walk? Do you have pets that you need to care for? What do they need from you?

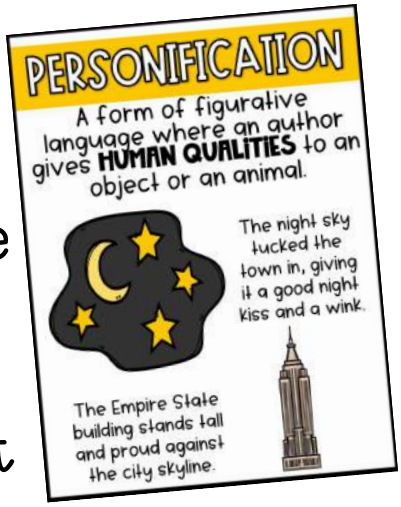
*The boy reads with his mom at the end of the book. Do you read with someone at your house? How does it make you feel?

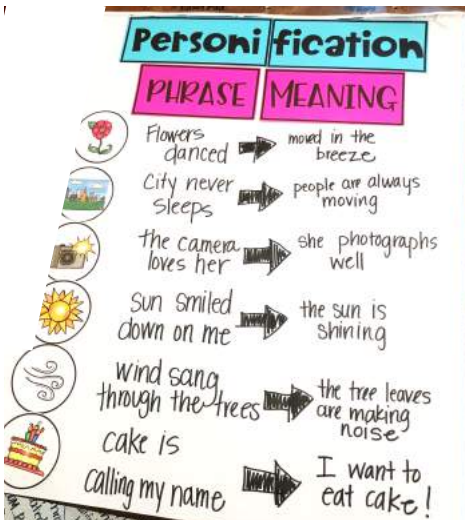
Teachers: Print on colored paper and laminate. Use this bookmark year after year to help extend students' thinking! You can even tape it in the front cover so you always know where it is!

Intended Use

WINDOWS

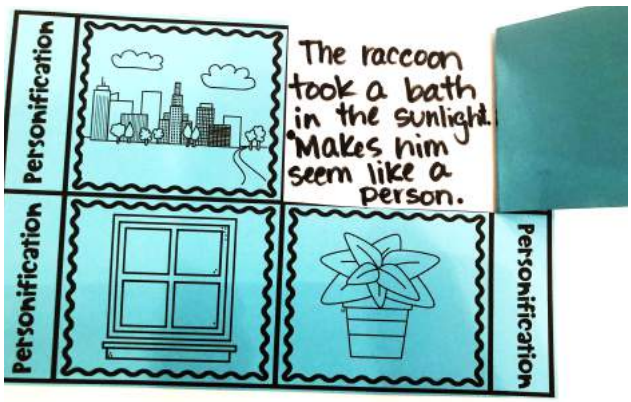
1. After reading *Windows* with students, discuss their general impressions of the book. Use the questioning bookmark to help guide discussion. Introduce the digital anchor chart. Review examples of personification that students might have heard before.



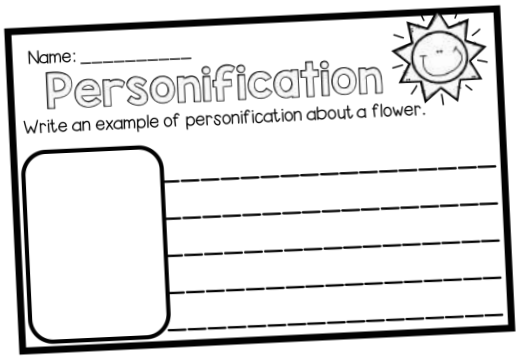


2. Introduce the whole class anchor chart (with all the pieces on but no writing). Watch "Personification" by the Bazillions on Youtube. Complete the rest of the chart together and discuss.

3. Reread the text to the class (Project the text if possible). Have students work to find examples of personification. They will need to complete the flip-flap.

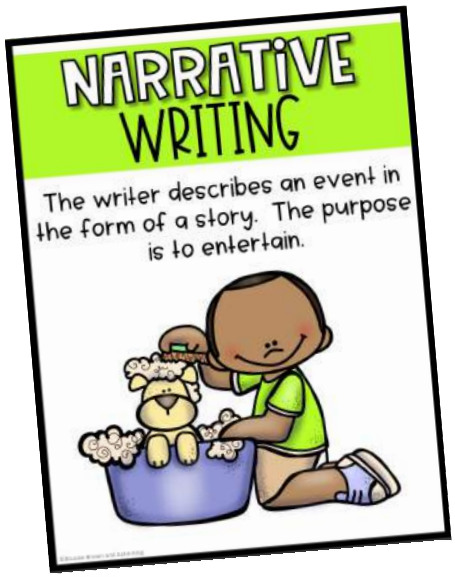


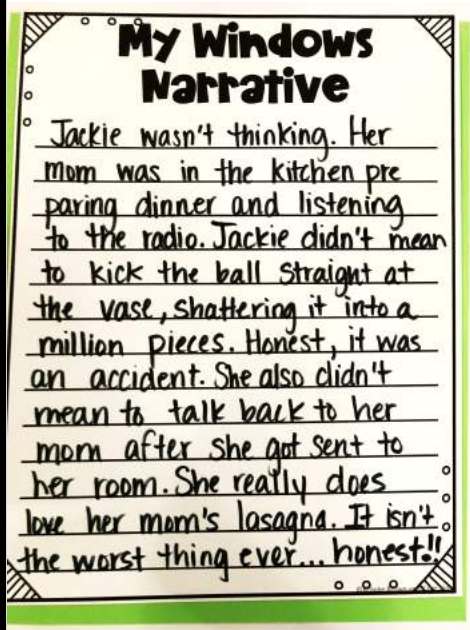
WINDOWS



4. This half sheet can be used as an exit slip to check for understanding of personification.

5. Optional High Flyer activity: Refresh students' memories about Narrative writing. Have them create a story and tell some of the story through illustrations in the window. See the example for more details.





PERSONIFICATION

A form of figurative language where an author gives **HUMAN QUALITIES** to an object or an animal.

The night sky tucked the town in, giving it a good night kiss and a wink.

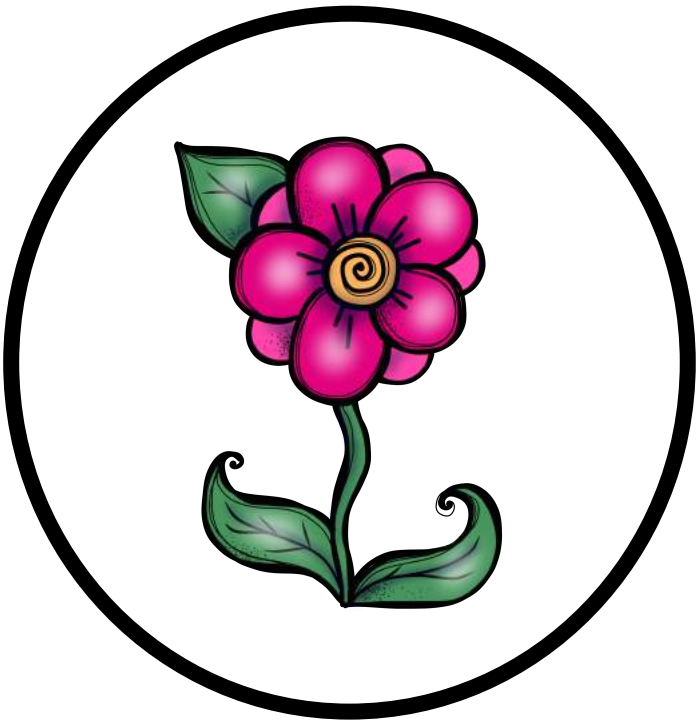
The Empire State building stands tall and proud against the city skyline.

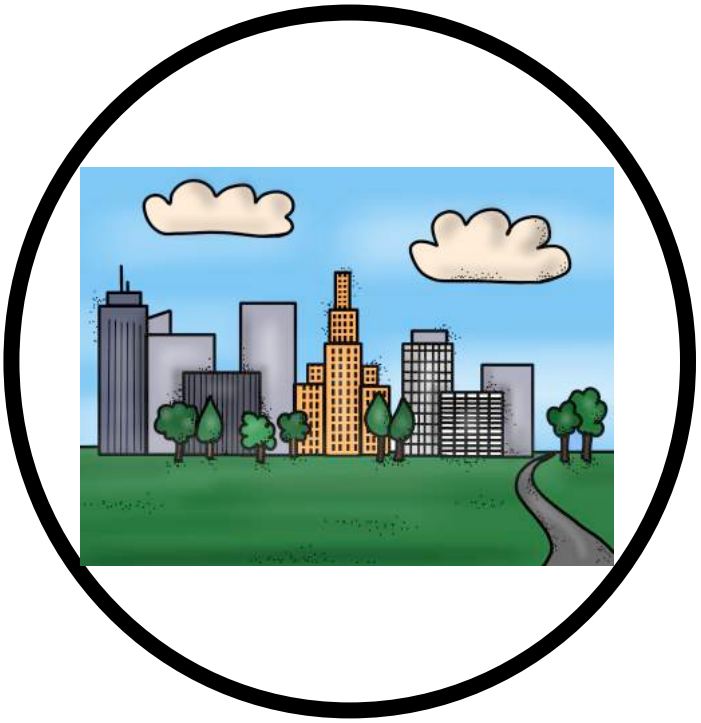
Personi

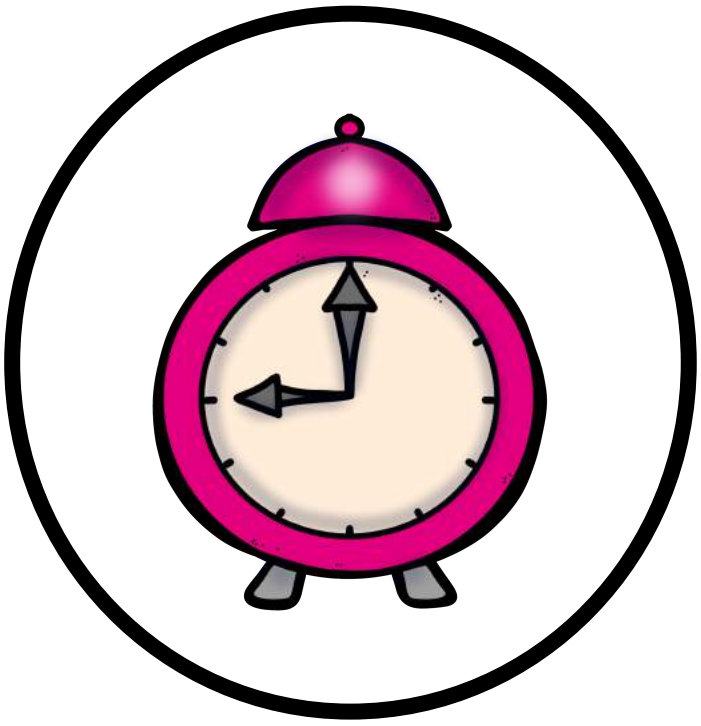
fication

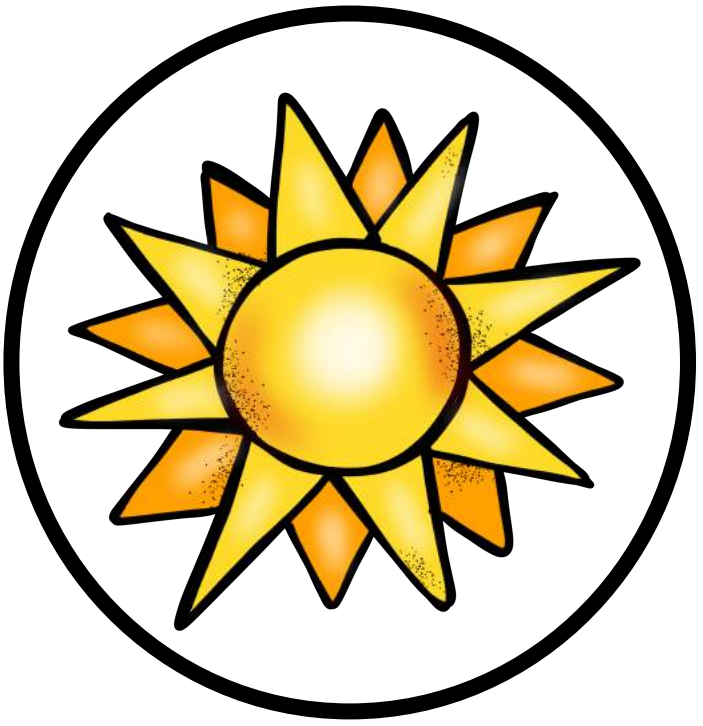
PHRASE

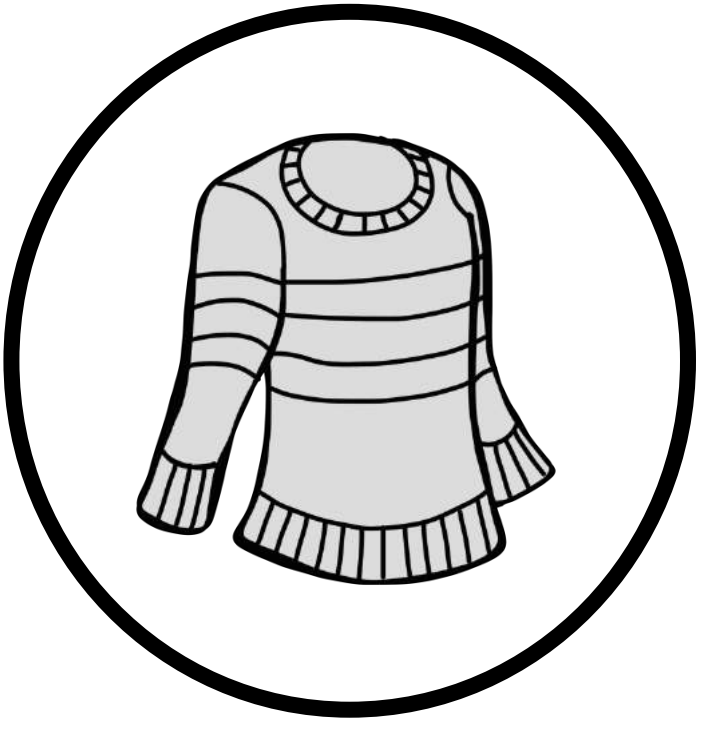
MEANING











Personification

Personification

Personification

Personification

Personification

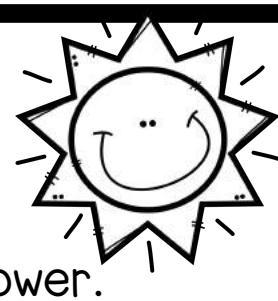
Personification

Personification

Personification

Name: _____

Personification



Write an example of personification about a flower.

