WINTER

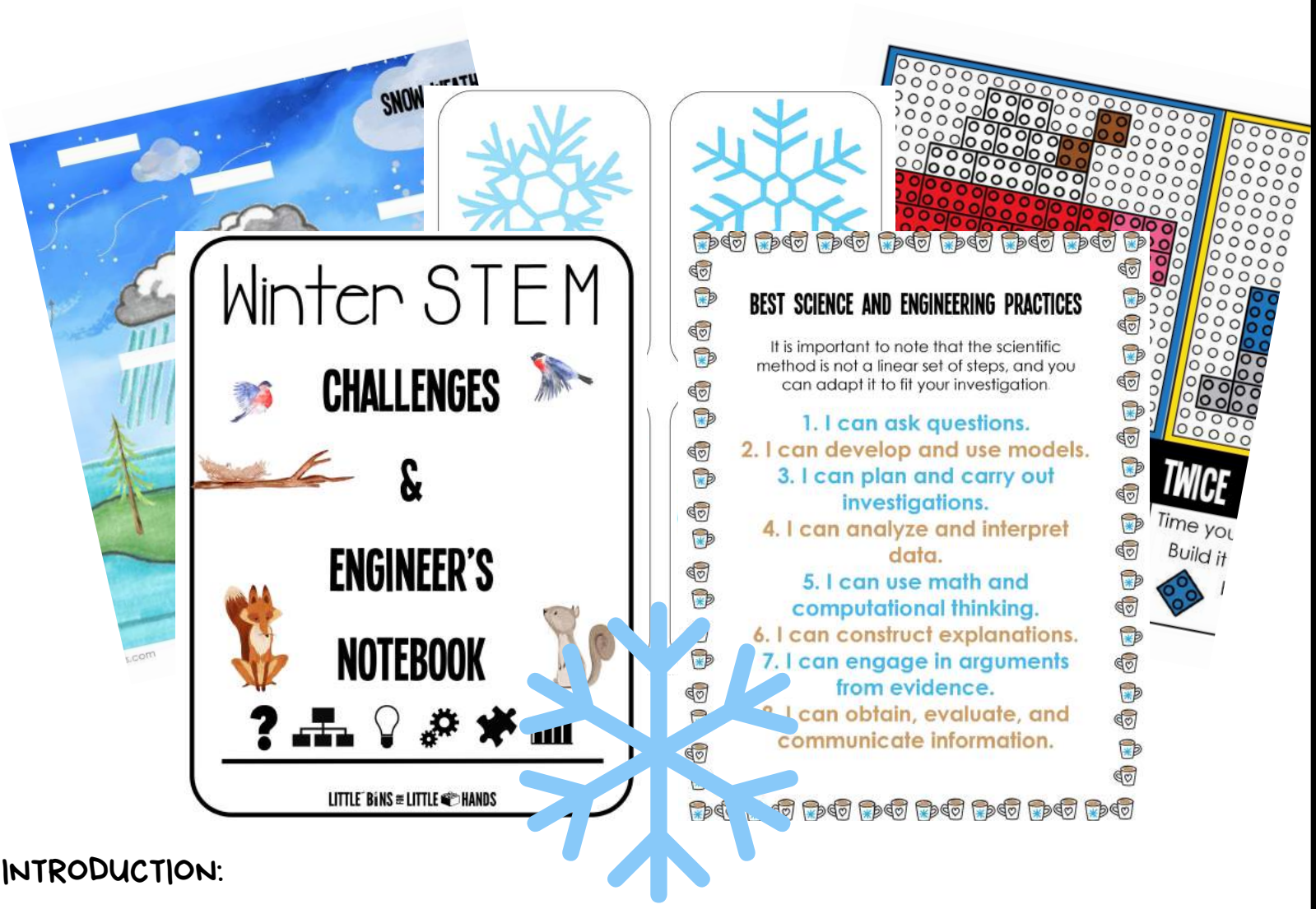
SCIENCE & STEM PACK FOR KIDS

Science Experiments

STEM Projects

Building Activities and Much More!

WINTER SCIENCE & STEM PACK



INTRODUCTION:

Welcome to your Winter Theme STEM Pack filled with great science activities and STEM projects every junior scientist or engineer should try! I hope it sparks creativity and curiosity within your young scientists, inventors, and engineers.

In this pack, find a fun selection of Winter activities, challenges, and experiments. I have added supplies, setup instructions, and simple science information for each activity. The pack also includes STEM projects and extras to share with your kids. Our packs now include simple writing activities!

Feel free to use this pack with one junior scientist or a whole group of junior scientists. You may copy activities as many times as you like for your class, but please send your friends to grab their pack instead of sharing files.

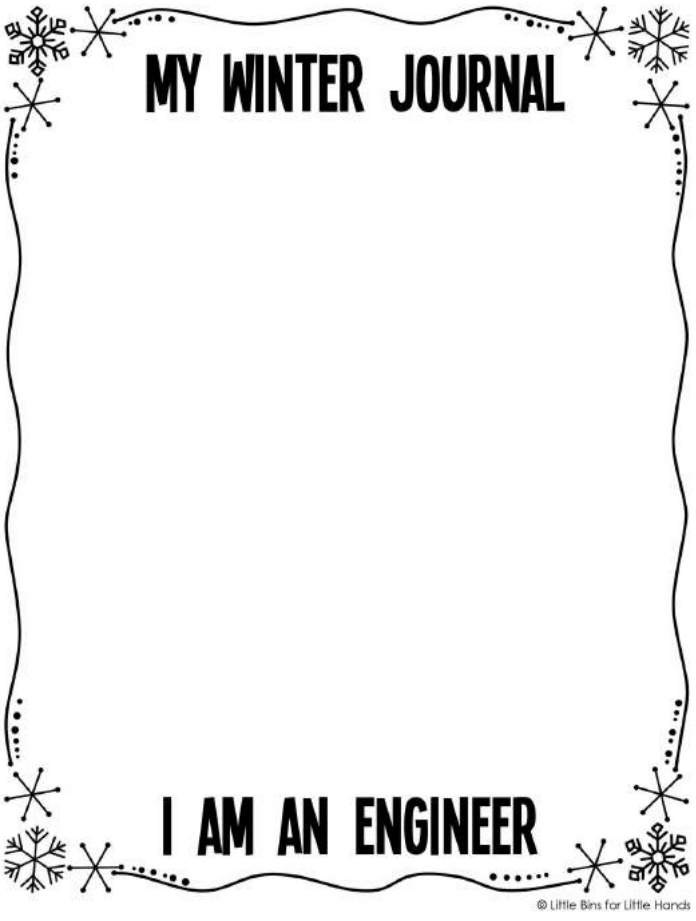
~ Thank you!

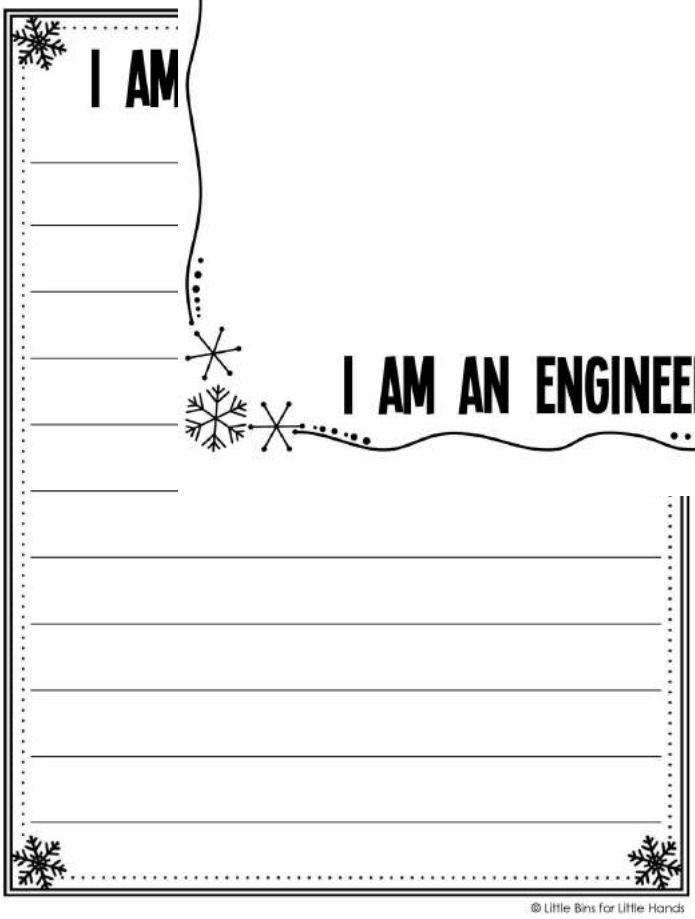
WINTER WRITING ACTIVITY

Our NEW cover page includes the opportunity to draw and write about a favorite Christmas memory or plan a future Christmas event.

What's Included:

- Winter theme cover page with the space to draw or plan
- Writing prompt for a Winter building project





MY WINTER JOURNAL

"My Winter Journal" Cover Directions:

On the cover of your Winter Journal, draw yourself building something outdoors such as a snowman or a snow fort. Your drawing can be based on something you have already built, or it can be based on something you would like to build after the next snowfall. Think about what you are wearing and working on as well as what equipment you would need. Think about what materials are available outside in the winter. Add as many details as possible!

"I Am An Engineer" Writing Page Directions:

Write about the picture you drew on the cover. What are you doing as a winter engineer? Are you designing an ice sculpture? Are you building a snowy structure? Are you planning a snowball fight and laying out obstacles? Explain your building process on the page provided.

