

JANUARY

WINTER STEM & ELA ACTIVITIES



Snowflake Bentley



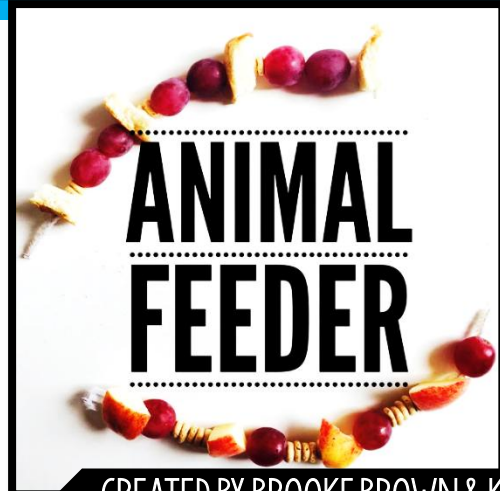
Snowballs



Martin's Big Words



Animals in Winter



Simple Engaging STEM Challenges to Supplement Favorite Winter Read Alouds

LESSON PLANS

KEY VOCABULARY

PAPER SNOWFLAKES

Snowflake Bentley

HOSE/CODES Standard Alignment: K-1202-1 Use and share observations of local weather conditions to describe patterns over time. **2-PS1-4** Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. **2-ESS2-3** Obtain information to identify where water is found on Earth and that it can be solid or liquid. **2-ESS2-2** 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. **CCSS.MATH.CONTENT.K.G.A.1** Identify and describe shapes. **CCSS.MATH.CONTENT.K.G.A.4** Analyze, compare, create, and compose shapes. **CCSS.MATH.CONTENT.1.G.A.1.2, 3** Reason with shapes and their attributes.

Challenge Description: IMPORTANT: Model this activity thoroughly with students prior to beginning. It may also be easier to complete this challenge with small groups of students or pair them with upper grade students. Students will create hexagonal (six-sided) snowflakes out of paper using a specific set of instructions. For folding and cutting. While the basic introductory instructions are the same, students will have the opportunity to add creative cutout shapes and designs as they choose, then identify if the shapes shown in their snowflake. They may also attempt to create snowflakes that resemble those shown in the book *Snowflake Bentley*.

Suggested Materials: white copy paper cut into 8.5" x 8.5" squares, scissors (You may also choose to provide smaller, square shaped pieces as well, such as 6" X 6", although smaller squares are more difficult for little hands to fold and cut.)

LESSON PLAN

1. Prime students' background knowledge about snowflakes by projecting a variety of Google images on an interactive whiteboard. Also, refer back to *Snowflake Bentley* and the variety of snowflakes shown in the book. Discuss differences between the snowflakes. Encourage students to notice that all real snowflakes are six-sided. Hold a class discussion, allowing students to share what they already know about snowflakes and how they differ from the provided vocabulary cards as needed throughout the lesson and display them in your classroom.
2. Refer to the provided teacher chart and have them add ideas to their individual booklets. Fill in blanks on student booklets as follows: crystals, molecules, b, symmetrical.
3. Introduce permitted materials and share the challenge. Model and walk students through the initial instructions for creating a hexagonal snowflake, either as a whole class or in small groups.
4. Allow students at least 30 minutes with partners or small groups to create and test a variety of designs, add observations about their snowflakes in their STEM journals. You may also choose to have students decorate snowflakes with markers or crayons.
5. Hold a whole class closing discussion and reflection, allowing students to share what they created and what they learned about snowflakes. Record their ideas on the provided teacher chart and have them finish their individual booklets.



PAPER SNOWFLAKES

Vocabulary Cards

hexagonal
having six sides

symmetrical
having an invisible line that reflects or mirrors identical sides when a shape is folded in half

crystal
a clear, transparent ice formation

molecule
a very small particle

TEACHER CHARTS

PAPER SNOWFLAKE

Snowflake Bentley

What we Know About Snowflakes

Questions we Ask About Snowflakes

How Snowflakes are Formed

Snowflake Bentley Maker Task Cards

Use the following task cards in a Makerspace or with STEM Pins for students to make more creations.

Make a symmetrical design.

Use a magnifying glass to observe a small object. Write about what you observe.

Make a chart to track the weather for one week.

Make a poster about how snowflakes are formed.

STUDENT BOOKLETS

That are found in nature. Write the number of each shape in the box.

One thing that was EASY:

One thing that was HARD:

One new thing I LEARNED:

Paper Snowflake

Snowflake Bentley

Name: _____

STEM CHALLENGE

Can you create a hexagonal (six-sided) snowflake out of paper?

Snowflakes are made out of ice _____.

The ice crystals are formed when tiny drops of water called _____ freeze and join together.

Snowflakes are hexagonal, which means that they always have _____ sides.

Snowflakes are _____ which means that they have mirrored designs on both sides.

SNOWFLAKE

5. Cut off the "ears" along a straight edge on the top.

5. Draw and cut a curved or jagged line, starting near the bottom of the double-folded edge, and ending near the top of the single-folded edge.

Then, cut out small pieces of the snowflake and glue them on the double-folded edge.