Name: _____

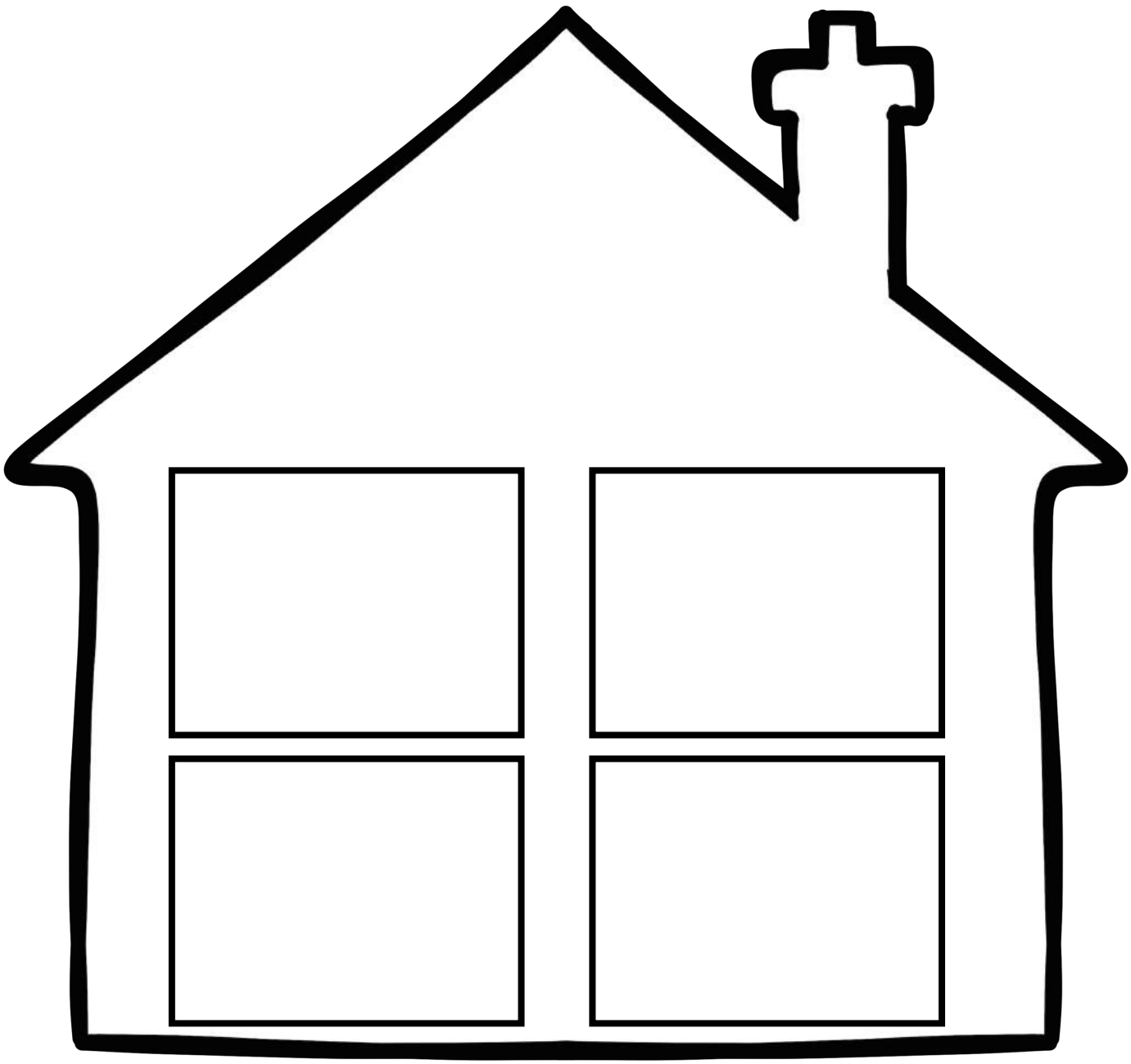
Personification

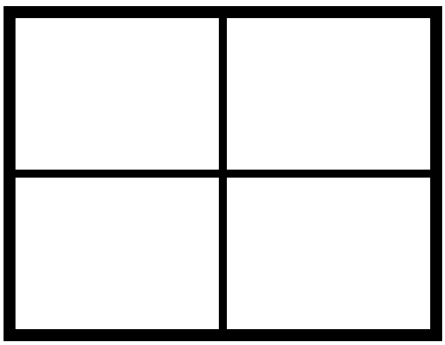
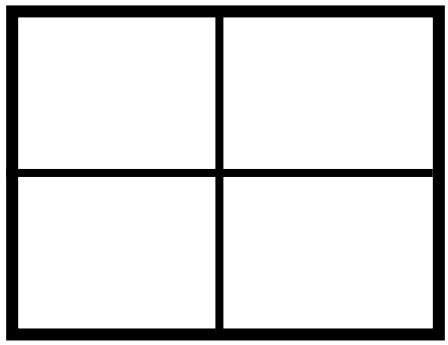
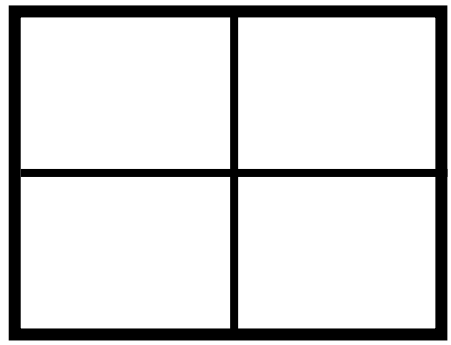
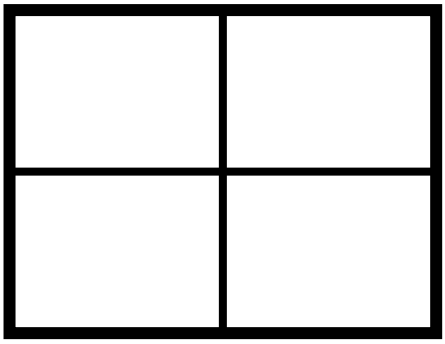
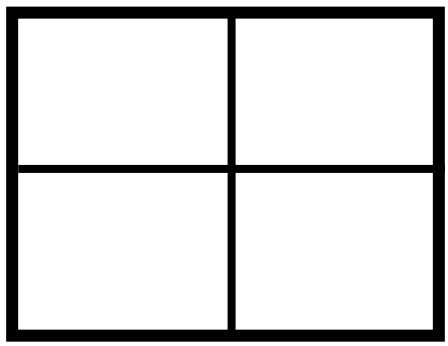
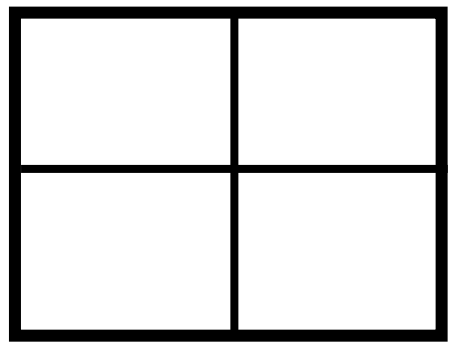
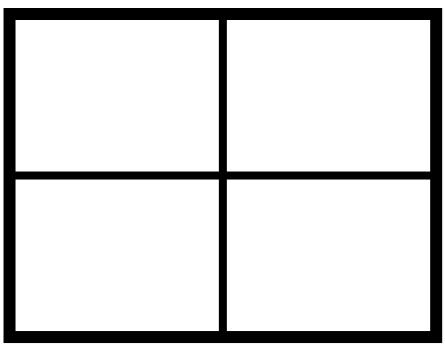
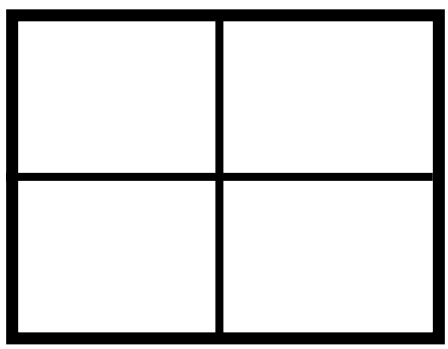
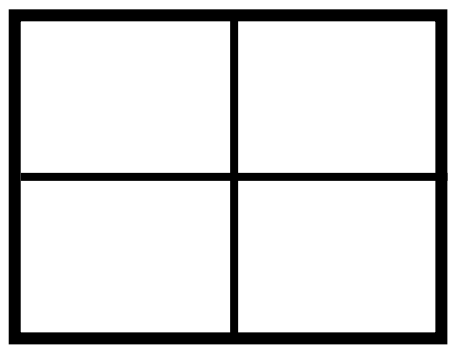
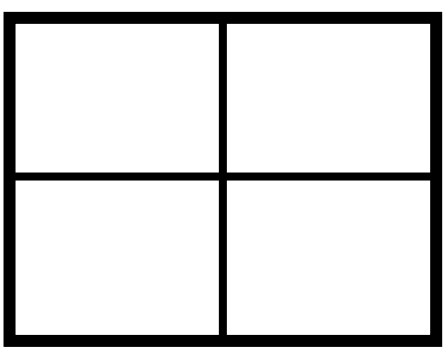
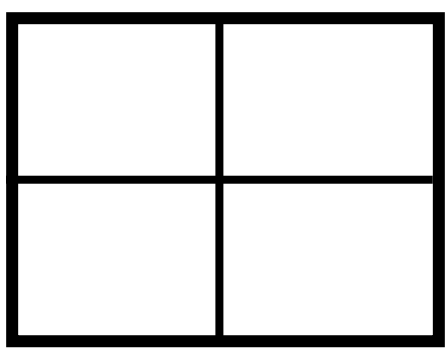
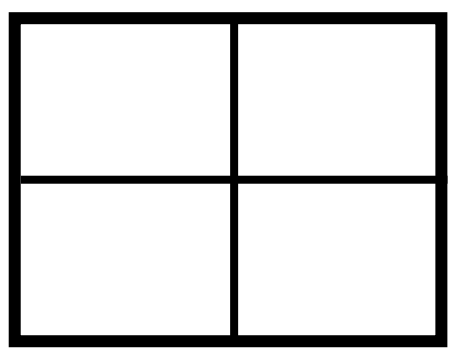
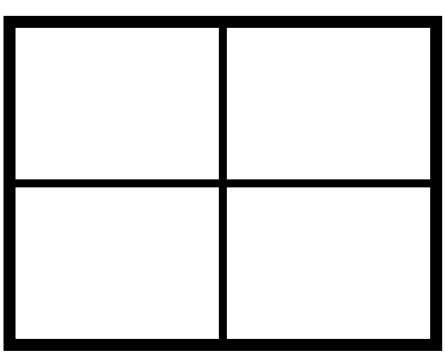
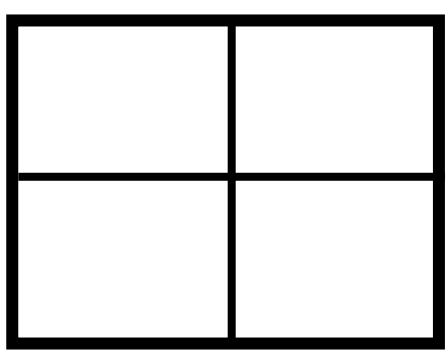
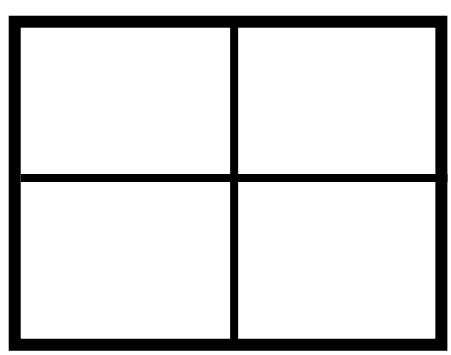
Write an example of personification about a flower.

NARRATIVE WRITING

The writer describes an event in the form of a story. The purpose is to entertain.

My Windows Narrative



My Windows Narrative

VOCABULARY

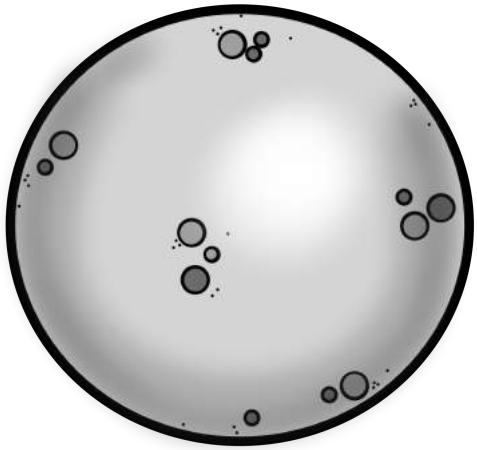
After going over the definitions, teachers can use the cards in all kinds of ways. Have students pair up. Put one of the cards up on the projector and ask the students to come up with a sentence. Another option would be to have the students act out the words together. Keep vocabulary words displayed in the classroom or add them to a ring and use during a word work station.