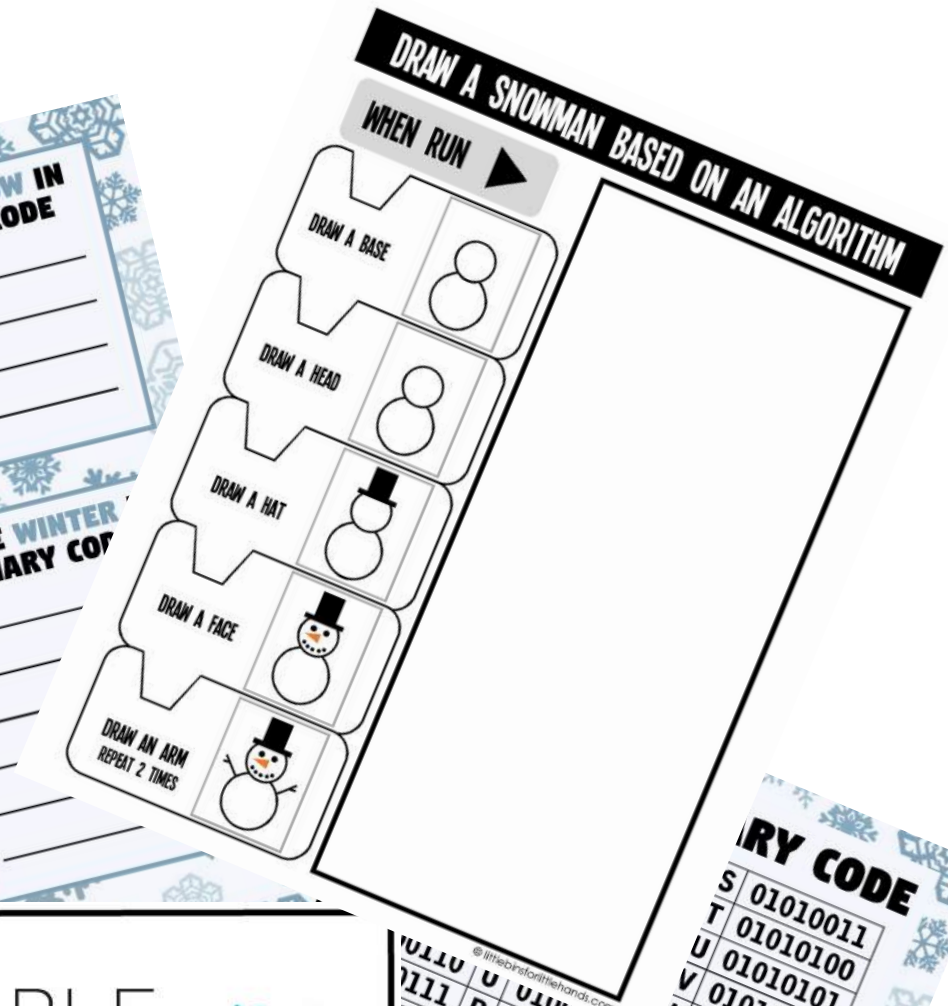
I AM A WINTER ENGINEER

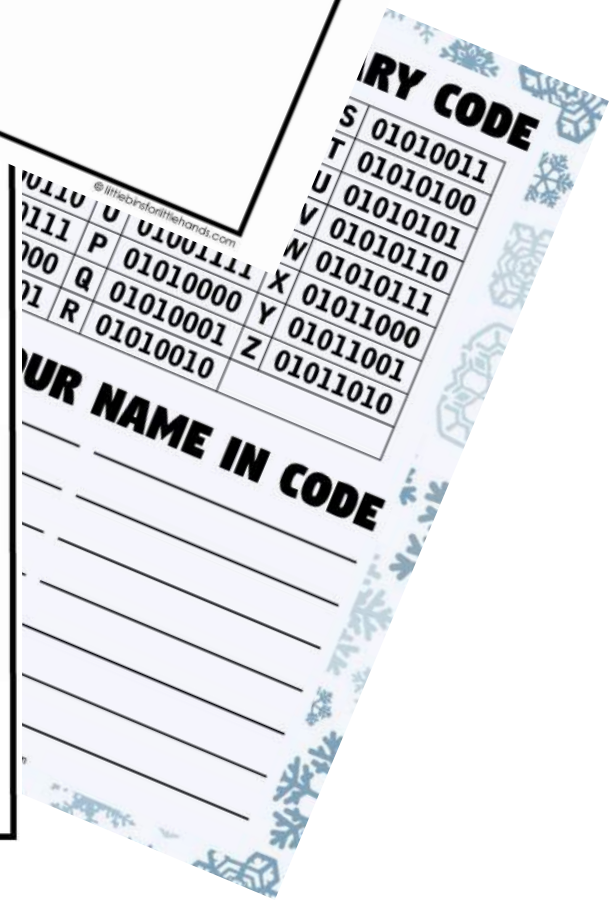
MY WINTER JOURNAL

I AM AN ENGINEER

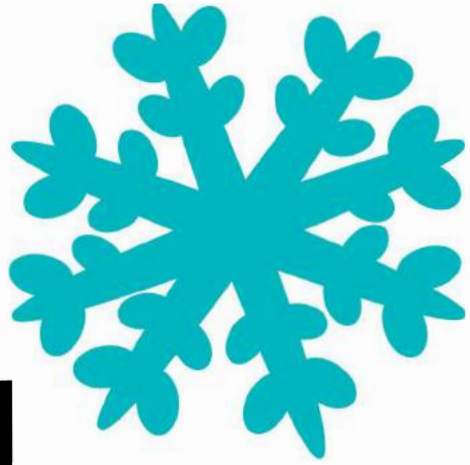
WINTER SCREEN FREE CODING

Screen-free coding is a fun and easy way to introduce computer coding concepts to young kids! Explore the binary alphabet and create a snowflake with pipe cleaners and beads, discover how an algorithm works, and draw a snowman based on an algorithm. Instructions included.





PRINTABLE WINTER ALGORITM CODING GAME



FOR KIDS

3 LEVELS OF DIFFICULTY

LITTLE BINS FOR LITTLE HANDS

Screen-free coding with a winter theme! Learn about algorithms as you play games.

SET UP & PLAY

Print out one of the sets of grids to set up your board. Choose a blank grid with either the mitten or hot cocoa. Cut out the corresponding snowflakes, snowmen, and arrows for your pieces.

Place the snowmen and snowflakes on the board in some of the blank spaces (not every space). You can play where the flakes are obstacles to move around and/or the snowmen need to be collected.

Your arrows are your direction cards and how you write the code to solve the puzzle (around the snowmen or collect the snowflakes). Included are left, right, and straight arrow pieces. You can use and re-use the grids over and over again and even laminate the sheets.

Use a small figure as an object to move through the board or you can cut out a snowman to move through the board to get to mitten or cocoa or vice versa.

Use the directional cards to create an algorithm to reach the desired object. You can change the obstacle cards to create a new board each time. Use either the flakes or snowmen or both on the same board! Start simple using just a few and work your way up!

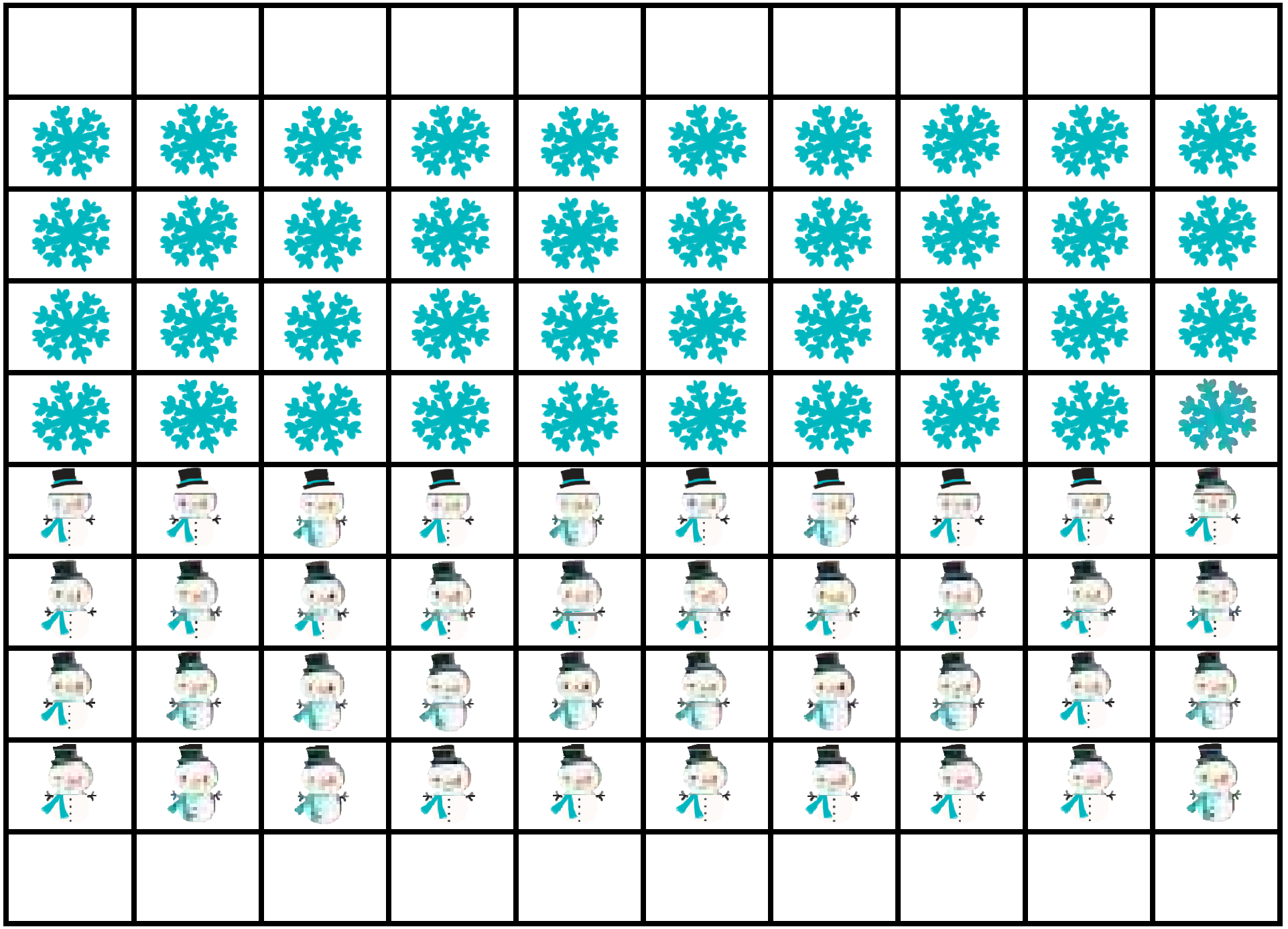
Easier version: Place out one directional card at a time as you move the object one square at a time with or without obstacles to go around.

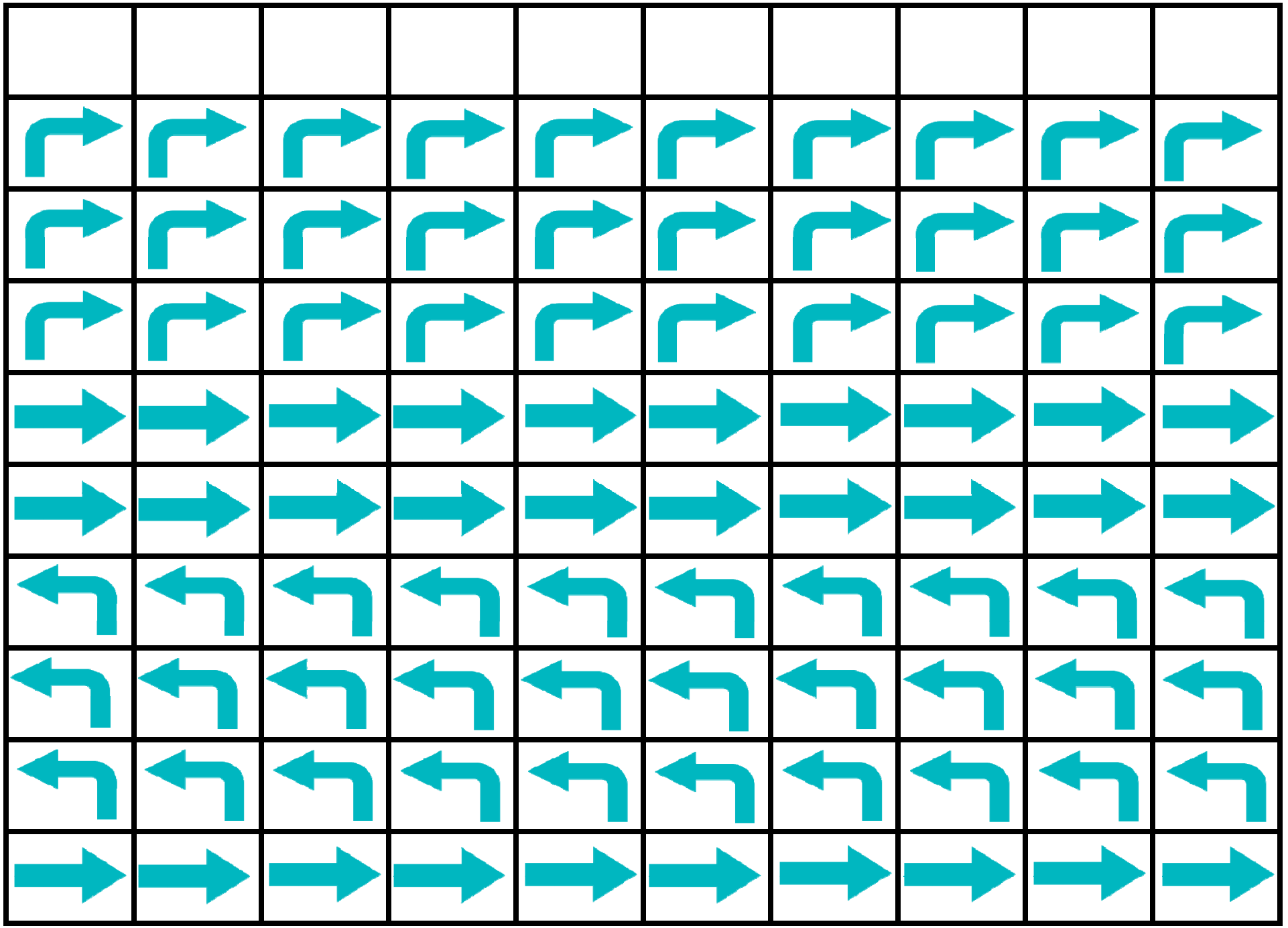
Harder version: Think out the sequence of actions ahead of time and place out a string of directional cards to show your program. Run your program (move your piece) according to your directions. Check your results. Did you make it? Do you need to fix a card?