Start

End

Curved and jagged

MAKER CARDS

Simple, Engaging STEM Challenges to Supplement Favorite Winter Read Alouds

WORD TOWER

Martin's Big Words

NGSS/CCSS Standard Alignment: 2-PS1-2 Analyze data obtained from testing of different materials to determine which materials have the properties that are best suited for an intended purpose. 2-PS1-3 Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to solve a given problem that may have several constraints. Challenge students to solve a given problem by building a word tower. Each cup and word is a challenge. Use words or use strategies to build three-dimensional word towers. Suggested Materials: OPTIONAL: Small

WORD TOWER

Martin's Big Words

Powerful words

Cup Tower strategies

WORD TOWER

Vocabulary Cards



three-dimensional

a solid shape that has depth, width, and height



pyramid

a solid with a polygonal base and triangular faces that meet at a point

cone

a solid that tapers from a circular base to a point

Height Tests

Test	Number of centimeters high
1	
2	
3	
4	

WORD TOWER

Martin's Big Words

Name

STEM CHALLENGE

Can you construct the highest possible word tower out of cups that stands on its own?

One thing

One thing

One new

WORD TOWER

HOPE
CHANGE PEACE
CARE RIGHT
WORDS LISTEN COURAGE
FREEDOM DREAM MOVING CITIZEN
GETHER TEACH EQUAL FAMILY LOVE

snowball friend

Snowballs

Name

STEM CHALLENGE

Can you identify properties of small objects, sort the objects, then use the objects to construct a "snowball friend"?

What are some examples of properties?

Feels

Smells

Snowballs

Maker Task Cards

Use the following task cards in a makerspace or with STEM pins

Animal

Animals

Animals that gather

Animal Feeder

Vocabulary Cards

survive

to stay alive

gather

to bring together into a group or collection

migrate

to move from one region or

My pattern

Draw and color your repeating pattern.

Animal Feeder

Animals in Winter

Name

STEM CHALLENGE

Can you create a garland animal feeder with a repeating pattern?

ways that Animals survive in winter

1

snowball friend

Snowballs

2-PS1-1 Plan and conduct an investigation to describe and classify objects by their observable properties. K-2-PS1-3 Ask questions, make predictions, and plan an investigation to determine how the shape of an object affects its function. 2-ETS1-1 Define a simple problem that has a solution that can be tested by a simple experiment. 2-ETS1-2 Generate and compare two solutions to a problem by drawing a simple diagram of the solution and using a simple experiment to test each solution. 2-ETS1-3 Plan and conduct an investigation to determine how the shape of an object affects its function. 2-ETS1-4 Generate and compare two solutions to a problem by drawing a simple diagram of the solution and using a simple experiment to test each solution. 2-ETS1-5 Generate and compare two solutions to a problem by drawing a simple diagram of the solution and using a simple experiment to test each solution.

SNOWBALL FRIEND

to notice how something looks, feels, smells, and sounds

property

a quality of an object that you can observe, such as size, shape, color, or texture

sort

to divide into groups based on similar properties

classify

to divide into groups based on similar properties

chain of "Big words."

Quick & Effective ELA Activities

LESSON PLANS

KEY VOCABULARY

COMPREHENSION

1. Show students the Setting poster and discuss the setting in *Snowflake Bentley*.
2. Use the posters to discuss the questions each one. Discuss setting impacts the storyline. Also discuss the "when" part of is important.

COMPREHENSION

1. Show students Punctuation Anchor chart and discuss.
2. Have students

COMPREHENSION

1. Review how readers make connections when reading fiction. Show them the connections poster and talk about how when reading nonfiction those connections might look a little different.
2. Use the posters to walk through the Montgomery Bus Boycott. Discuss Rosa Parks and MLK Jr. and their roles in the historical events. Have students finish by completing drawing and writing about their understanding.

COMPREHENSION

1. Show students Compare and Contrast poster and discuss how the animals are alike and different.
2. Complete the whole class anchor chart for Migrating/Hibernating. Then students can complete their own compare/contrast paper about the pika and the woodchuck.

failures

foolishness

sack

shrinking

blistering

intense heat

courage

to do something that frightens you

migrate

to move from one area to another based on the season

hibernate

Spend the winter in an inactive state

protest

showing that you disagree

segregation

separated by race

twigs

small sticks

discover

to find something during a search

TEACHER CHARTS

STUDENT PRINTABLES

Proper Nouns

Nouns that have particular names. These names are capitalized.

People

Restaurants

Months

Pets

LOVE

HAT

PEACE

WAR

Describe the Setting

Time of day? Where is this? Would this be a setting for

Compare and Contrast

When you **COMPARE** things, you are looking for how they are **alike**.

When you **CONTRAST** things, you are looking for how they are **different**.

"When the history books are written, someone will there lived black people who had the courage to stand up for their rights."

PUNCTUATION: Read the Room

Name: _____

Setting

Why is setting important in the story?

MAKING CONNECTIONS: Historical Figures

Name: _____

How are MLK Jr. and Rosa Parks connected?

Quick & Effective ELA Activities

Apostrophe

An apostrophe can be used to show possession.

Willie's
camera



his father's
herd

the world's
expert

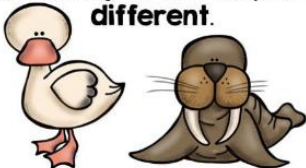


Compare and Contrast

When you **compare** things, you are looking for how they are **alike**.



When you **contrast** things, you are looking for how they are **different**.



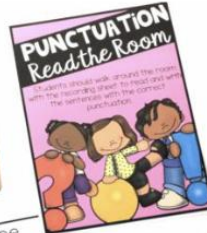
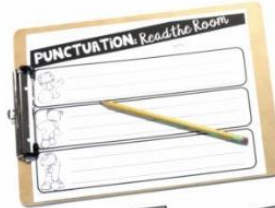
Name: _____

Vivid Verbs



Word: _____

Use it in a sentence:



MAKING CONNECTIONS: Historical Figures

Name: _____

How are MLK Jr. and Rosa Parks connected?



Printable
Anchor
Charts,
Vocabulary
Cards, High
Flyer
Extension
Charts &
Exit Slips