<u>Teachers</u>: Print the black and white versions on colored paper and have students hold them up as you give examples, synonyms, or antonyms. Be creative! Use this as a quick way to gauge understanding! Scan the room to look for the color you are looking for!

dusk

the time just before night

rounded

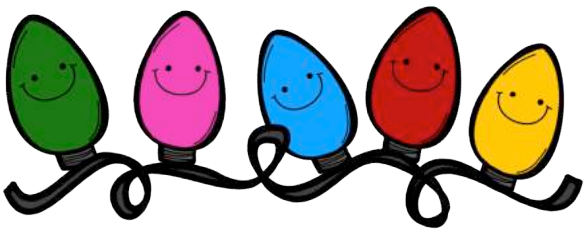


smooth, curved surface

arrive

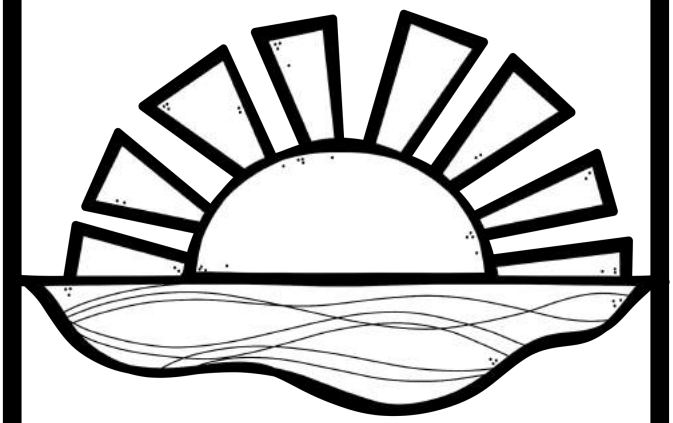
reach a place at the end of a journey

blinking



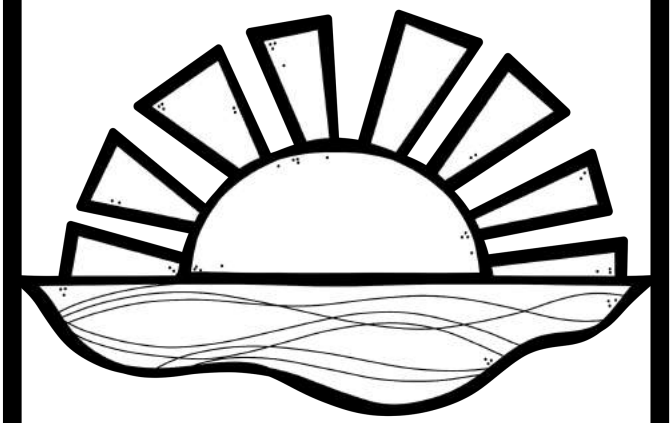
light turning on and off again and again

dusk



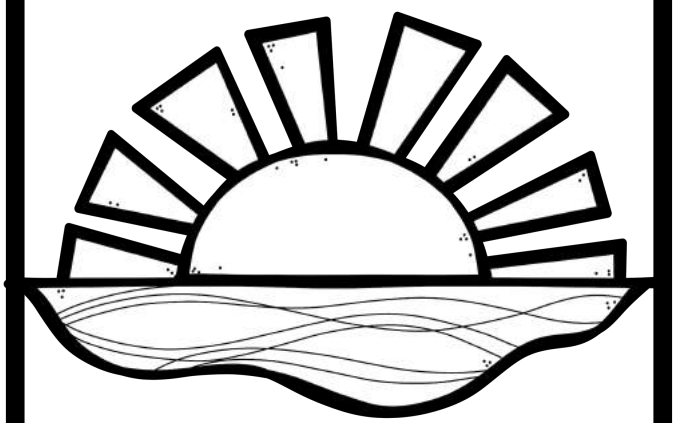
the time just before night

dusk



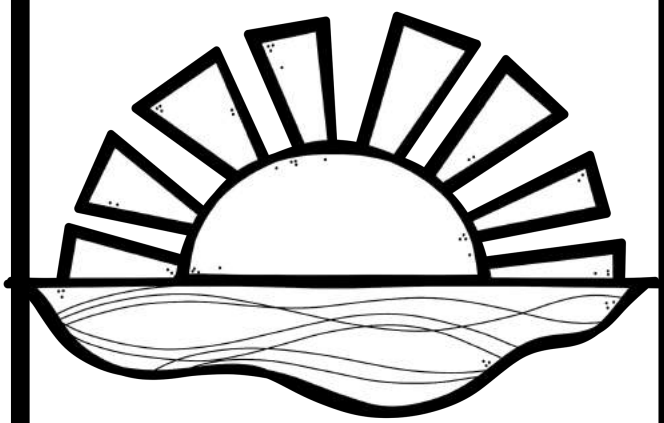
the time just before night

dusk



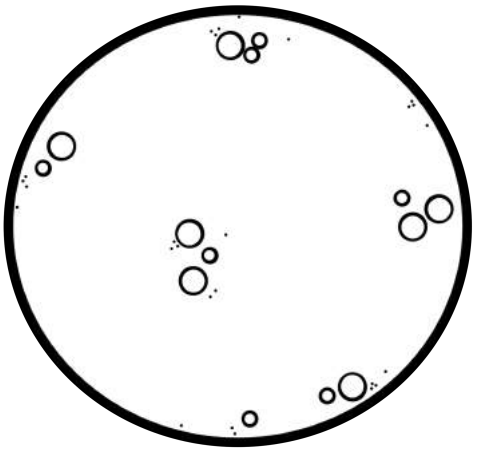
the time just before night

dusk



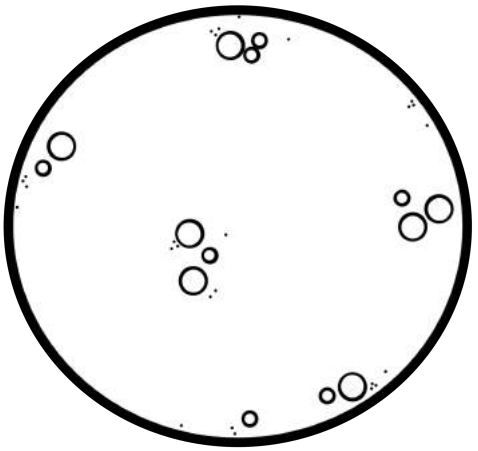
the time just before night

rounded



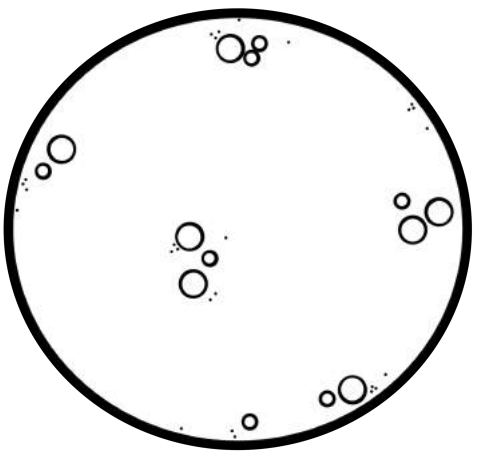
smooth, curved surface

rounded



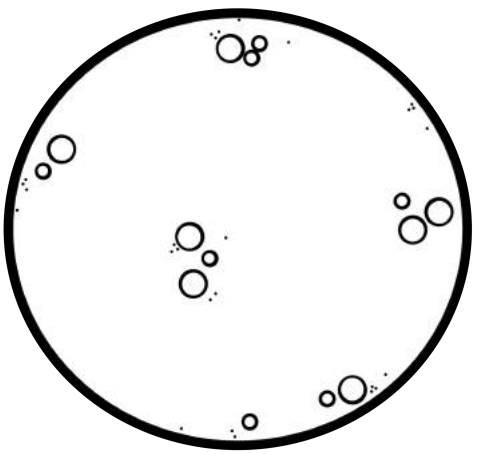
smooth, curved surface

rounded



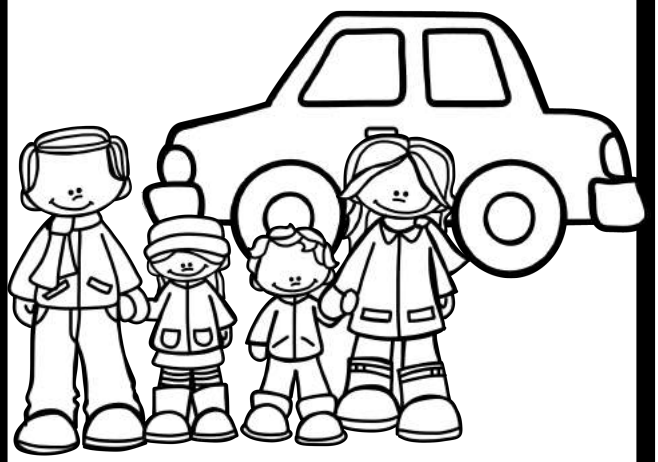
smooth, curved surface

rounded



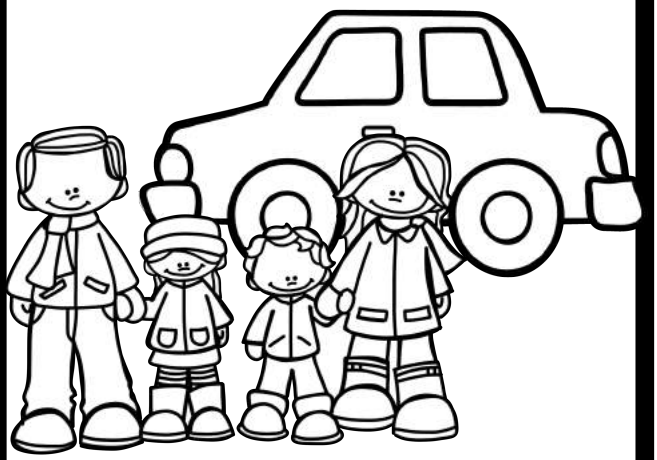
smooth, curved surface

arrive



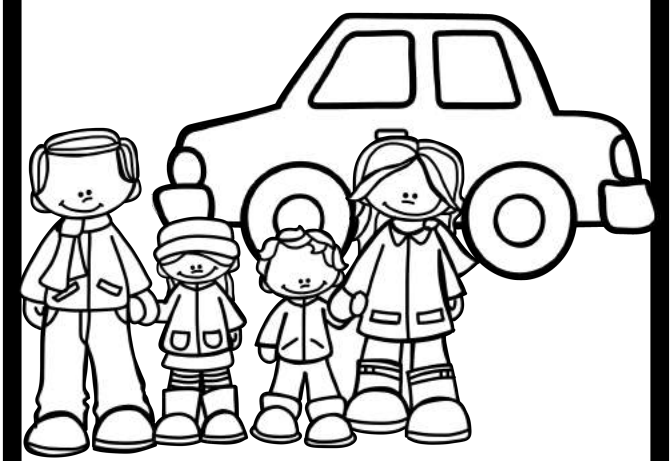
reach a place at the end of a journey

arrive



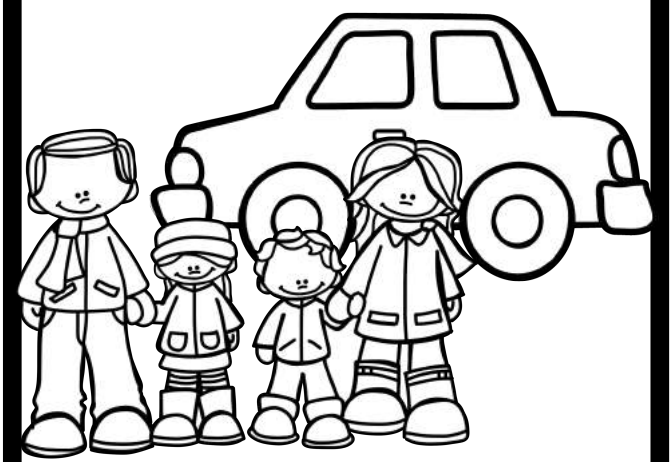
reach a place at the end of a journey

arrive



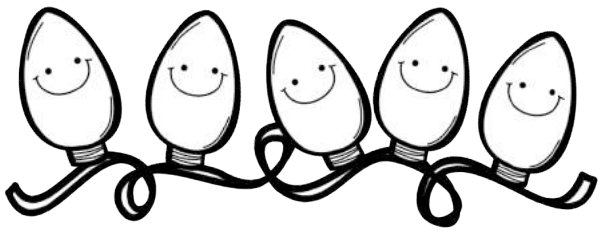
reach a place at the end of a journey

arrive



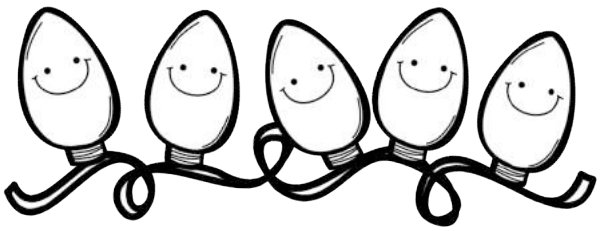
reach a place at the end of a journey

blinking



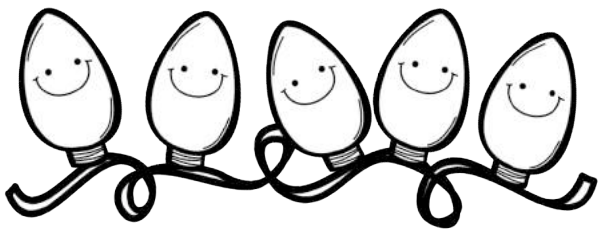
light turning on and off again and again