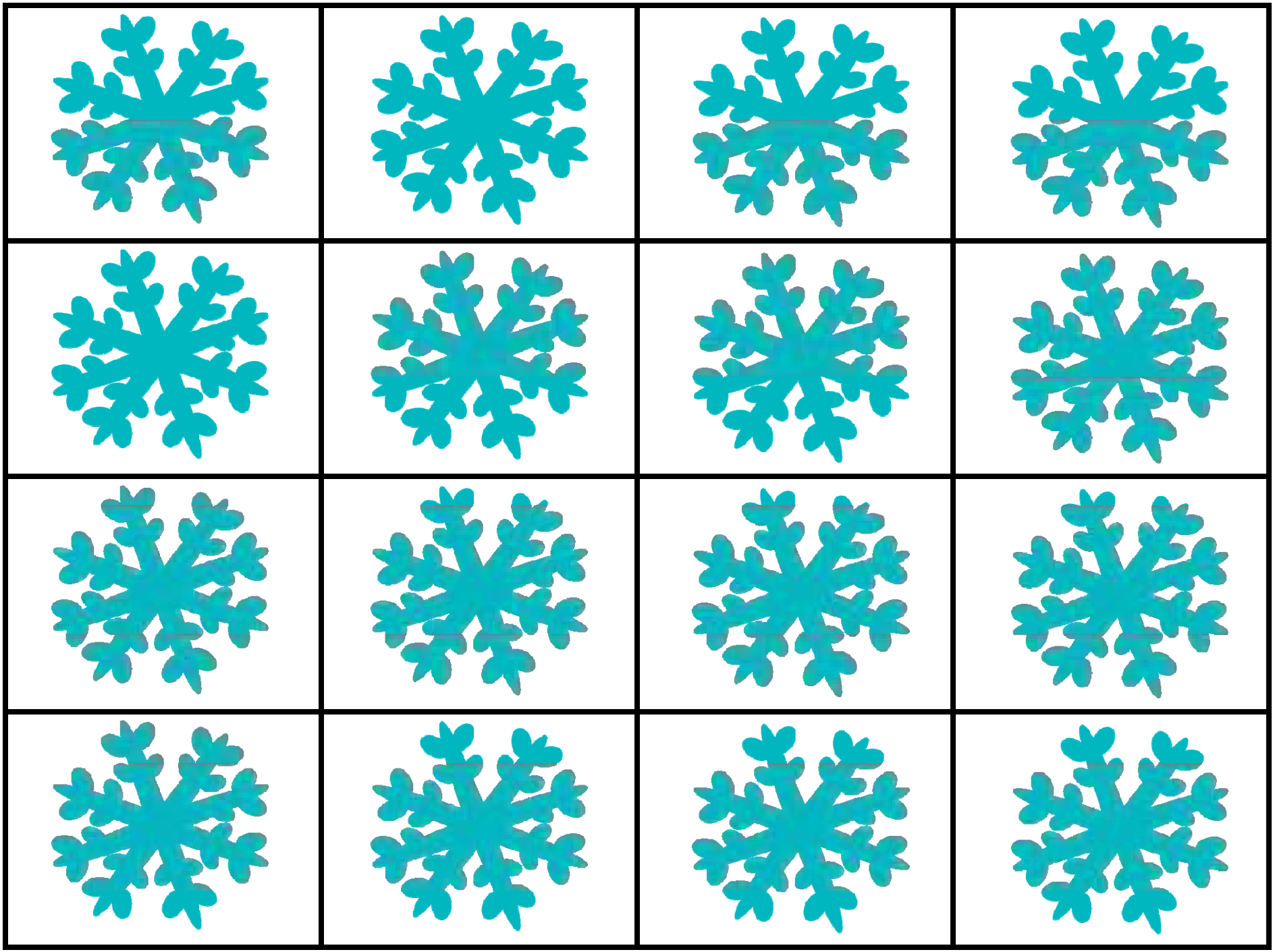
Go ahead and make up new obstacles if desired!

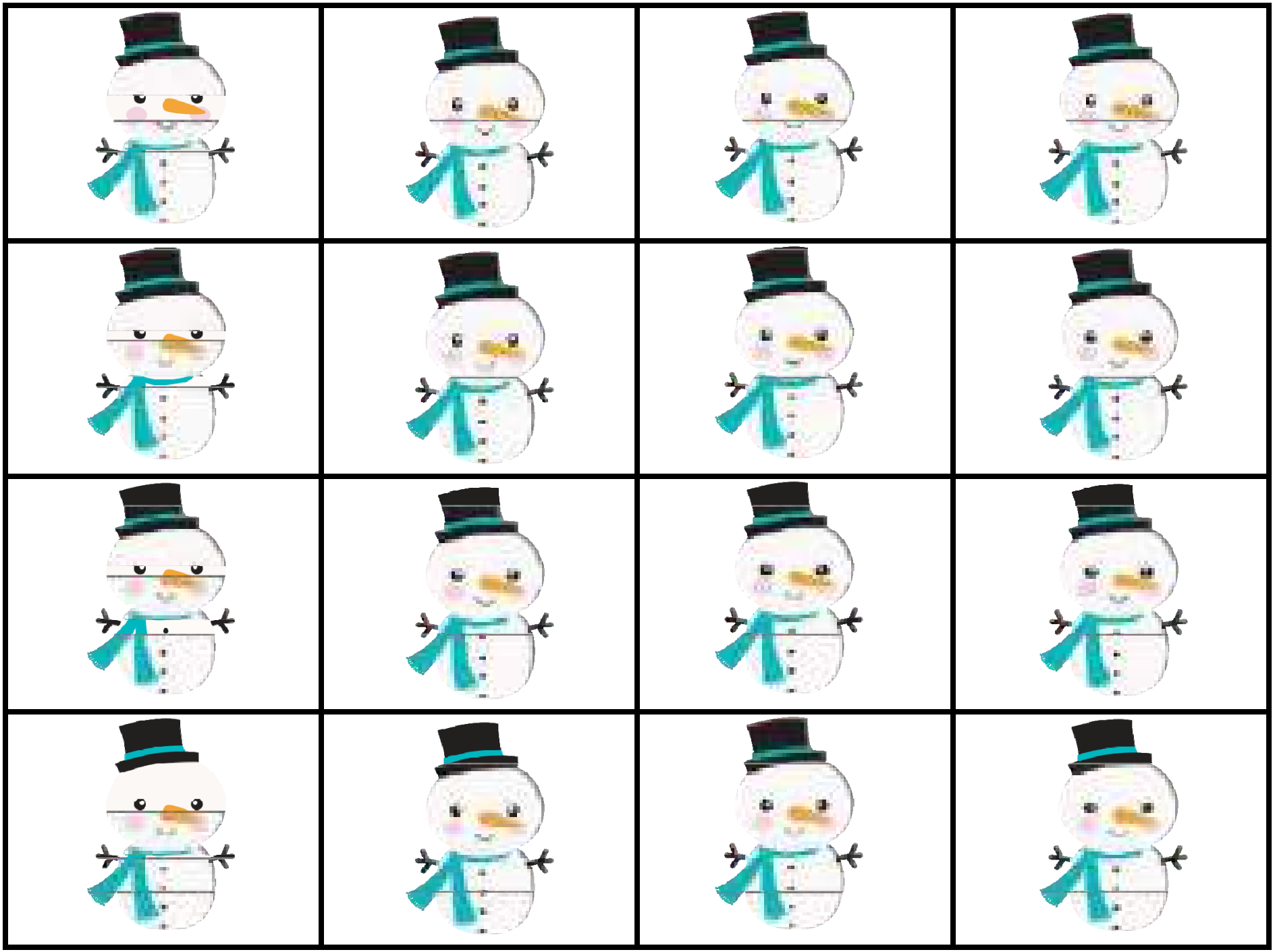
QUICK STEM

Coding is its own language. For programmers, it's like learning a new language when they write code for a new program. An algorithm is a series of actions that are strung together to solve a problem or tell something what it should do. Our printable algorithm coding game is perfect for learning how these actions string together to create a program through hands-on play!