blinking



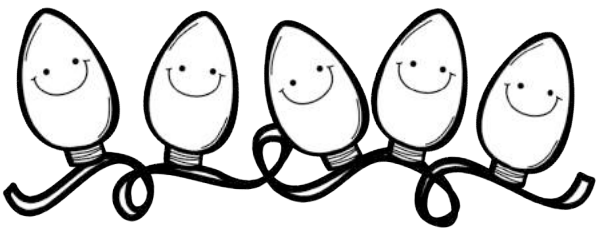
light turning on and off again and again

blinking



light turning on and off again and again

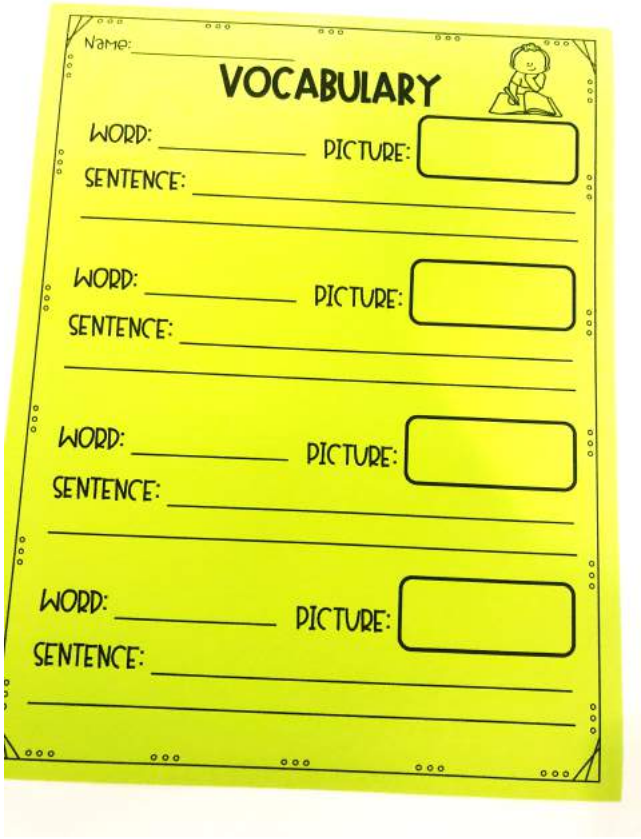
blinking



light turning on and off again and again

WHAT'S MY WORD?

DIRECTIONS: Make headbands either using sentence strips or the long rectangles provided. Either staple on or have kids slide the card into the slit without looking at the word. Students will walk around the room until you tell them to partner up. They will take turns helping each other figure out the words on their heads by giving clues! In order to keep playing, switch out the cards or the whole headbands. The printable can be used to check for understanding.



My Word

dusk

Describe me!

rounded

Describe me!

arrive

Describe me!

blinking

Describe me!

Name:_____

VOCABULARY

WORD: _____ PICTURE:

SENTENCE: _____

_____

WORD: _____ PICTURE:

SENTENCE: _____

_____

WORD: _____ PICTURE:

SENTENCE: _____

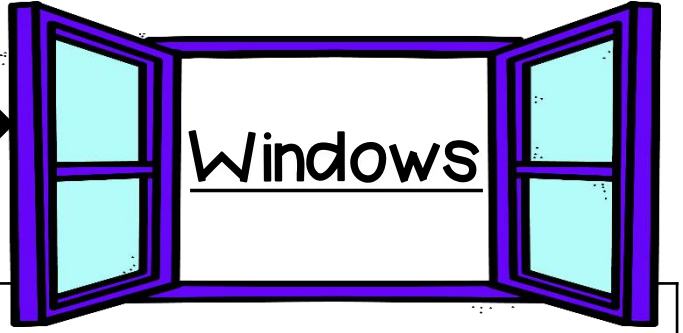
_____

WORD: _____ PICTURE:

SENTENCE: _____

_____

SCIENCE SPARK



THINK, TALK, SHARE:

- Where does light come from?
- What is the difference between natural light and artificial light?
- What are some ways that we can control light? (block it, reflect it, bend it)
- How do mirrors affect light?
- What do windows allow light to do?
- What are some different objects (mediums) that light can pass through?
- What are some objects (mediums) that light cannot pass through?
- What makes shadows? How do shadows change?

EXPLORE:

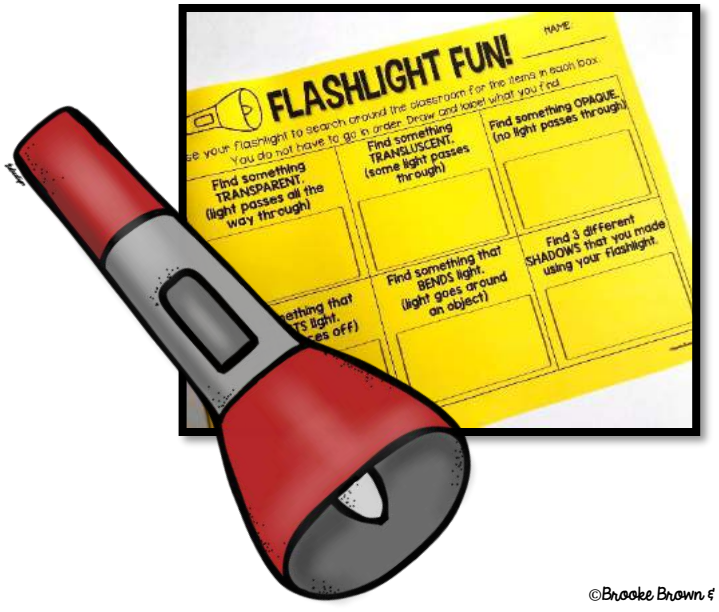
Use the QR Codes and links on the following page to help students explore more information about light. OPTIONAL: Have students complete the foldable facts booklet. (This portion can also be completed as a science center.)

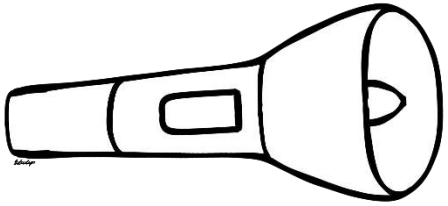
SPARK - FLASHLIGHT FUN:

*Give each pair of students one flashlight. You may choose to have them bring their own flashlights from home. You can also purchase small, inexpensive keychain flashlights at party stores or on Amazon.

*Review the instructions on the Flashlight Fun page with your students. Have them hunt around the classroom with their partners and flashlights until they complete all required boxes on their page.

*Bring students back together as a class to share their discoveries and observations about properties of light.





FLASHLIGHT FUN!

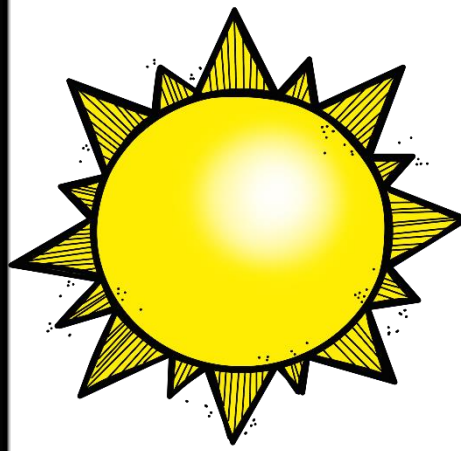
NAME: _____

Use your flashlight to search around the classroom for the items in each box. You do not have to go in order. Draw and label what you find.

Find something TRANSPARENT. (light passes all the way through)	**Find something TRANSLUSCENT. (some light passes through)**	**Find something OPAQUE. (no light passes through)**
Find something that REFLECTS light. (light bounces off)	**Find something that BENDS light. (light goes around an object)**	**Find 3 different SHADOWS that you made using your flashlight.**

LET'S EXPLORE LIGHT!

WHAT IS LIGHT?



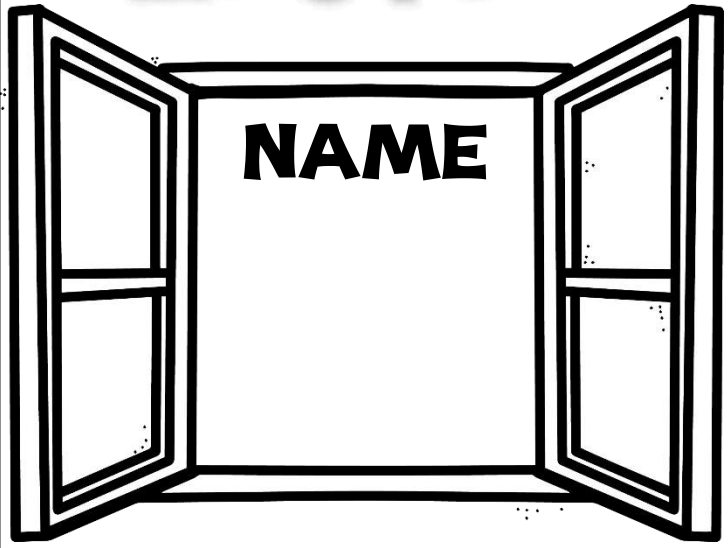
SHADOWS

MAKING RAINBOWS

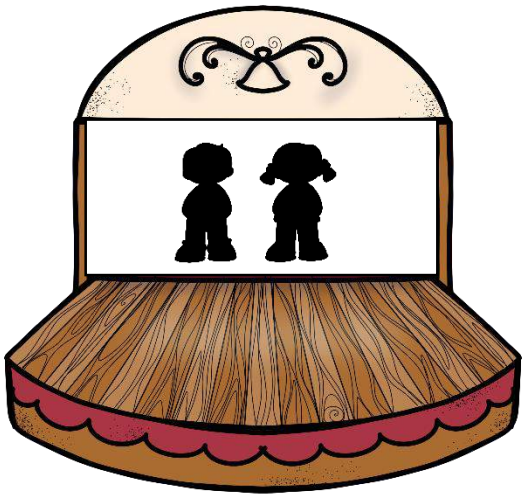
BENDING AND BOUNCING LIGHT

FACTS ABOUT LIGHT

NAME



STEM CHALLENGE: SHADOW PUPPET THEATER



NGSS Standard Alignment: 1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated.1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Challenge Description: Students will create a puppet theater out of a cereal box turned on its side, using a translucent piece of wax paper for the screen. They will also create their own shadow puppets to use in the theater and use them to explore properties of light and shadows. They may use the provided shadow puppet templates or create their own out of black construction paper.

Suggested Materials GROUP OF 2-3 OF STUDENTS: 1 empty cereal box, 1 ft x 1 ft piece of wax paper, scotch tape, scissors, theater template, 4-6 shadow figure templates, 4-6 popsicle sticks, flashlight, 1 piece of black construction paper

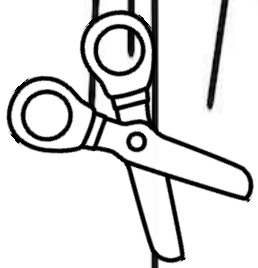
LESSON PLAN

1. SCIENCE SPARK: FLASHLIGHT FUN
2. Ask students to share what they already know about light and shadows. Share the video clips and links on the **"LET'S EXPLORE LIGHT!" page** to prime their background knowledge.
3. Introduce permitted materials and share the STEM challenge and key vocabulary cards. Allow students 45-60 minutes with partners or small groups to design their puppet theaters and shadow puppets, then test them using the flashlights.
4. If time permits, have students use the "Shadow Play" template to write and perform a short play for the class.
5. Hold a whole class closing discussion, asking students to share what they learned about properties of light and shadows.

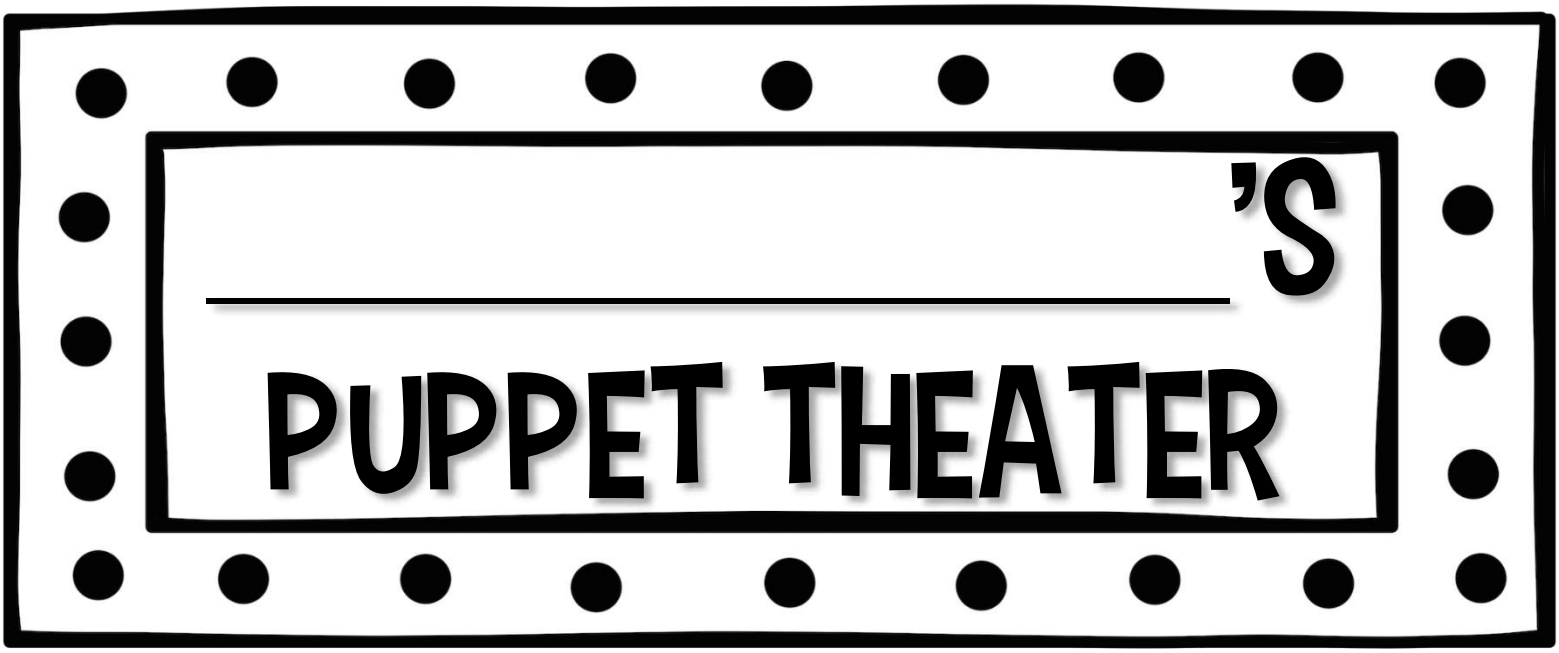
SHADOW PUPPET THEATER

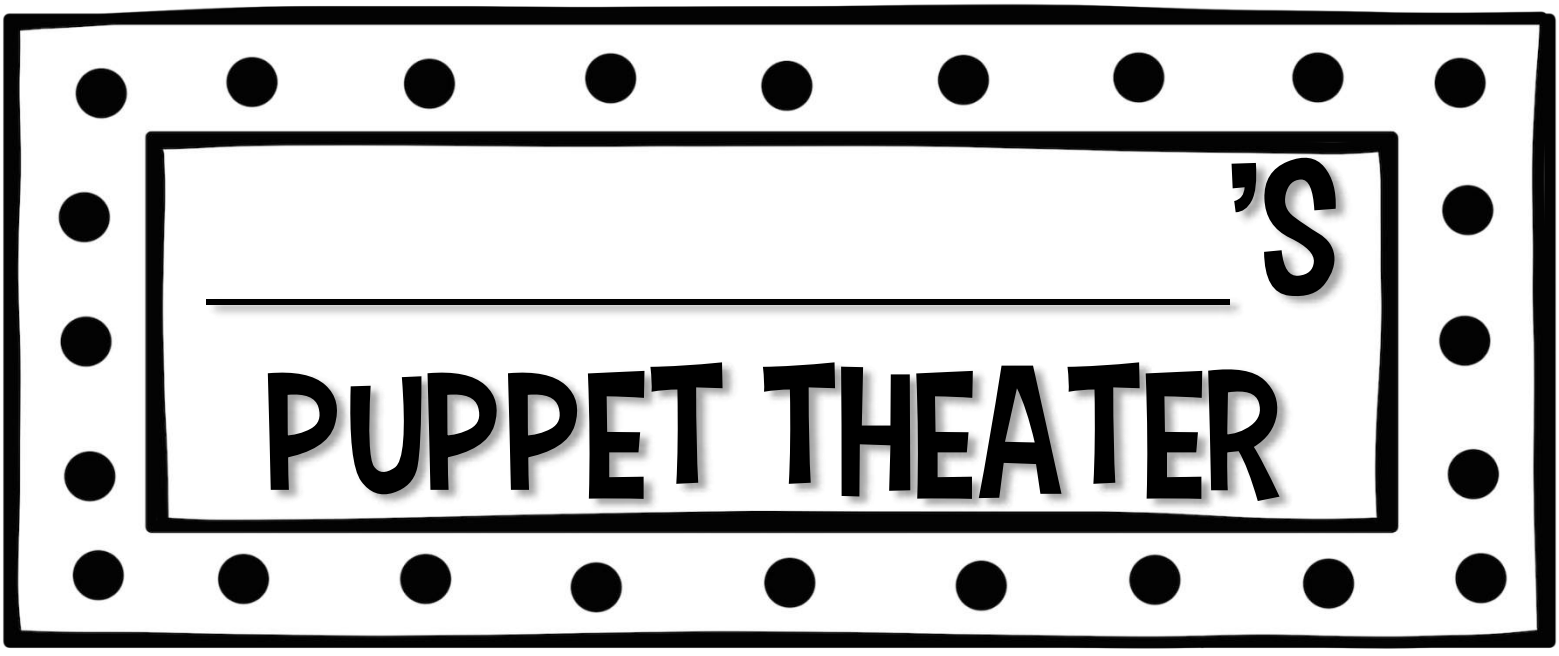
Windows

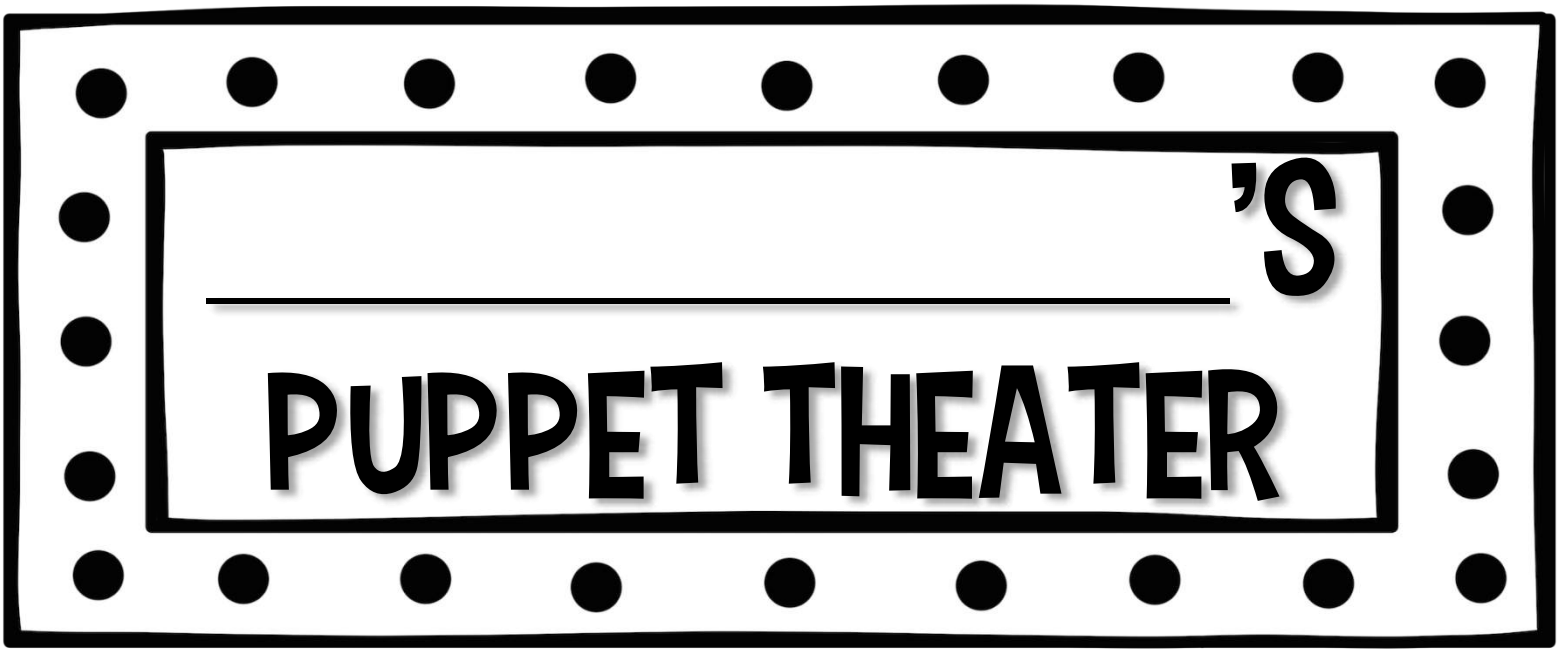
Possible Product



Cut out this center section and tape to the front of your box. Tape wax paper over the opening.

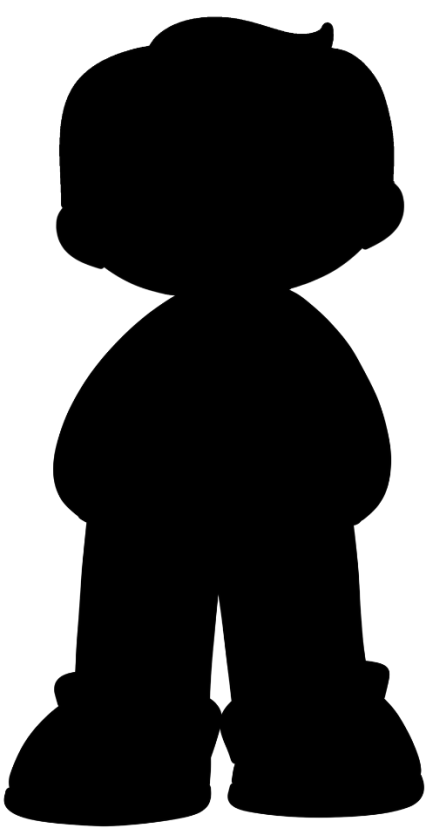


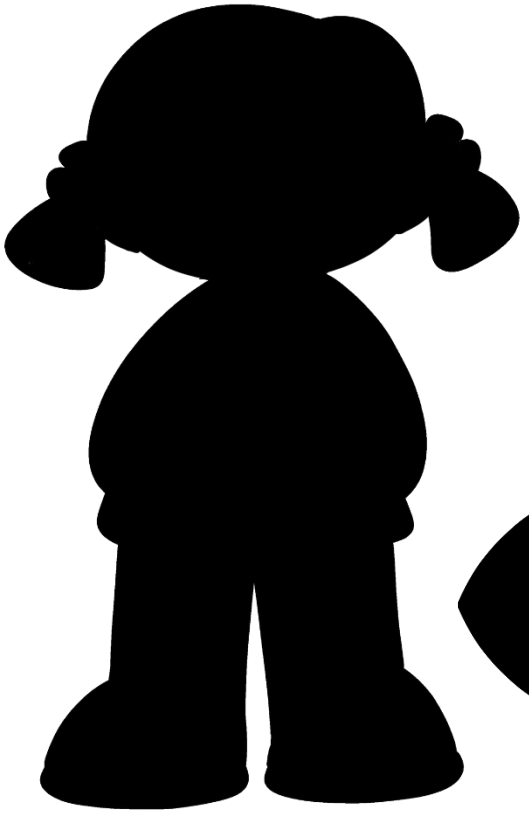


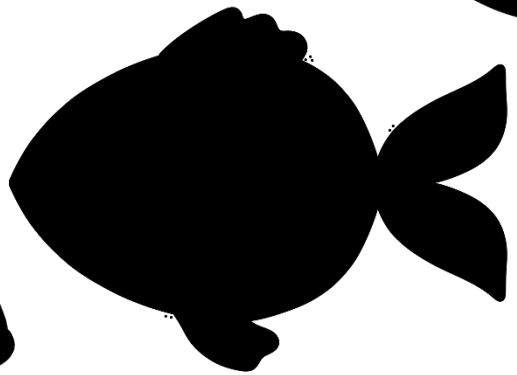


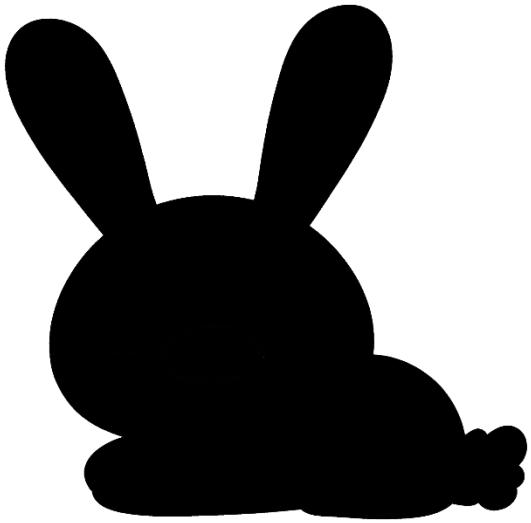
SHADOW PUPPETS

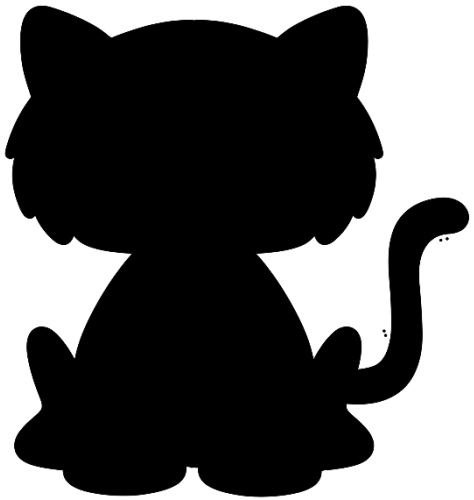
Cut out and glue or tape onto popsicle sticks.