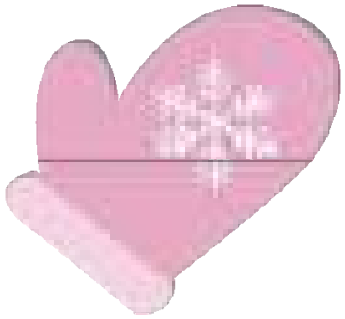


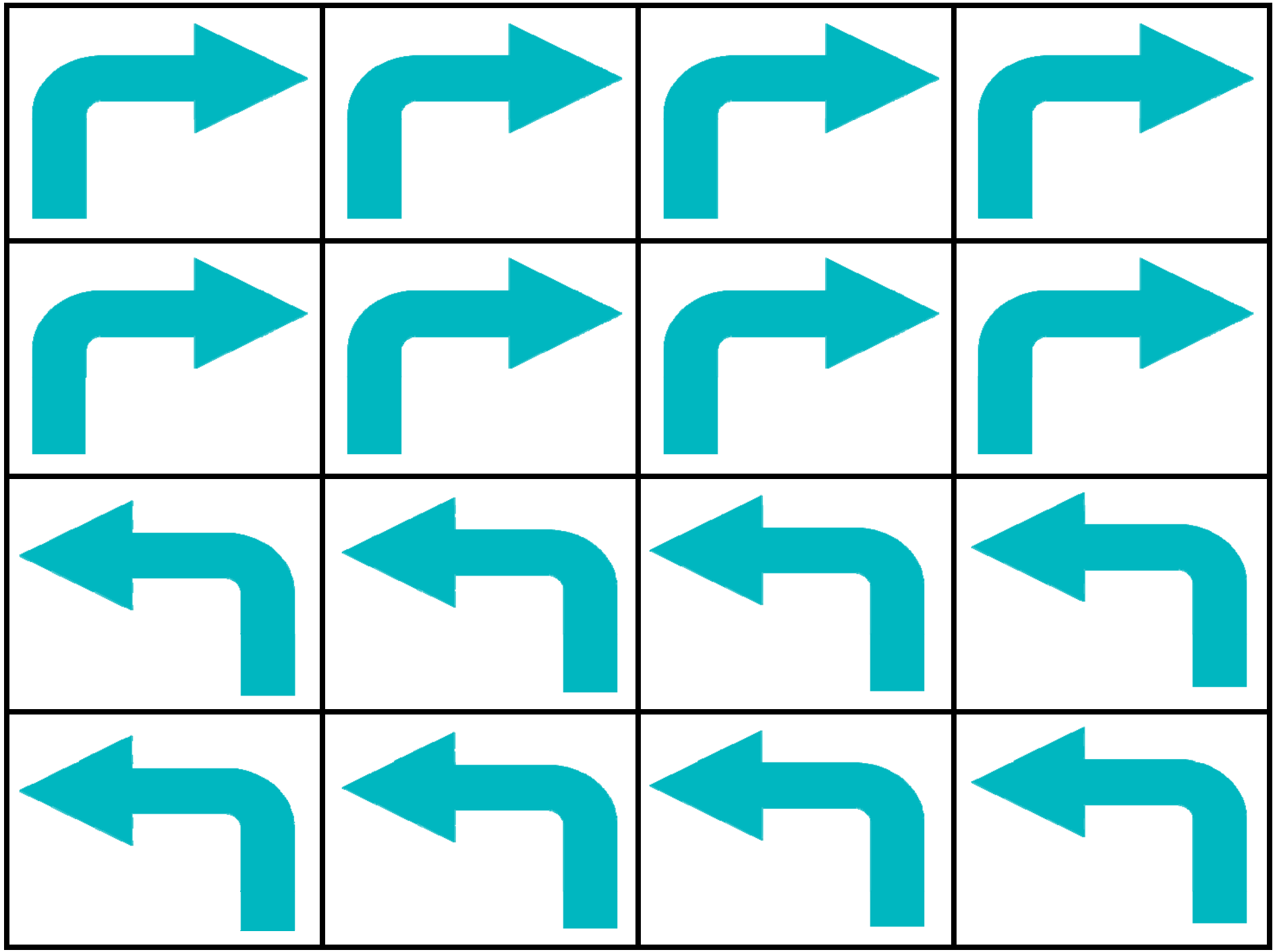


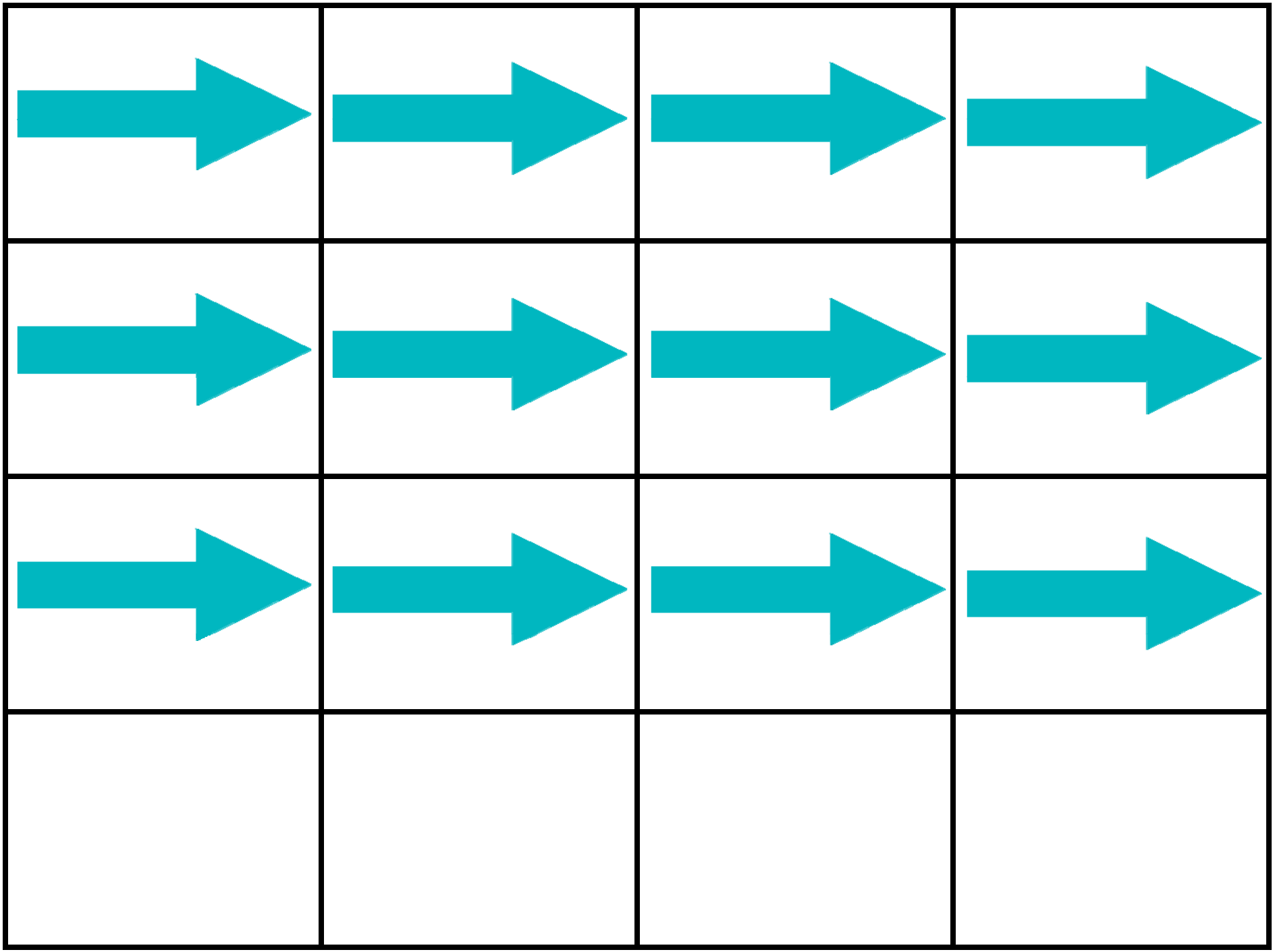


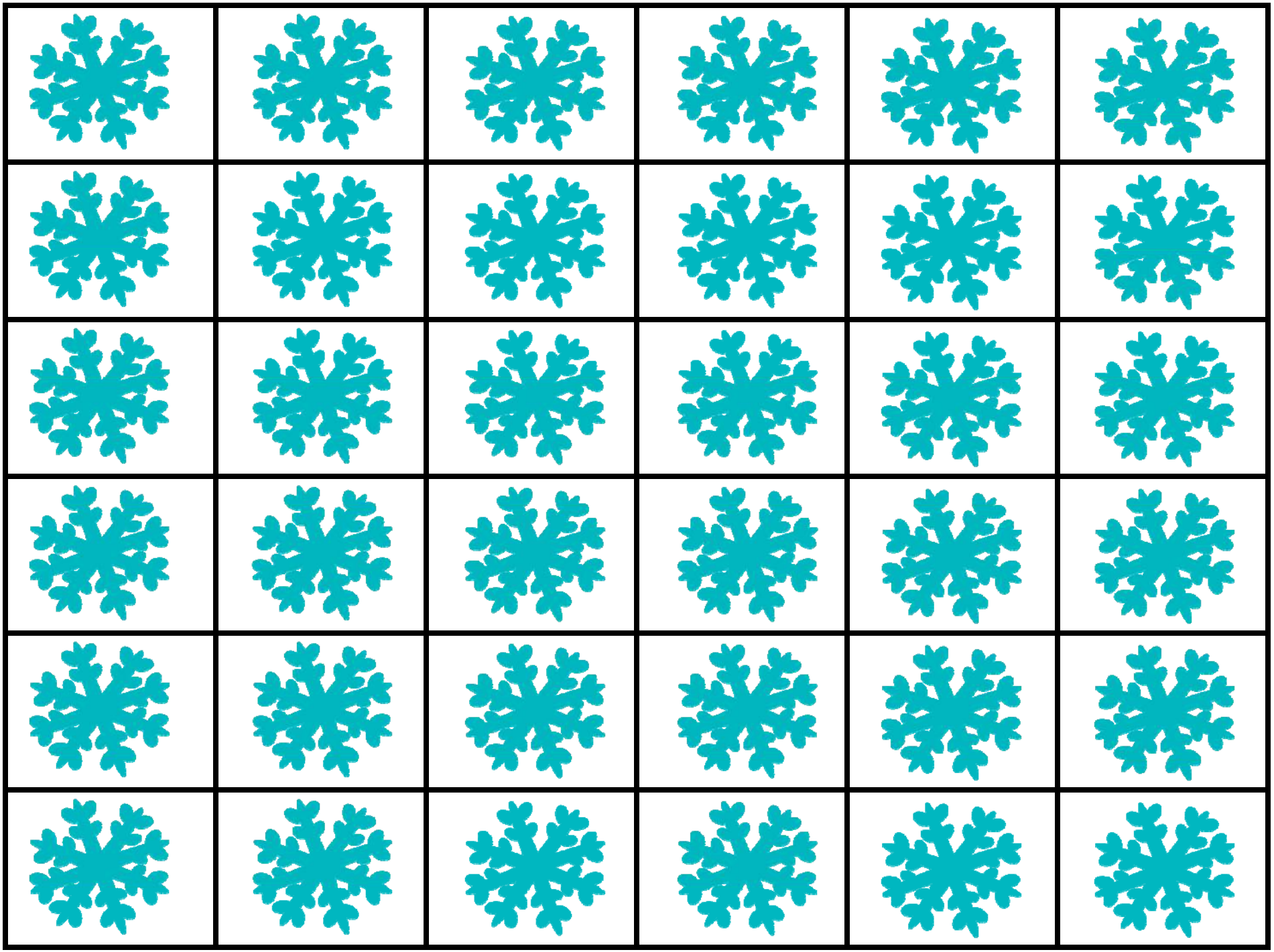


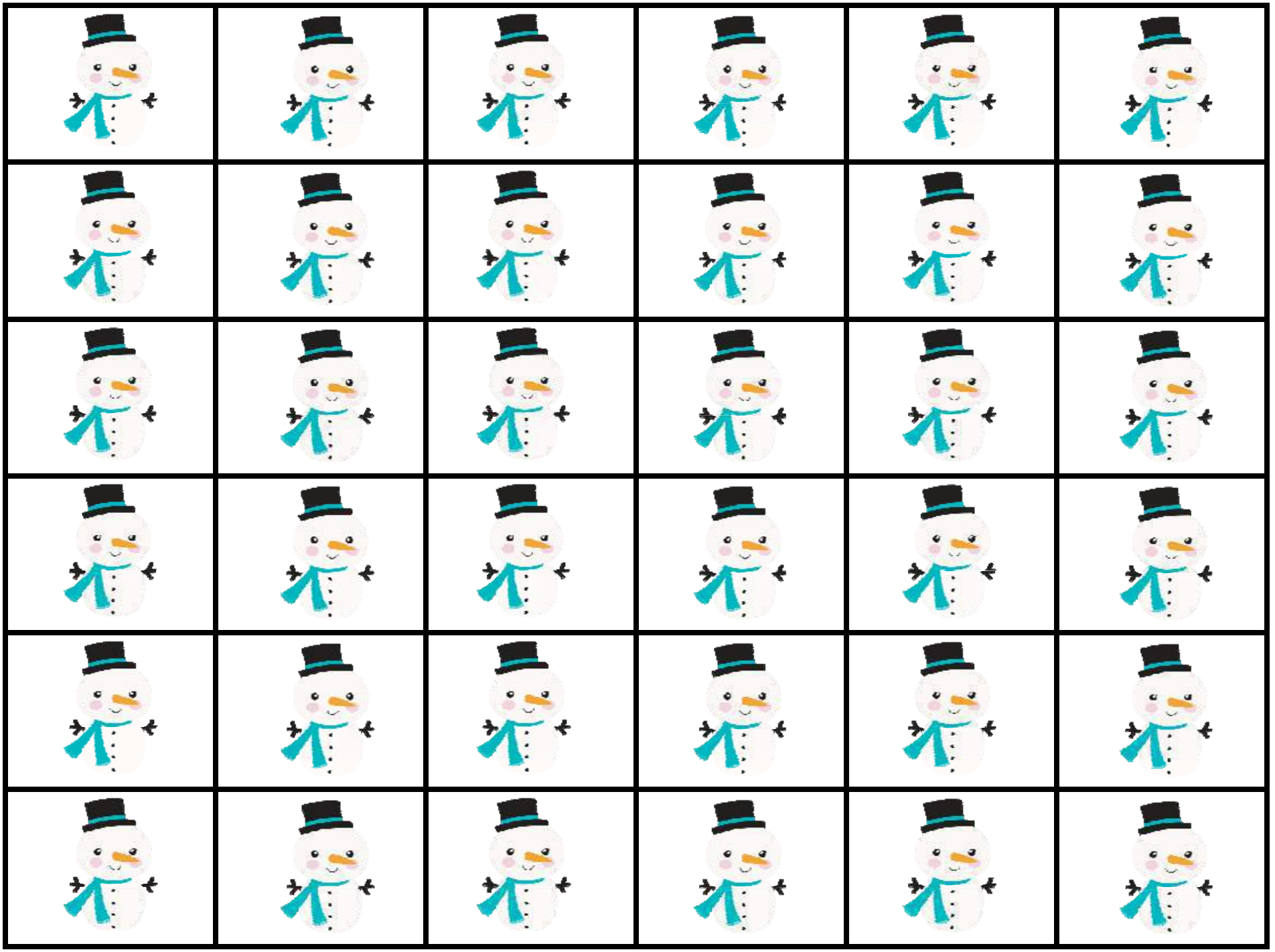
			

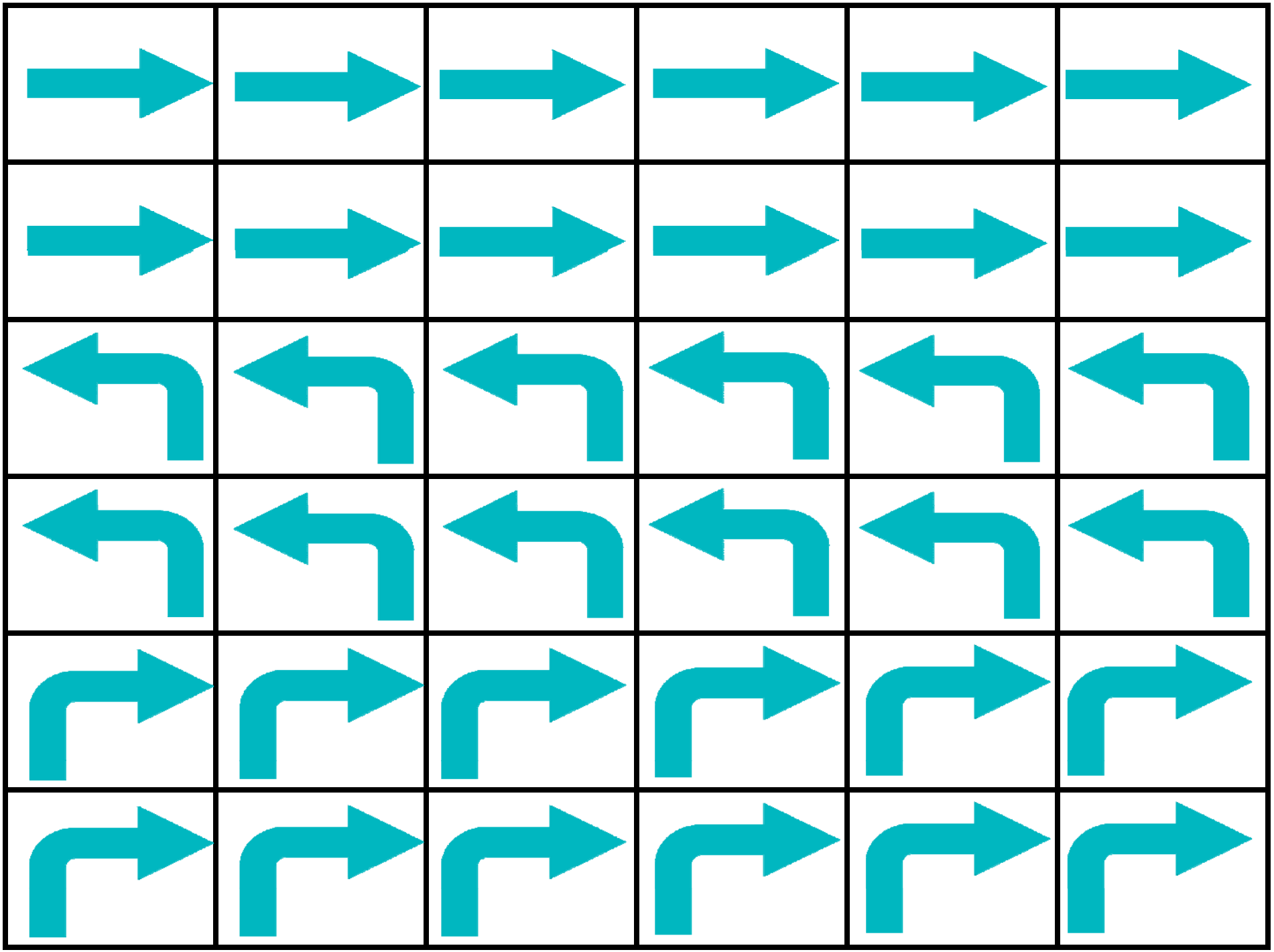










BINARY CODE

Winter coding ornaments are the perfect craft activity for the kid who doesn't care too much for crafts! Screen-free coding and ornament making as you explore the binary code

SUPPLIES

- 3 Colors of Beads
- Pipe Cleaners
- Printable Binary Code Sheet

Choose one color bead for the number 1 and another color bead for the number 0. Choose a 3rd color bead to use as a spacer between letters.

Bend your pipe cleaner into any winter theme shape such as an icicle, snowflake, or tree.

Choose a word or your name to be represented with the binary code. Use the printable sheet to write down the code.

If your word is too long for one pipe cleaner, simply attach another! Use ribbon or another type of fastener to hang in your window or tune into a keychain!

The computer doesn't read the letter A like we read the letter A. It reads it in a series of 1's and 0's. Each letter has its own code of 1's and 0's. This code is called the ASCII Binary Alphabet.

The binary number system is a base-2 number system. This means it only has two numbers: 0 and 1. The number system that we normally use is the decimal number system. It has 10 numbers: 0-9.

Computers work best with an “on” and “off” system and that is just what the binary code is all about. 1 is “on” and 0 is “off”.

ALPHABET IN BINARY CODE

A	01000001	J	01001010	S	01010011
B	01000010	K	01001011	T	01010100
C	01000011	L	01001100	U	01010101
D	01000100	M	01001101	V	01010110
E	01000101	N	01001110	W	01010111
F	01000110	O	01001111	X	01011000
G	01000111	P	01010000	Y	01011001
H	01001000	Q	01010001	Z	01011010
I	01001001	R	01010010		

WRITE YOUR NAME IN CODE

WRITE COLD IN BINARY CODE

WRITE SNOW IN BINARY CODE

WRITE FROSTY IN BINARY CODE

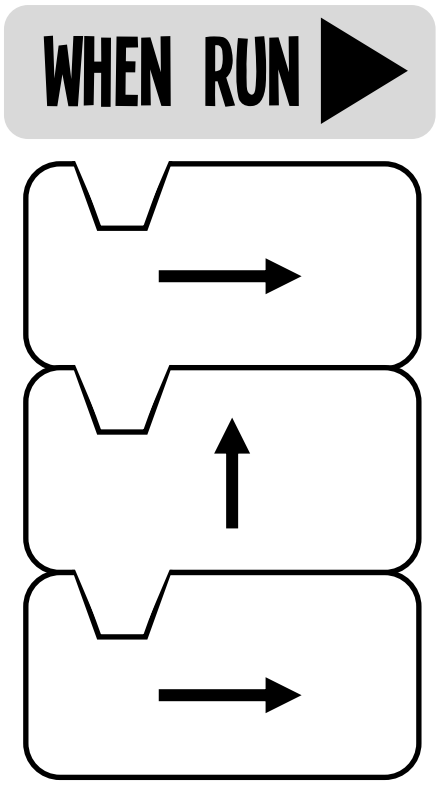
WRITE WINTER IN BINARY CODE

DRAW A SNOWMAN BASED ON AN ALGORITHM

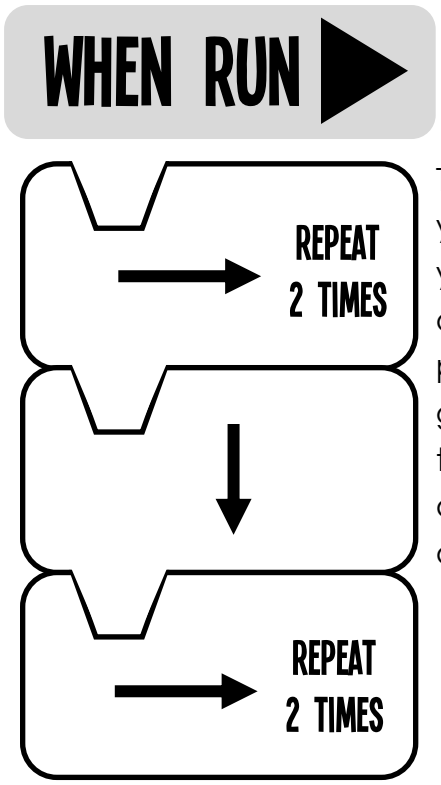
Years ago when people learned to code. They needed to learn a computer language like Cobol, Basic or C++. The language features a combination of words, letters, numbers and symbols.

A few years ago Neil Fraser invented a coding language called Blockly Blocks which features visual block programming. A series of command or function blocks are linked together vertically to create an algorithm or series of steps

Examples:



This means after you click on run, you need the object you are programming to go right, then forward, and finally, right again.



This means after you click on run, you need the object you are programming to go right twice, then backwards, and finally, right again twice.