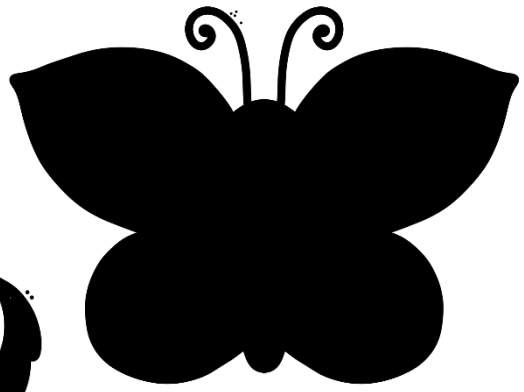


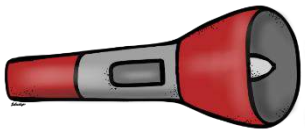










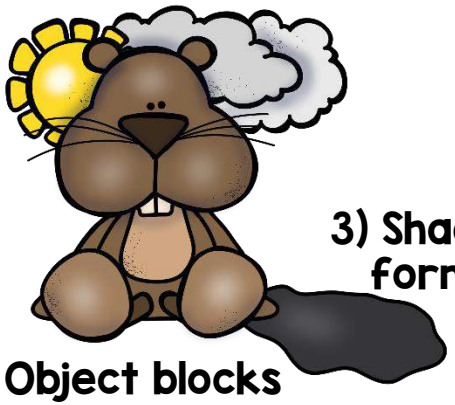


SHADOW PUPPET THEATER

Different Types of Light

How Shadows are Made

1) Light source shines on an object



3) Shadow forms

2) Object blocks light

properties of Light

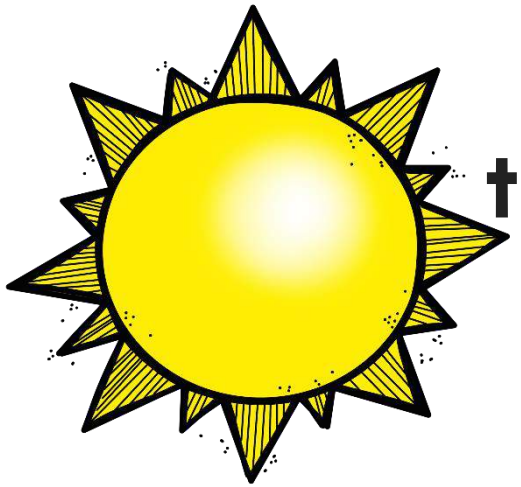
Things that are TRANSPARENT

Things that are TRANSLUCENT

Things that are OPAQUE

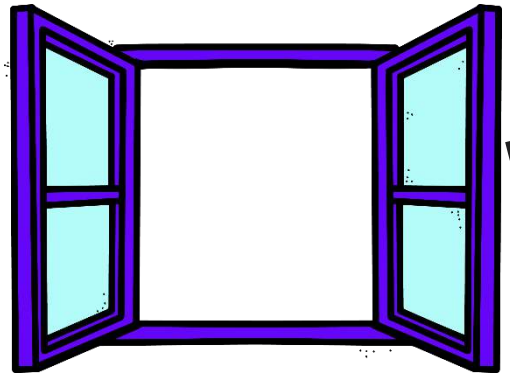
SHADOW PUPPET THEATER

LIGHT



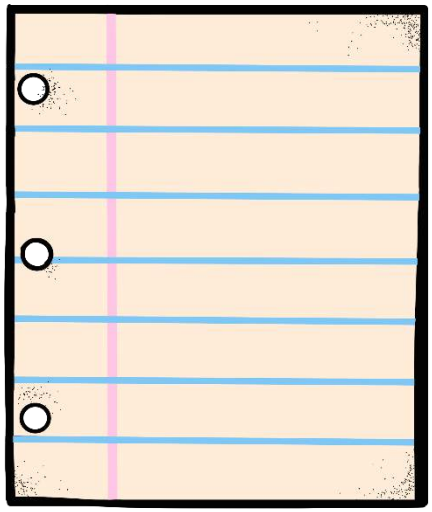
a form of energy that allows us to see all things around us

TRANSPARENT



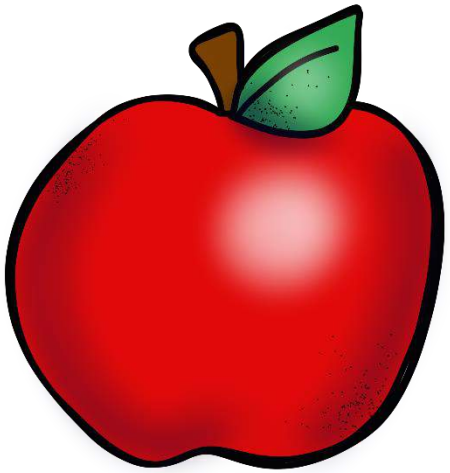
allowing light to pass all the way through so that objects behind can be seen

TRANSLUCENT



allowing some light to pass through, but objects behind are not seen clearly

OPAQUE



not able to be seen through and allowing no light to pass through

SHADOW PLAY SCRIPT

Shadow Character	Line

SHADOW PUPPET THEATER

Windows

Name:_____

STEM CHALLENGE

Can you create your own puppet theater and shadow puppets, then use light to put on a puppet show?

What is LIGHT?

_____

_____

_____

Where does light come from?

_____

_____

_____

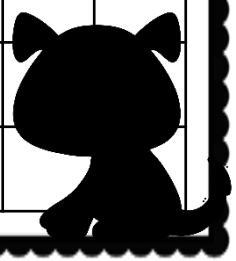
Is the wax paper transparent, translucent, or opaque?

How do you know?

What happens on your theater screen when you shine your flashlight behind your shadow puppets?

How can you move your flashlight or shadow puppets to make special effects?

My Puppet Theater



Dig Deeper Into the Text!

Teacher Questions for DRUM DREAM GIRL

*Look at the setting of the book. Where do you think it takes place? Tell the students that the book is about a girl in Cuba.

*Do you know different kinds of drums? What kind is the girl playing?

*"Only boys should play drums." Does this remind you of anything else in history? Why is this unfair?

*Why did the Drum Girl dream? How does this let her cope?

*How would you describe the climate where Drum Girl lives? How do you know?

*What is happening when the girl walks through the park? What does she always focus on?

* What culture is represented by the gigantic dragons?

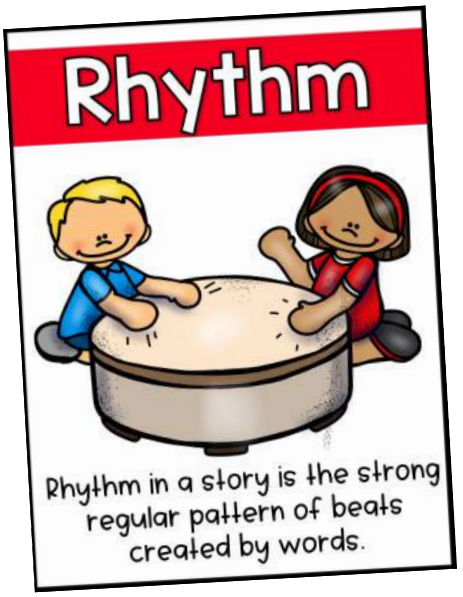
*How did everyone react to Drum Girl playing?

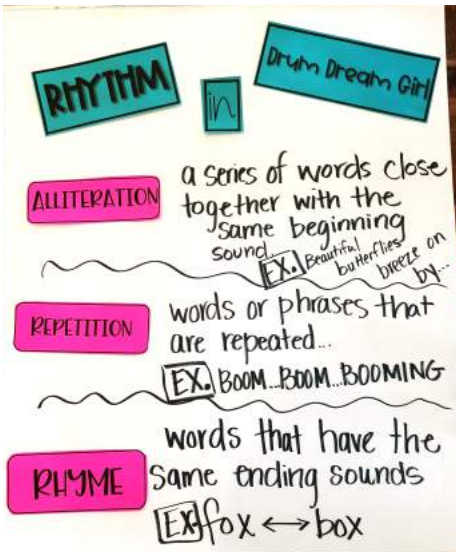
Teachers: Print on colored paper and laminate. Use this bookmark year after year to help extend students' thinking! You can even tape it in the front cover so you always know where it is!

Intended Use

DRUM DREAM GIRL

1. Introduce *Drum Dream Girl* to the students. Have the students close their eyes and listen to the text. When you are finished, introduce the rhythm anchor chart. Ask them if they felt this throughout the book? Discuss examples that they can remember.

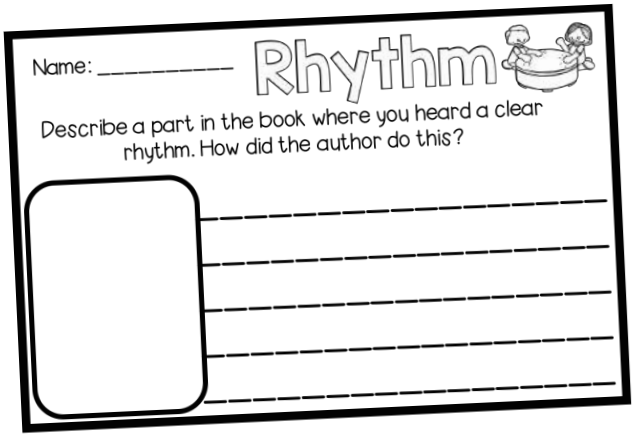




2. Make a whole class anchor chart. Put the title and subtitles (Alliteration, Rhyme, and Repetition). Explain what each one is and add examples.

3. Give students the flip-flap. As you reread the text slowly, allow them to write examples of Alliteration, Rhyme, and Repetition. Share out as a class when finished.

DRUM DREAM GIRL



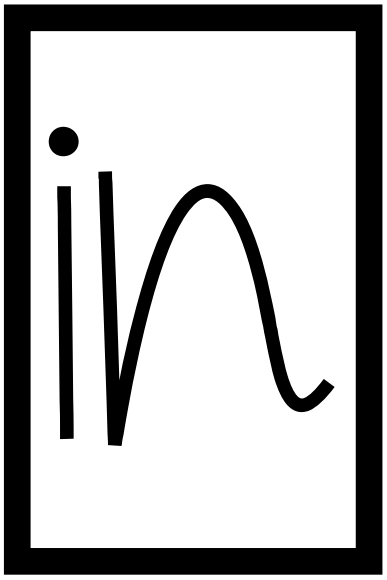
4. This half sheet can be used as an exit slip to check for understanding of how an author creates rhythm and what it sounds like.

5. Optional High Flyer activity: Remind students what a summary is. Have them use the drum booklet to write a summary making sure to include the problem and the solution.

Rhythm

Rhythm in a story is the strong regular pattern of beats created by words.

RHYTHM



Drum Dream Girl

ALLITERATION

REPETITION

RHYME

RHYTHM in Drum Dream Girl

REPETITION	RHYME	ALLITERATION

RHYTHM in Drum Dream Girl

REPETITION	RHYME	ALLITERATION

Name: _____

Rhythm

Describe a part in the book where you heard a clear rhythm. How did the author do this?

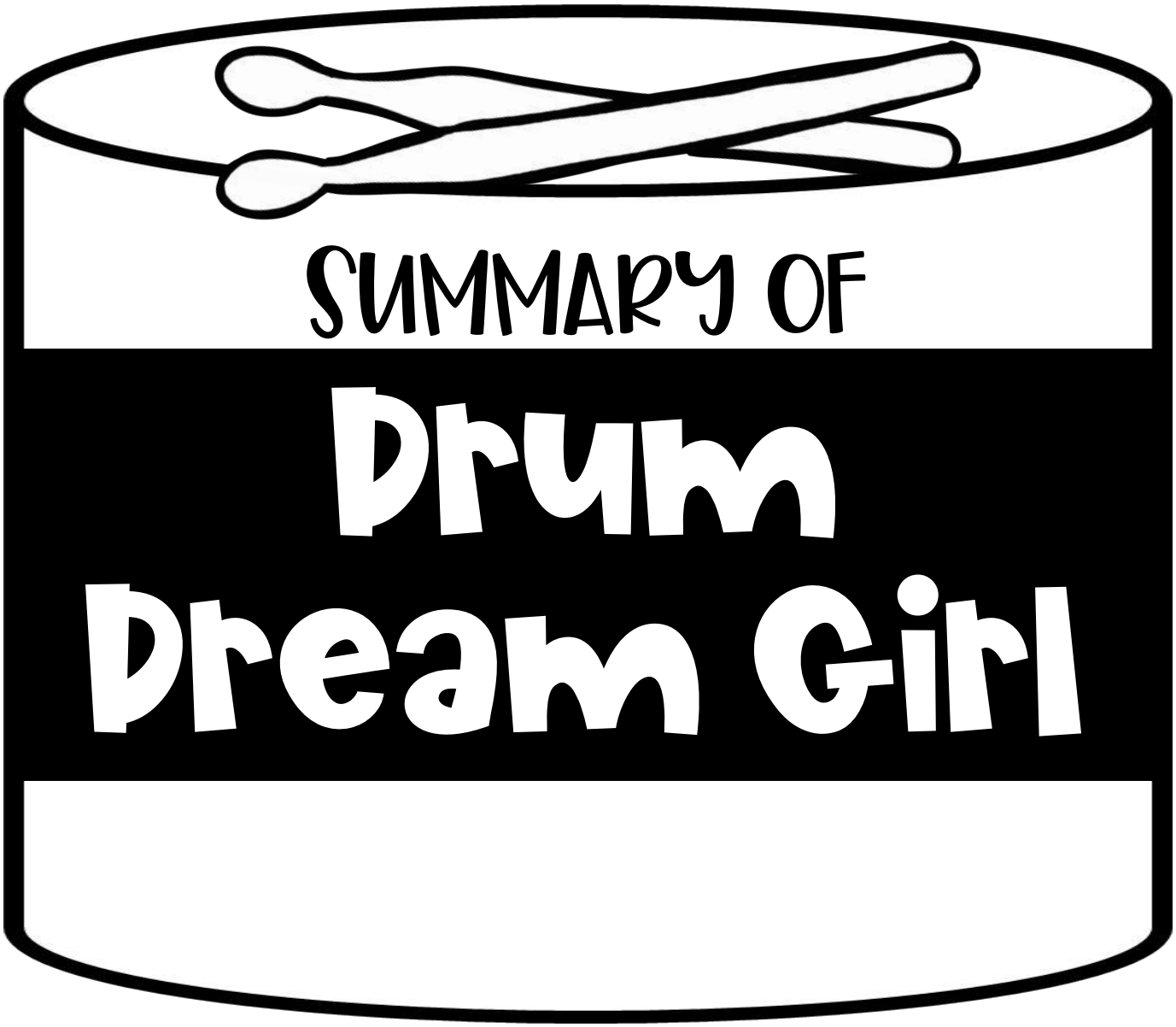
Name: _____

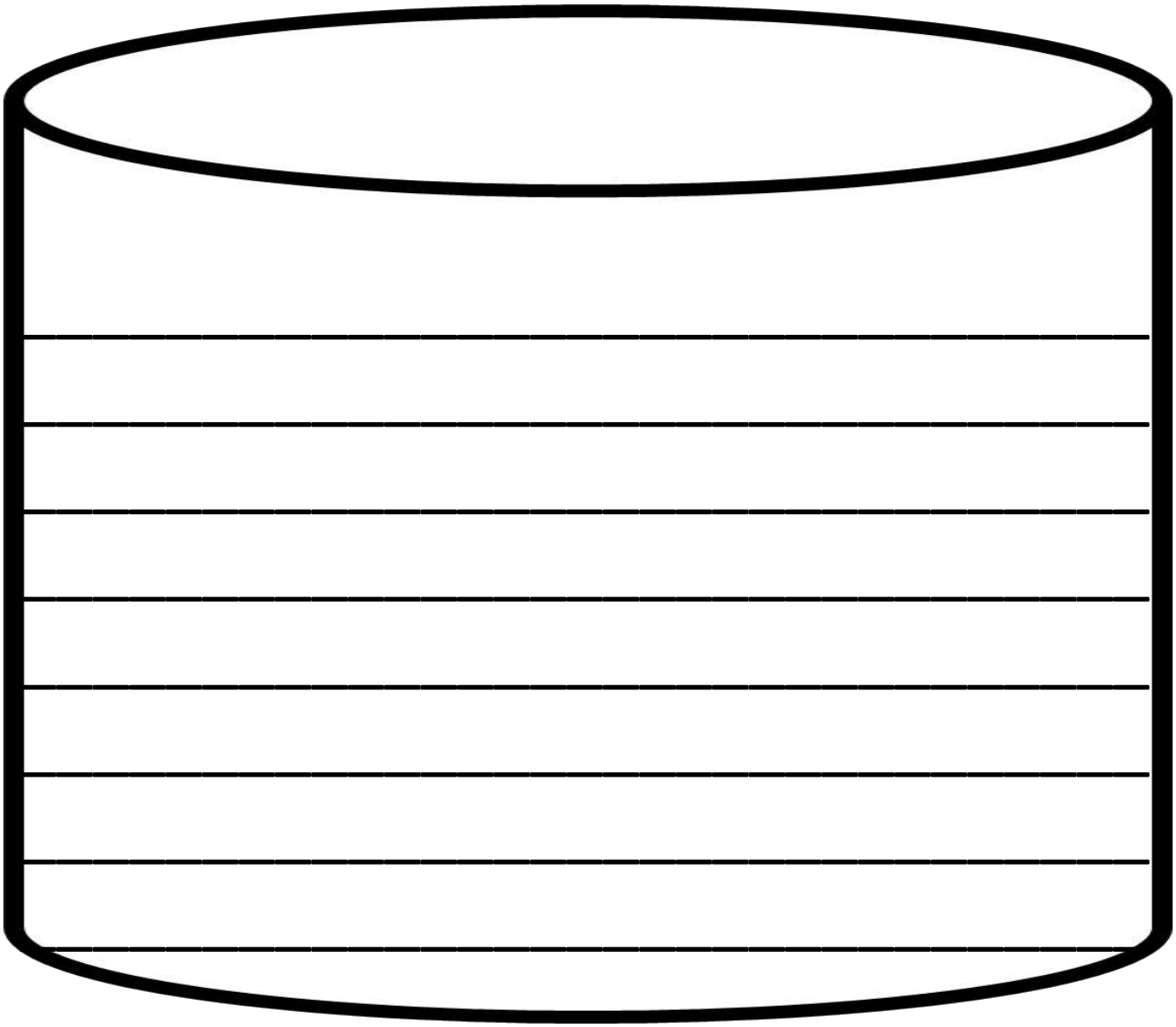
Rhythm

Describe a part in the book where you heard a clear rhythm. How did the author do this?

SUMMARY

Retells the **MAIN EVENTS** of a story.


SUMMARY OF
Drum
Dream Girl



VOCABULARY

After going over the definitions, teachers can use the cards in all kinds of ways. Have students pair up. Put one of the cards up on the projector and ask the students to come up with a sentence. Another option would be to have the students act out the words together. Keep vocabulary words displayed in the classroom or add them to a ring and use during a word work station.

Teachers: Print the black and white versions on colored paper and have students hold them up as you give examples, synonyms, or antonyms. Be creative! Use this as a quick way to gauge understanding! Scan the room to look for the color you are looking for!

pounding

repeated and heavy striking

imaginary

exists only in the mind

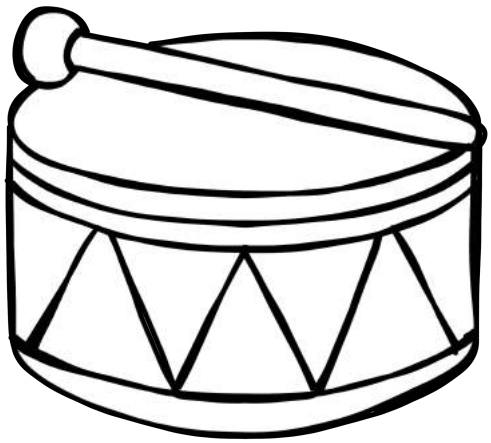
comforting

Something that makes someone feel better

towering

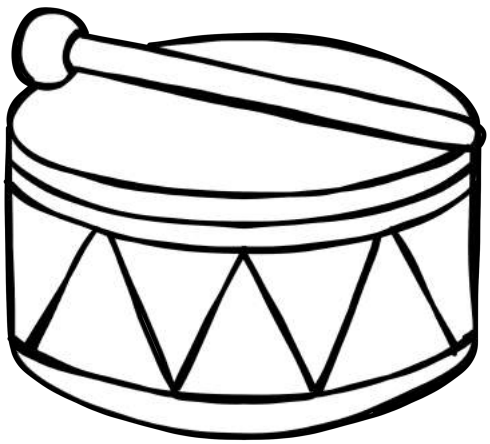
extremely tall

pounding



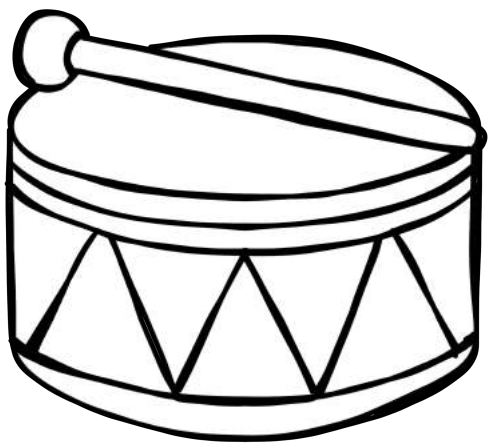
repeated and heavy striking

pounding



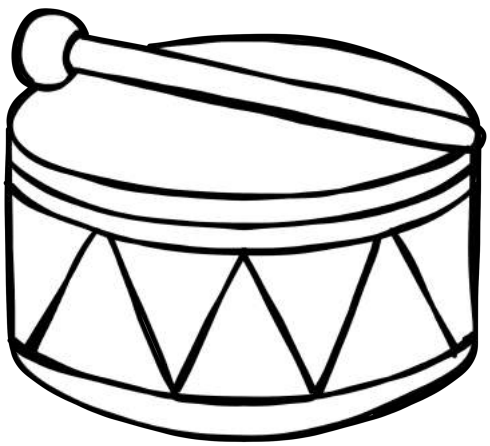
repeated and heavy striking

pounding



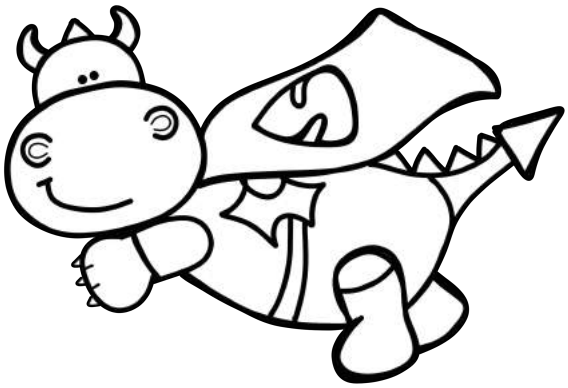
repeated and heavy striking

pounding



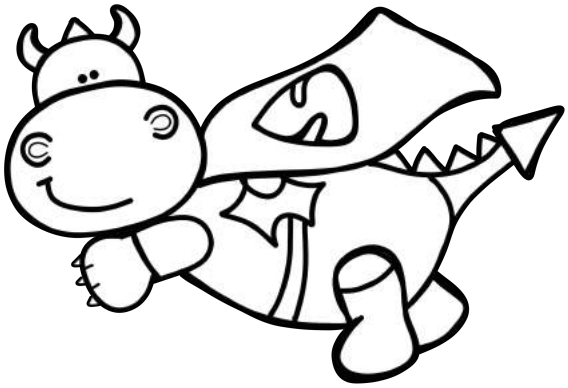
repeated and heavy striking

imaginary



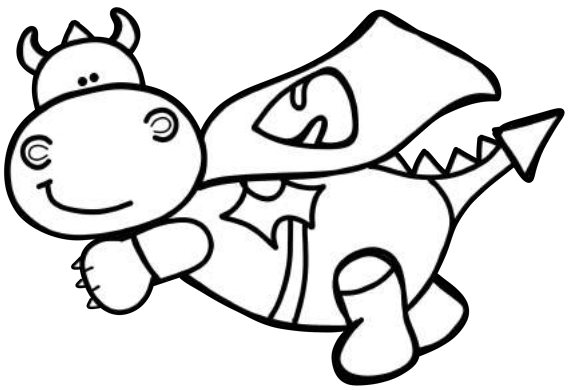
exists only in the mind

imaginary



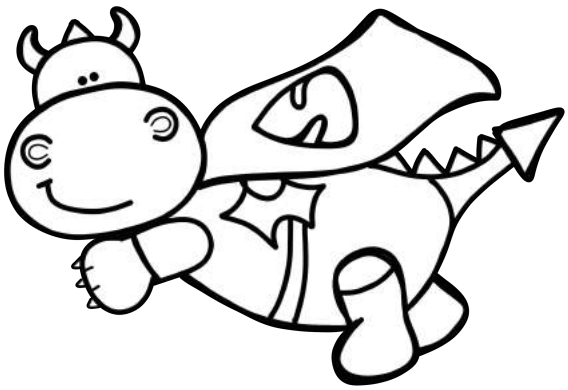
exists only in the mind

imaginary



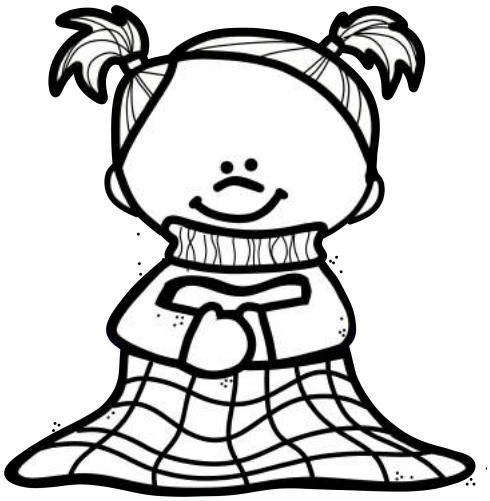
exists only in the mind

imaginary



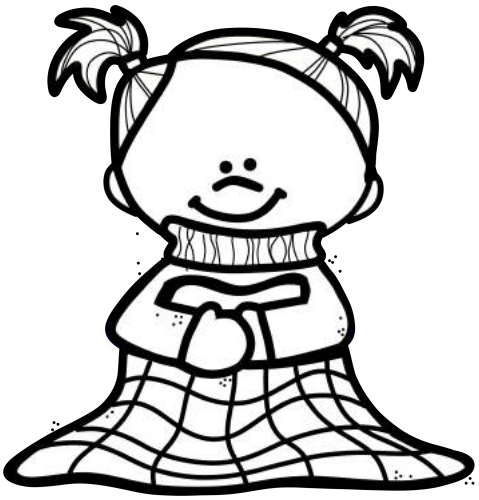
exists only in the mind

comforting



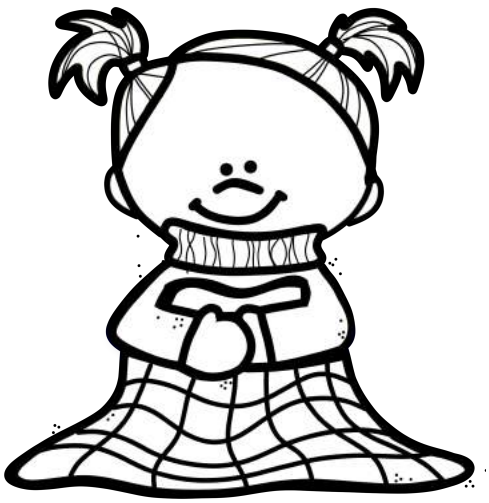
Something that makes someone feel better