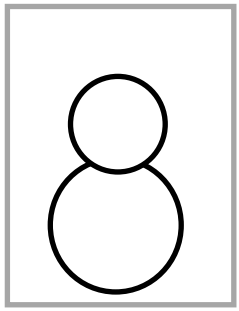
Coding sites for children like Tynker and Code.org feature Blockly Blocks in their coding activities. Before you have them put Blockly blocks together online, you can have them follow an algorithm offline. One way they can work with a Blockly block algorithm is to follow the steps you need to draw an object like a snowman. The algorithm or series of steps needed to draw and color a snowman can be found on the Drawing a Snowman Based on an Algorithm worksheet.

What will they do? Your children will draw what is mentioned or pictured in each of the blocks from the top block to the bottom block. When they have completed each step displayed in the block, they will have drawn a snowman.

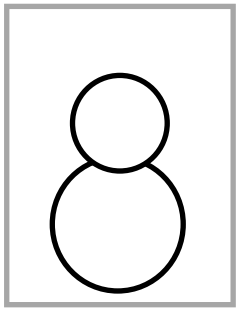
DRAW A SNOWMAN BASED ON AN ALGORITHM

WHEN RUN ▶

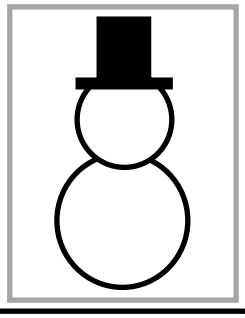
DRAW A BASE



DRAW A HEAD



DRAW A HAT



DRAW A FACE

DRAW AN ARM

REPEAT 2 TIMES

WINTER STEM EXTRAS

Explore marshmallows, experiment with freezing water, craft a thaumatrope, build with marshmallows, and more!

Winter Hibernation Sort & Classify

SUPPLIES:
Printable Sort and Classify Sheets
Scissors

INSTRUCTIONS:
Cut out each animal card and sort into one of the three states: Hibernates, Does Not Hibernate, or Torpor. Have kids research more animals to add to the list.

VOCABULARY:

Torpor: This is a survival method for animals during the winter who do not hibernate. It is a state of inactivity used for some animals to survive including lower body temperature, heart rate, and breathing rate.

Hibernation: This is the process in which an animal (or plant) spends the winter in a dormant state. These animals physical functions slow down or even stop for this period of time.

Sort & Classify

Bear

Snake

Bumblebee

Skunk

Hedgehog

Frog

Bat

Beetle

Sort & Classify

Hyena

Cardinal

Raccoon

Fish

Chameleon

Aardvark

Owl

Otter

Cut out the animals & sort to the correct card.

Hibernates	Does Not Hibernate	Torpor

Winter 5 Senses Pack

INCLUDES:
Printable Winter 5 Senses Sheets

WHAT ARE THE 5 SENSES?

The five senses are touch, taste, sight, sound, and smell. We use our senses to learn about the world around us every day. use these cards to explore the senses as well as work on literacy skills.

These senses gather information and help keep us safe as well as enjoy everyday activities! We use our ears, eyes, skin, mouth, and nose as tools for picking up this information.

Kids love to explore their senses and winter is the perfect time to do just that! Included in the pack you will find sheets to use with our snow ice cream and snow candy recipes found in the Winter Science Ebook.

Goa head and set up a hot chocolate station or gather freshly fallen snow!