comforting



Something that makes someone feel better

comforting



Something that makes someone feel better

comforting

Something that makes someone feel better

towering

extremely tall

towering

extremely tall

towering

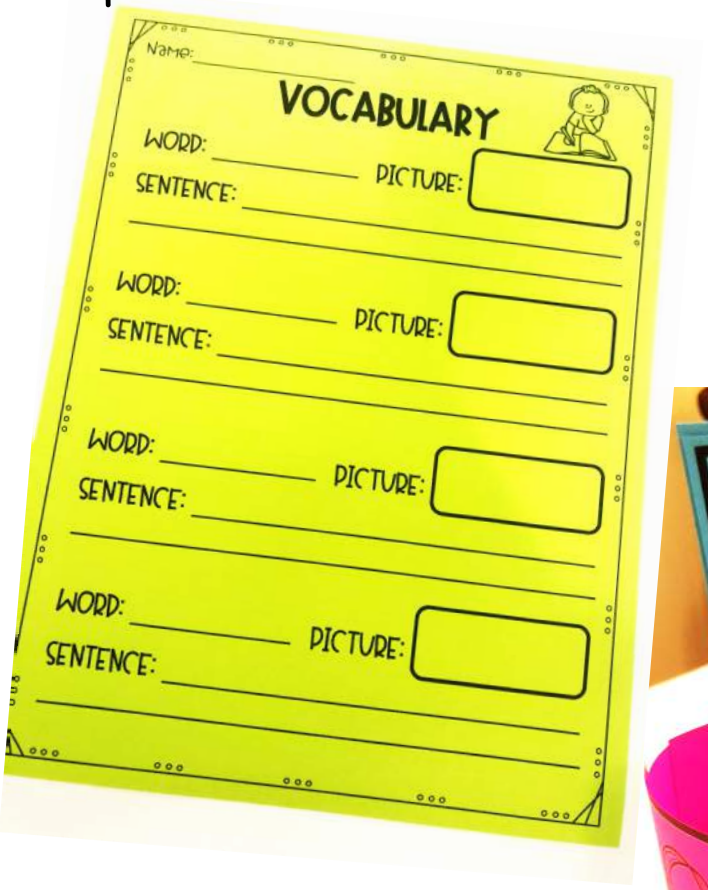
extremely tall

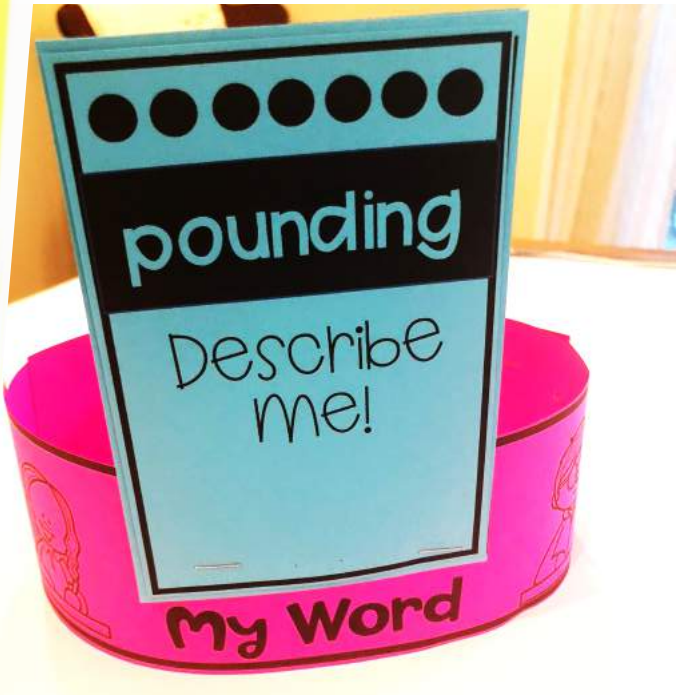
towering

extremely tall

WHAT'S MY WORD?

DIRECTIONS: Make headbands either using sentence strips or the long rectangles provided. Either staple on or have kids slide the card into the slit without looking at the word. Students will walk around the room until you tell them to partner up. They will take turns helping each other figure out the words on their heads by giving clues! In order to keep playing, switch out the cards or the whole headbands. The printable can be used to check for understanding.





My Word


pounding
Describe me!


imaginary
Describe me!


comforting
Describe me!


towering
Describe me!

Name:_____

VOCABULARY

WORD: _____ PICTURE:

SENTENCE: _____

_____

WORD: _____ PICTURE:

SENTENCE: _____

_____

WORD: _____ PICTURE:

SENTENCE: _____

_____

WORD: _____ PICTURE:

SENTENCE: _____

_____

SCIENCE SPARK

Drum Dream Girl

THINK, TALK, SHARE:

- What are some different types of instruments that make sound?
- How do you think drums make sound?
- What do you think sound waves are? How do you think sound waves are made?
- When you play a drum, what vibrations do you notice?
- How do you think vibrations might relate to sound?
- Have you heard drums that sound differently than other drums? Why do you think they sound different?
- What are some ways that people use sound to communicate?

EXPLORE:

Use the QR Codes and links on the following page to help students explore more information and build background knowledge about sound. OPTIONAL: Have students complete the foldable facts booklet. (This portion can also be completed as a science center.)

SPARK - COMMUNICATION CUPS:

*Make a class "telephone" using two plastic cups and a long piece of string to connect them.
*Have students take turns speaking into the cups and listening to each other's messages. Ask students to share how and why they are able to understand each other.
*Discuss how sound waves travel through the string, making the string vibrate, and the waves travel along the string to their ears on the other end.

LET'S EXPLORE SOUND!

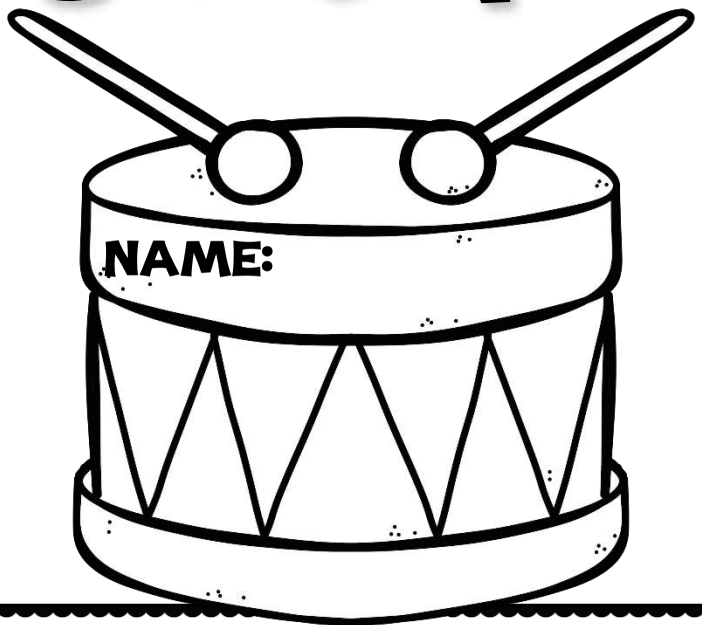
WHAT IS SOUND?

STRING PHONE

MUSIC

HOW DRUMS ARE MADE

FACTS ABOUT SOUND



STEM CHALLENGE: DIY DRUMS

NGSS Standard Alignment: 1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [C1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. 2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose*K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Challenge Description: Students will make drums using cups, balloons, and water and will use pencils as drumsticks. They will fill the cups with various levels of water to explore the different tones that result from the different amounts of vibrations in the water. They will also take turns with partners writing sequences of drum patterns for their partners to read and play.

Suggested Materials PER GROUP OF STUDENTS: 3-5 plastic cups, 3-5 large balloons, water, scissors, permanent marker, two pencils with erasers.

LESSON PLAN

1. SCIENCE SPARK: COMMUNICATION CUPS
2. Ask students to share what they already know about how sound travels, sound waves, vibrations, and musical instruments. Share the video clips and links on the **"LET'S EXPLORE SOUND!" page** to prime their background knowledge.
3. Introduce permitted materials and share the STEM challenge and key vocabulary cards. **(Answers for page 1 student booklet: waves, vibrations)** Students will fill the cups with different levels of water, then cut the mouthpiece off of balloons and stretch them over the top of the cups. They will number the cups 1, 2,3, etc. and use the pencils as drumsticks to observe the different tones of the drums that result from the vibrations in the water. More water will cause slower vibrations and a deeper tone, while less water or no water will cause faster vibrations and higher tones/pitches.
4. Have students write their own drum patterns using the numbers on the cups and their partner must read and echo/copy the patterns. (i.e. 1-2-33-1)
5. Bring the whole class together for a final "drum performance" by having them perform one sequence of patterns. Ask students to share what they've learned about sound waves and vibrations and how they relate to drums.

DIY DRUMS

Drum Dream Girl

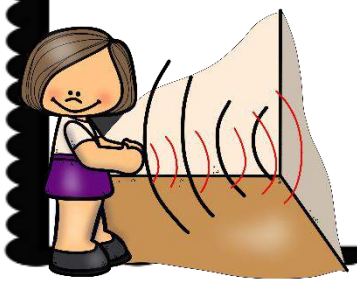
Possible Product

DIY DRUMS

How Sound Travels

Types of Musical Instruments

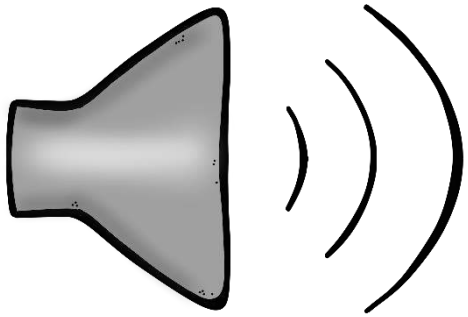
Ways That We Can Communicate With Sound



How Our Drums Work

DIY DRUMS

SOUND WAVES



Sound is made up of vibrations, or sound waves, that we can hear. They are formed by objects vibrating and can travel through air, water, and solid objects.

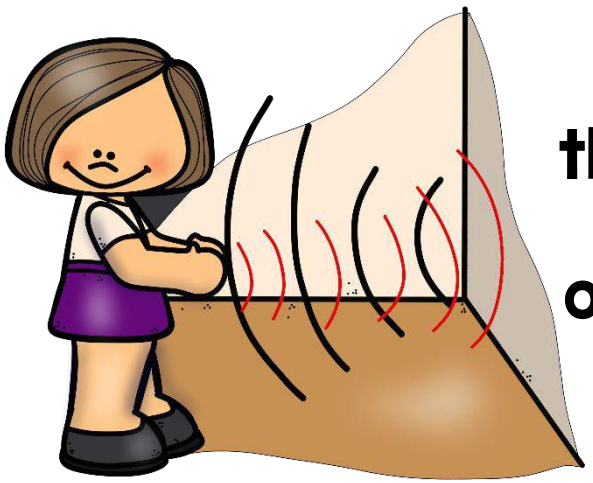
VIBRATION

a movement that shakes back and forth

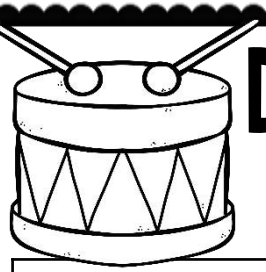
TONE

a quality of pitch or loudness in music

ECHO



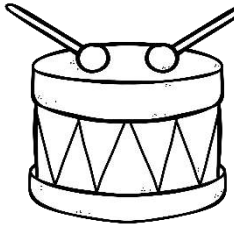
a sound that bounces off of an object and is repeated again



DRUM PATTERNS

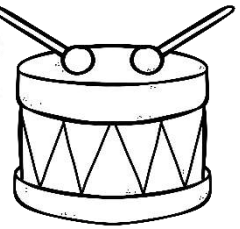
Write drum patterns for your partner to read and play.

EXAMPLE: 1 - 2 - 33 - 1



DIY DRUMS

Drum Dream Girl



Name:_____

STEM CHALLENGE

Can you create a set of drums with different tones and use them to play beats and patterns?

Sound travels in _____.

The waves are made up of _____ that we can see and hear.

What are some ways that sound is used to communicate?

_____

_____

_____

INSTRUCTIONS

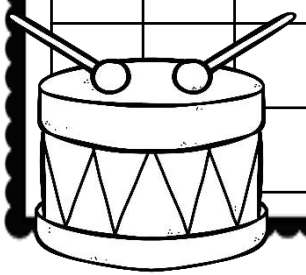
1) Fill each cup with a different amount of water.
2) Use the marker to write a different number on each cup.
3) Cut the mouthpiece off of balloons and stretch them over the openings on the cups.
4) Use a pencil eraser as a drumstick to try out your drum set.

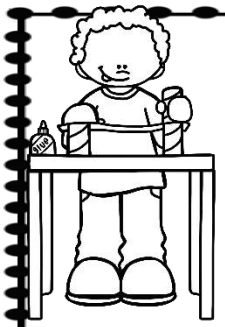
What do you notice about the drums that have more water?

What do you notice about the drums that have less water?

This is because more water will cause **slower vibrations** in the water and a **deeper tone**, while less water or no water will cause **faster vibrations** and **higher tones**.

DIY DRUMS





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