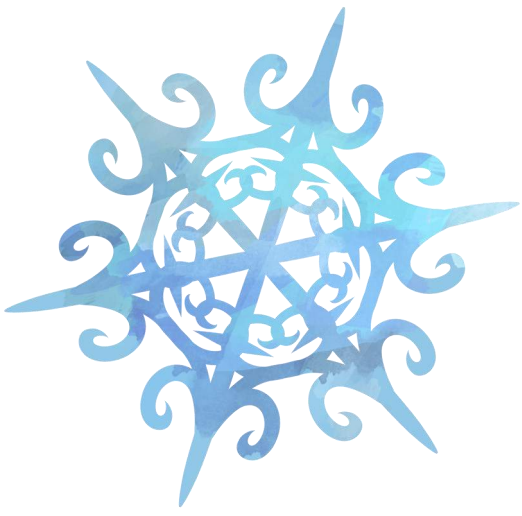
SNOW

I SEE

I SMELL

I TASTE

I FEEL



I HEAR

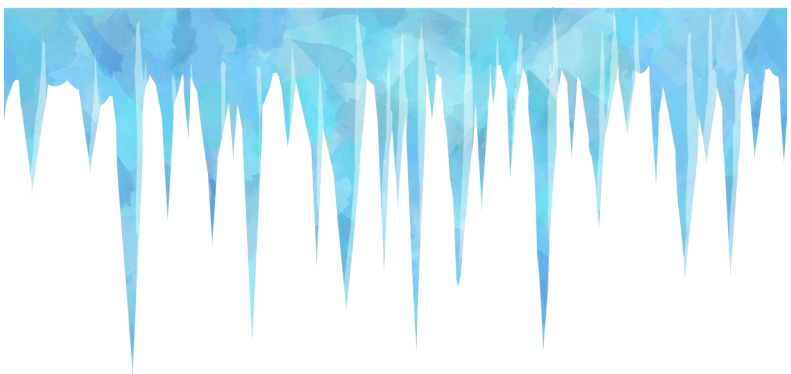
ICICLES

I SEE

I SMELL

I TASTE

I FEEL



I HEAR

HOT COCOA

I SEE

I SMELL

I TASTE

I FEEL

I HEAR

SNOW ICE CREAM

I SEE

I SMELL

I TASTE

I FEEL

I HEAR

SNOW POPS

I SEE

I SMELL

I TASTE

I FEEL

I HEAR

Marshmallow Melt Rate

Supplies:

Hot Chocolate Mix
Marshmallows
Mugs
Spoon
Thermometer
Timer or clock
Water

Directions:

Measure the same amount of water into each mug. Stir hot chocolate mix into water using varying degrees of water temperature. Document the starting water temperature of each mug. Add the same number of marshmallows to each mug, and time the rate melt of the marshmallows in each mug. Document the ending temperature of water in each mug.

Mixture	Starting Temperature	Ending Temperature	Time
Hot Chocolate Using Cold Water			
Hot Chocolate Using Tepid Water			
Hot Chocolate Using Warm Water			
Hot Chocolate Using Hot Water			
Hot Chocolate Using Boiling Water			

My prediction:
My conclusion:

Freezing Water Experiment

Which solution takes the longest to freeze?

Supplies:

- Distilled Water
- Sugar
- Salt
- 3 Small Plastic Cups

Procedure:

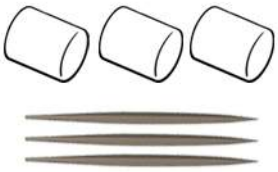
- Label one cup, plain water, one salt water, and one sugar water.
- Measure out 1/2 cup water into each cup.
- Add 1 Tablespoon of salt to the correct cup.
- Add 1 Tablespoon of sugar to the correct cup.
- Place all cups into the freezer.
- Check the water every 30 minutes and document the time when the water in each cup reaches freezing.

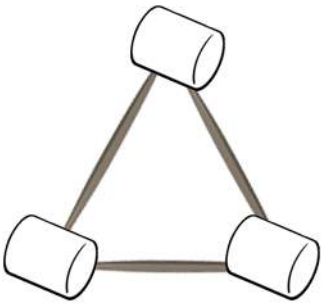
Which do you predict will freeze first?

Time	Pure Water	Salt Water	Sugar Water

create a triangle (2D)

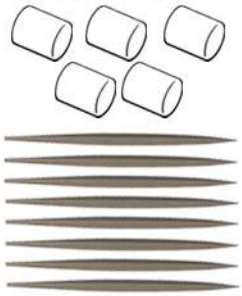
you need

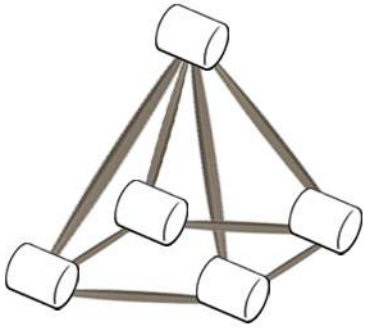




create a pyramid (3D)

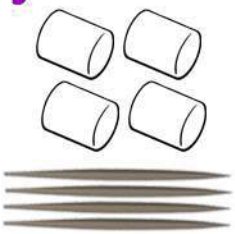
you need

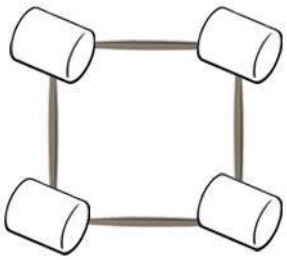




create a square (2D)

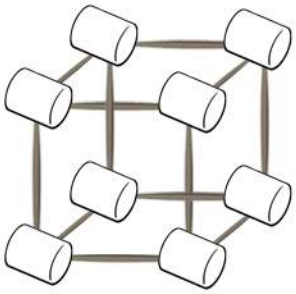
you need





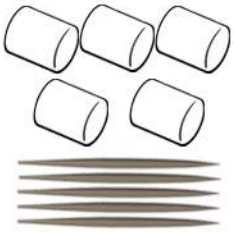
create a cube (3D)

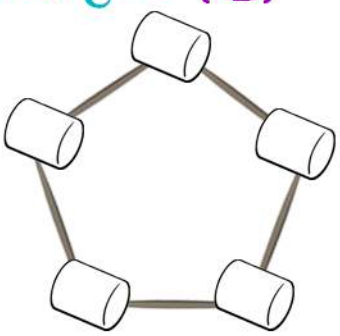
you need



create a pentagon (2D)

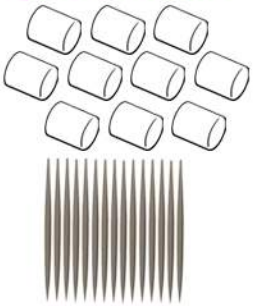
you need

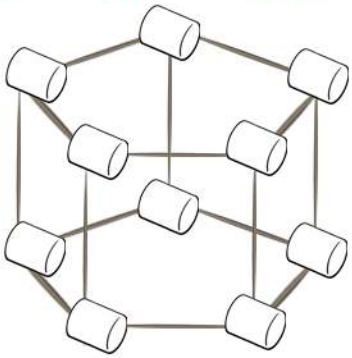




create a pentagonal prism (3D)

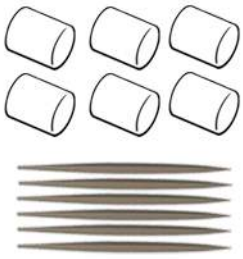
you need

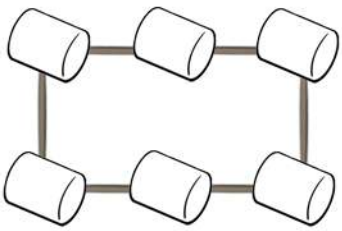




create a rectangle (2D)

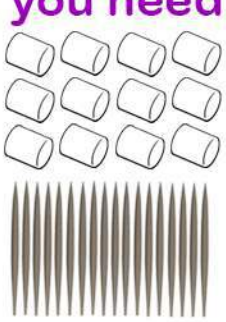
you need

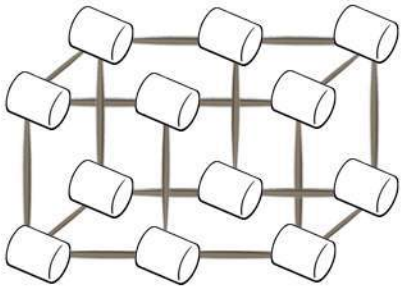




create a rectangular prism (3D)

you need





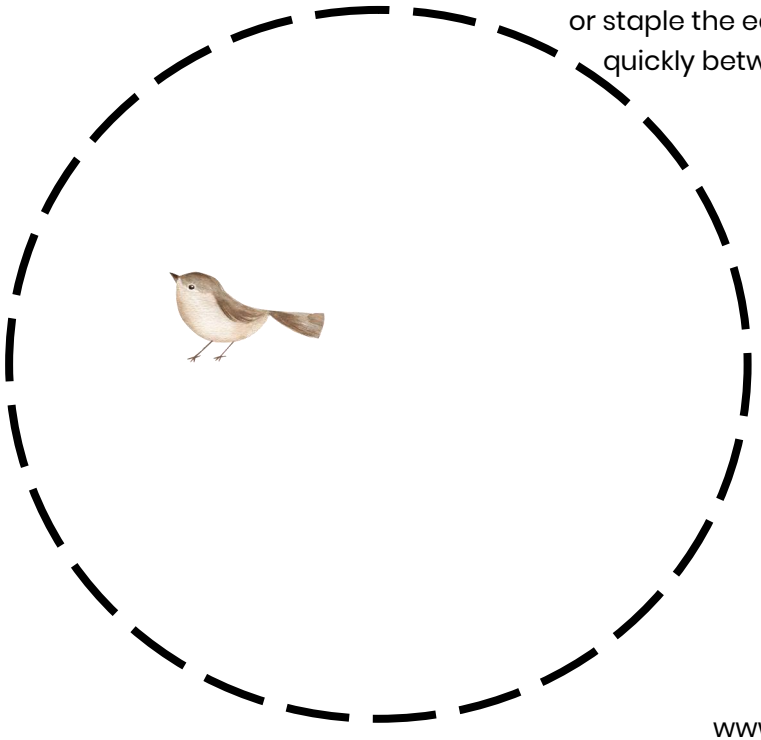
Winter Thaumatropes

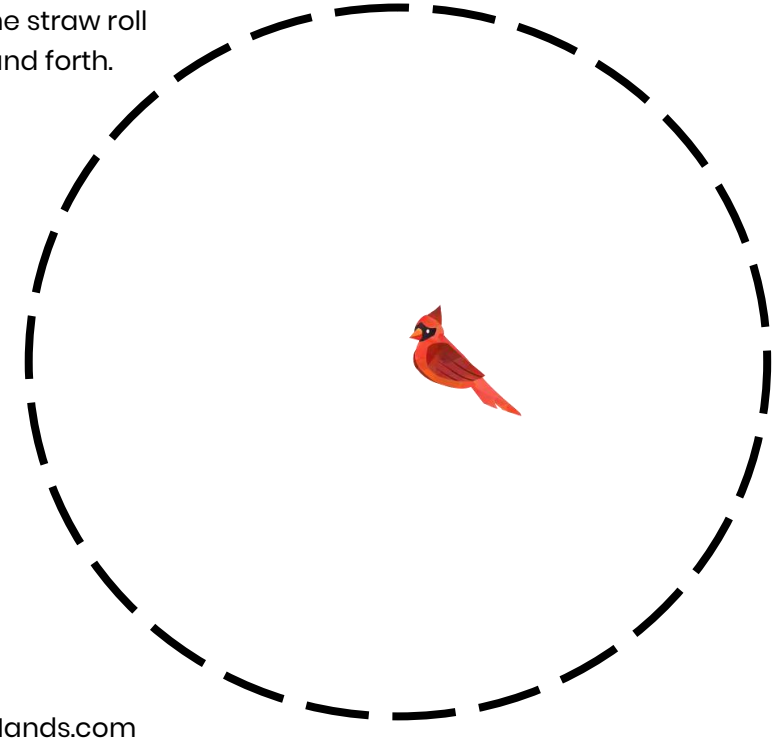
SUPPLIES:
Printable Thaumatrope Designs
Scissors
Straws
Tape

INSTRUCTIONS:
Cut out each circle. Tape a straw to the back of one of the circles., then match the other image to the back like 2 sides of a coin. Tape or staple the edges.
Then using the straw, roll thaumatrope quickly between fingers and watch what happens to the images!

ABOUT THAUMATROPES:
The two pictures become one image thanks to something called the persistence of vision. As the images flip back and forth, the brain begins to recognize both images as one!

Cut out each circle. Tape a straw to the back of one of the circles, then match the other image to the back like 2 sides of a coin, tape or staple the edges. Then using the straw roll quickly between fingers back and forth.





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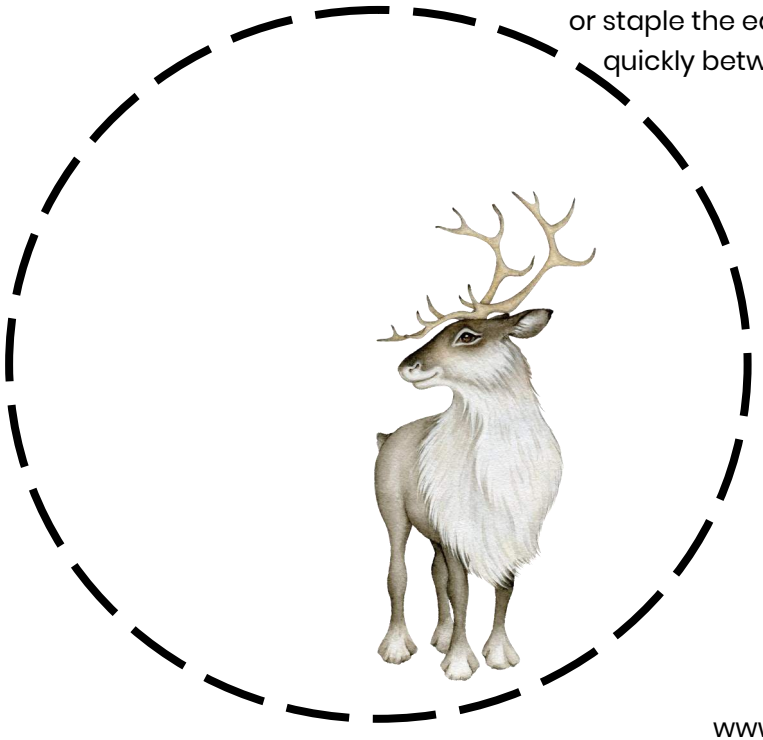
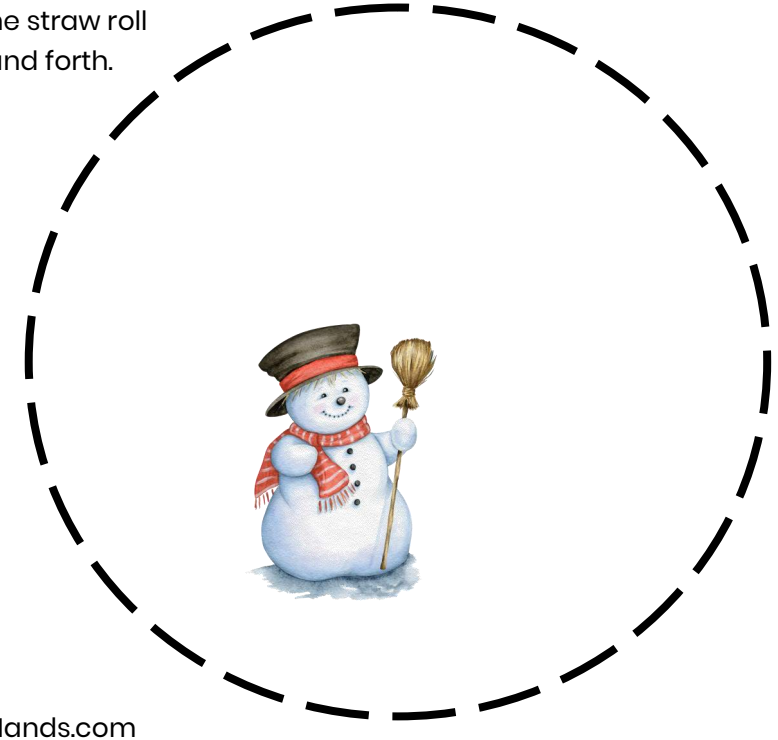




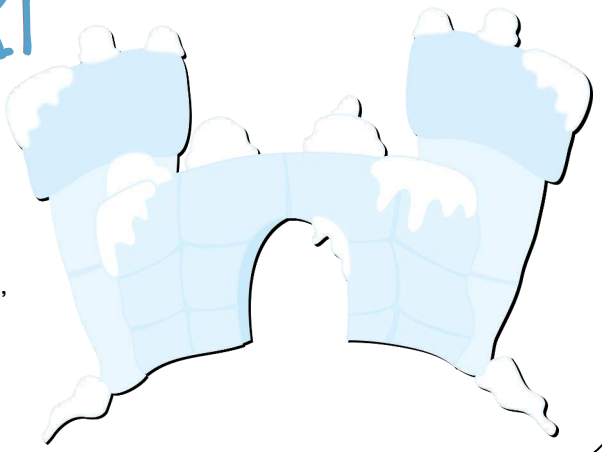
WINTER QUICK STEM CHALLENGES

Add these Winter STEM challenge cards to a simple engineering kit filled with easy to find supplies. Encourage the kids to get creative! Fun individual or group activity that's perfect for maker spaces or tinker tables.

WINTER STEM TINKER SUPPLY LIST

- Aluminum foil
- Baggies
- Beads
- Bows
- Buttons
- Clothes pins
- Coffee filters
- Cookie cutters
- Cotton balls
- Cotton swabs
- Doilies
- Dried cereal
- Dried pasta
- Feathers
- Felt
- Flat marbles
- Funnel
- Gems
- Glitter
- Glitter glue
- Glow stars
- Glow sticks
- Glue
- Golf tees
- Google eyes
- Gumdrops
- Leaves
- LEGO® bricks
- Lollipop sticks
- Magnets
- Marbles
- Marshmallows
- Measuring cups
- Paint
- Paper
- Paper clips
- Pinecones
- Pipe cleaners
- Pom-poms
- Popsicle sticks
- Pretzel Sticks
- Raffia
- Ribbon
- Rubber Bands
- Scissors
- Sequins
- Shells
- Shredded paper
- Skewers
- Spice jars
- Sponges
- Snow brick maker
- Stapler
- Strainer
- Straws
- String
- Styrofoam balls
- Sugar cubes
- Tape
- Tea lights
- Toilet paper rolls
- Toothpicks
- Twist ties
- Water beads
- Washi tape
- Wire
- Wooden planks
- Yarn
- Zip ties

DESIGN A SNOW FORT



Possible Supplies:
paper, toothpicks, wood planks, LEGO® bricks, cotton balls, cotton swabs, glitter glue

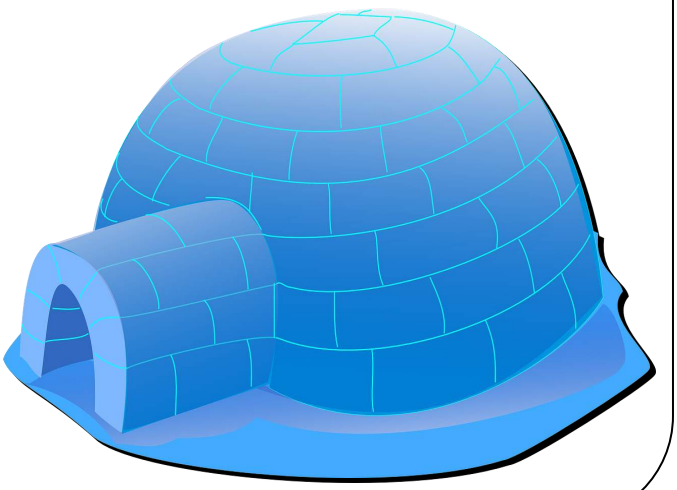
BUILD AN 3D SNOW-

Possible Supplies:
Styrofoam balls, paper, gems, yarn, toothpicks, buttons, marbles, marshmallows

BUILD AN ICEBERG RAFT

Possible Supplies:
baggies, aluminum foil, ice tray, glue, marshmallows,

BUILD AN IGLOO



Possible Supplies:
marshmallows, sugar cubes, cotton balls, toothpicks, cotton swabs, ice cubes

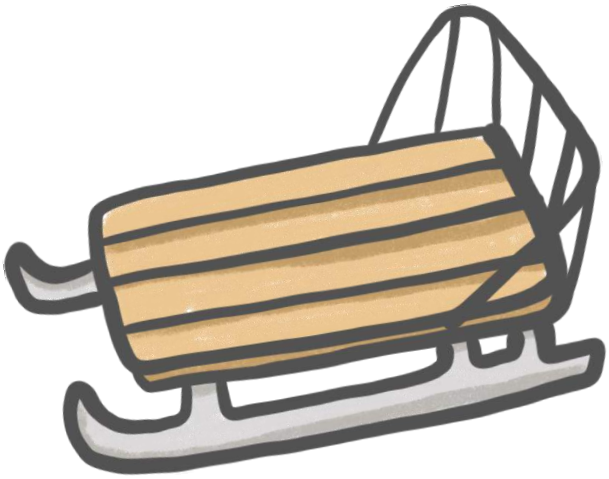
BUILD AN ANIMAL DEN

Possible Supplies:
raffia, toothpicks, leaves, feathers, twist ties, Washi tape, paper

BUILD A SNOW SHOVEL

Possible Supplies:
toothpicks, skewers, aluminum foil, paper, cardboard,

BUILD A SLED



Possible Supplies:
popsicle sticks, glue • twist ties • zip ties, staples, aluminum foil, Washi tape

DESIGN A SLED RAMP

Possible Supplies:
toothpicks, skewers, twist ties, wooden blocks, Washi tape, tape

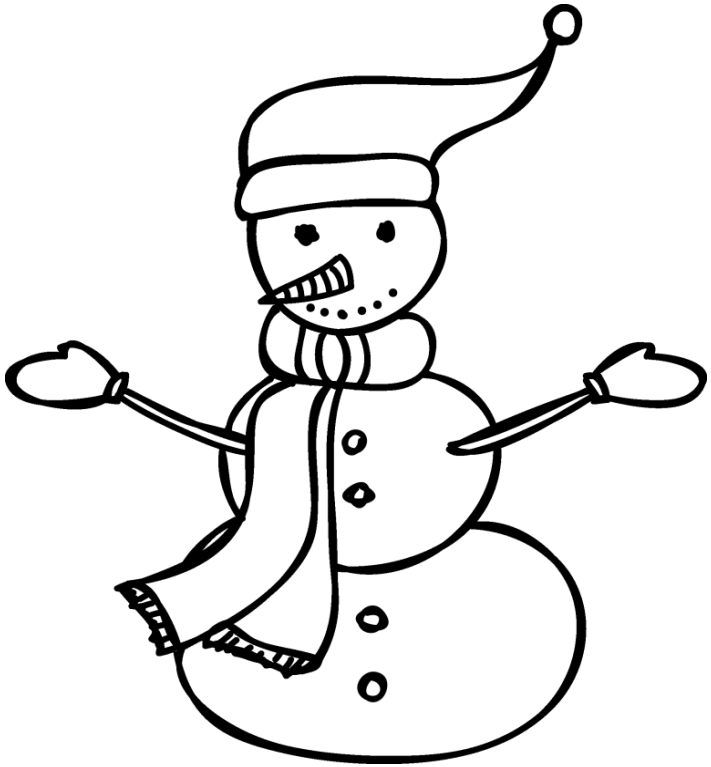
BUILD A SKI JUMP

Possible Supplies:
popsicle sticks, glue • twist ties • zip ties, staples, aluminum foil, Washi tape, LEGO bric

My Winter Coloring Book

S

S is for snowman



N is for new year

N

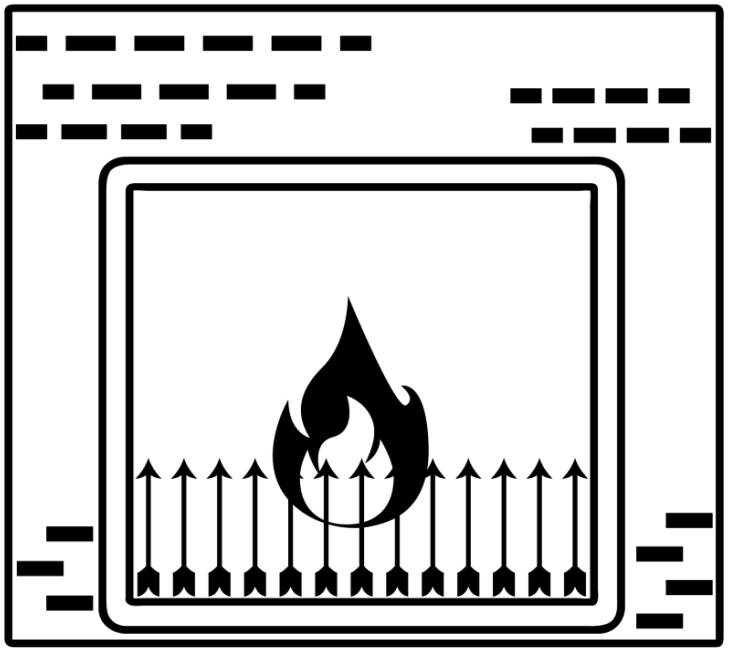
O is for overcoat

O

W is for warmth

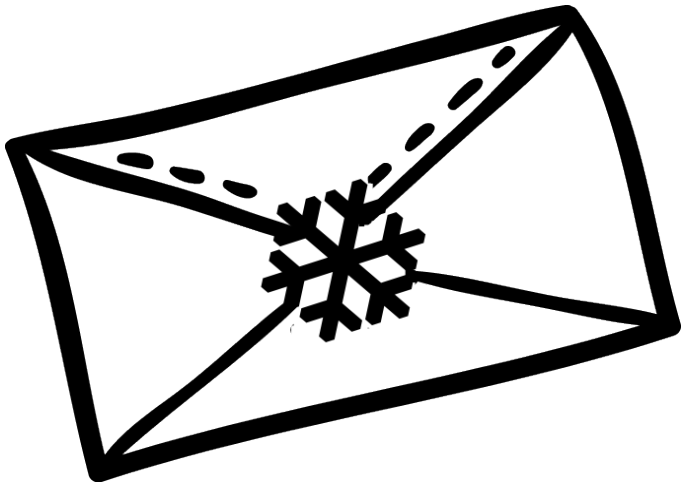
W

F is for fireplace



F

L is for letter

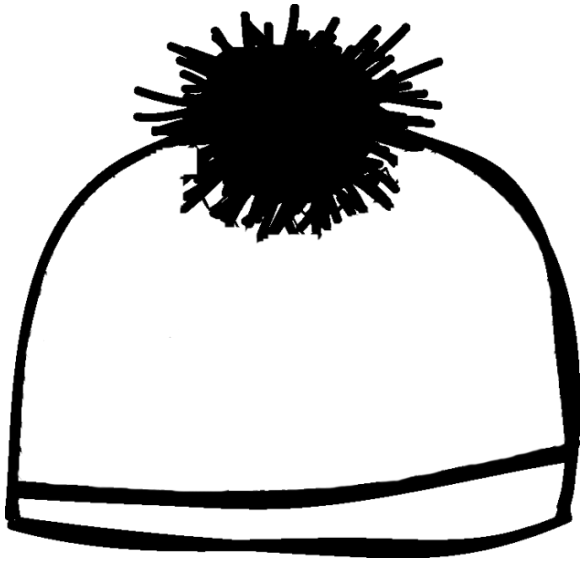


L

A is for angel

A

K is for knit cap



K

E is for earmuffs

E

WINTER SCIENCE ACTIVITIES

Explore these fun Winter theme science activities right through spring! Use the enclosed journal pages and best science practices pack to round out your science this season.

SCIENCE ACTIVITIES & STEM PROJECTS GUIDE

Introduction

This guide is full of AMAZING Science Activities and STEM Projects is dedicated to my equally AMAZING kiddo who loves the changing seasons as much as I do!

Over at littlebinsforlittlehands.com, we have been bringing the magic of the seasons to our simple science experiments and STEM activities for 5+ years!

Because I know kids love the novelty of the changing seasons and holidays, I have created and re-created many kid-favorite and classic science activities with special or unique themes to fit the occasion.

Join us as we celebrate the changing seasons with a bit of science and STEM. In these pages, you will find multi-sensory, hands-on learning experiences you can try over and over again. They are easy to set up, inexpensive, and PERFECT!

Using the Guide

What is the best way to use this Science Activities and STEM Projects guide?

Just pick an activity and go for it! Make a (science supplies) list! Grab the items on your next grocery shopping trip! I bet you have plenty of supplies already on hand in your cupboards.

Many of these activities are playful! Some activities can take as little as 5-10 minutes or as long as an hour if your kids are still having fun observing, exploring, and experimenting!

Also, make sure to check out the printable Science Activities & STEM Projects Journal Pages included!

Don't forget to visit the dollar store and craft stores around the start of each season. You can find many fun and inexpensive items that can enhance your themes and also be saved from year to year!

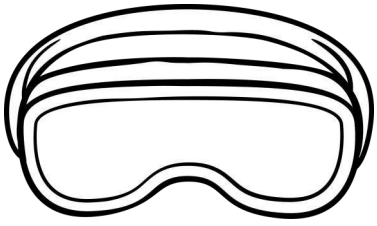
You can also fill a bin with recycled and up-cycled items for future projects! Then, you always have a stock of neat materials available to use.

Safety First

While all the ingredients in this Science and STEM guide are easy to find at your local stores, I always **RECOMMEND adult supervision** and assistance at all times depending on the abilities and needs of each kiddo.

- Be prepared to get a little messy!
- Stock your pantry with all the ingredients you need!
- Read through the instructions or recipe thoroughly before getting started!
- Do NOT eat or drink any of these activities unless noted.
- Wash hands thoroughly after all activities.
- Wash all surfaces, utensils, and bowls thoroughly after activities.
- Protective eyewear is always recommended and perfect for the junior scientist!

For Kids: Make sure you have an appropriate workspace and the correct supplies or ingredients before you get started. Always ask for adult help before trying any science activity.



BEST SCIENCE AND ENGINEERING PRACTICES

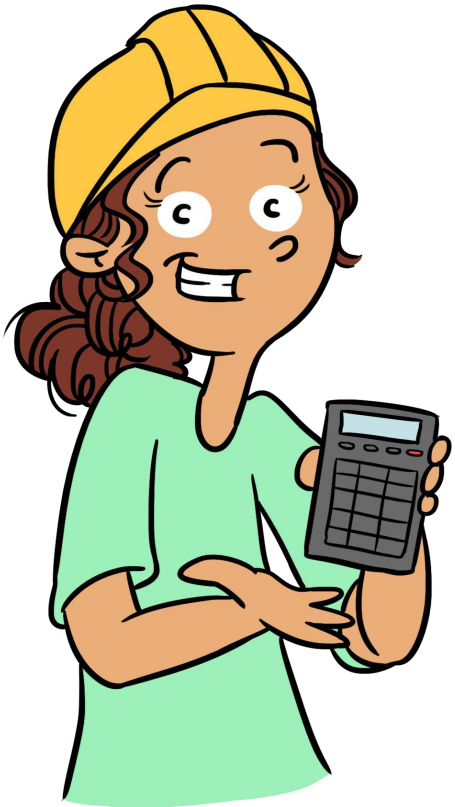
1. I CAN ASK QUESTIONS

2. I CAN DEVELOP AND USE MODELS

3. I CAN PLAN AND CARRY OUT INVESTIGATIONS

4. I CAN ANALYZE AND INTERPRET DATA

5. I CAN USE MATH AND COMPUTATIONAL THINKING



6. I CAN CONSTRUCT EXPLANATIONS

7. I CAN ENGAGE IN ARGUMENTS FROM EVIDENCE

8. I CAN OBTAIN, EVALUATE, & COMMUNICATE INFORMATION

1. I can **ask questions**.	2. I can **develop** and **use models**.
3. I can **plan** and **carry out investigations**.	4. I can **analyze** and **interpret data**.
5. I can use **math** and **computational thinking**.	6. I can **construct explanations**.
7. I can **engage** in **arguments** from **evidence**.	8. I can **obtain, evaluate**, and **communicate information**.

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7. I can **engage** in **arguments** from **evidence**.	8. I can **obtain, evaluate**, and **communicate information**.

BEST SCIENCE AND ENGINEERING PRACTICES

It is important to note that the scientific method is not a linear set of steps, and you can adapt it to fit your investigation.

1. I can ask questions.
2. I can develop and use models.
3. I can plan and carry out investigations.
4. I can analyze and interpret data.
5. I can use math and computational thinking.
6. I can construct explanations.
7. I can engage in arguments from evidence.
8. I can obtain, evaluate, and communicate information.

THE SCIENTIFIC METHOD, BEST SCIENCE PRACTICES, AND LEARNING!

What is science, and why should we learn it?

The word "science" comes from the Latin word that means "knowledge" . So science is all about gaining knowledge about the world around us. We know kids love to ask questions about what they see!

The word "method" comes from the Greek word that means "road". A method is all about the route you take to get someplace, but is it a road map?

If you put the two words together, science and method, you get a new term called "scientific method". This term is used to talk about a series of steps to use as a way to figure things out or to gan knowledge.

The scientific method is a useful tool for introducing kids to a logical way to solve scientific problems. The steps are helpful for guiding the process, but "guide" is the key here. It's important to understand that the scientific method is not a linear set of steps and can be adapted to suit the needs of a variety of investigations.

There are many ways scientists look to gain knowledge. It is important to allow kids to use the practices with what they are learning. This process will encourage the use of higher-order thinking skills for creating, evaluating, and analyzing. As kids develop the practices of questioning, gathering data, analyzing, and communication, they can apply these critical thinking skills to any situation. Now that's a winner!

* Note: You might be familiar with the more traditional version which includes some similar practices but in a linear format. These steps include asking questions, developing a hypothesis, conducting research, doing experiments and tests, analyzing data, and drawing conclusions.

However, the following eight science practices are less structured and allow for a more free-flowing approach to problem-solving and finding answers to questions.

MY EXPERIMENT:

Materials I used:

What I think will happen:

MY EXPERIMENT:

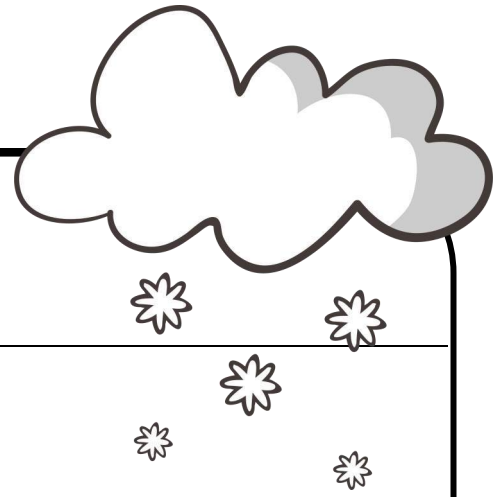
What I did:

What I saw:

MY EXPERIMENT:

Draw it:

MY EXPERIMENT:



What happened:

MY EXPERIMENT:

What happened:

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Snowstorm in a Jar

YOU WILL NEED:

- Water
- Baby oil (or regular cooking oil)
- Food coloring
- White washable acrylic paint
- Fizzy tablets (Alka-Seltzer® type)
- Glitter and confetti (Optional)
- Jar or tall glass

DIRECTIONS:

1. Start by filling a container one-third of the way full with water.
2. Fill the rest of the way with baby oil or cooking oil. Watch what happens.
3. Do the oil and water mix? Which liquid is heavier or denser?
4. Next, add several squeezes of food coloring, but don't stir!
5. Drop in a fizzy tablet and watch the activity!

What's Happening?

THE SCIENCE BEHIND THE SNOW IN A JAR EXPERIMENT:

Why don't all liquids simply mix together? Did you notice the oil and water separate? That's because water is heavier than oil. Liquids are made up of different numbers of atoms and molecules. In some liquids, these atoms and molecules are packed together more tightly resulting in a denser or heavier liquid.

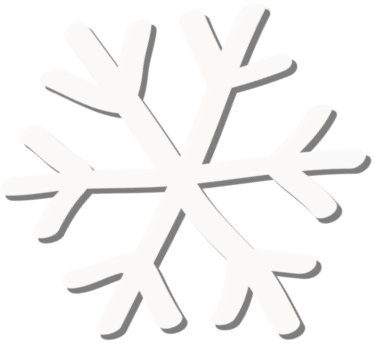
Now for the chemical reaction! When the tablet and water mix, they create a gas called carbon dioxide which is all the bubbling you see. These bubbles carry the color water to the surface of the oil where they pop. Then the color water falls back down due to gravity.

THINK ABOUT IT:

What might happen in you added baking soda instead of the fizzy tablet? Would you get the same reaction?
Why or why not?

Test your theory: make another batch of water and oil. Then add just a tablespoon of baking soda.

Did it work?
What could you do to change the reaction?



These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Snowy Oobleck

YOU WILL NEED:

- 1 Cup of corn starch
- 1 Cup of water
- Brown pipe cleaner
- Brown buttons
- Orange foam paper

DIRECTIONS:

1. Start by mixing cornstarch and water in a baking dish or shallow bowl.

2. The mixture should be neither too dry nor too soupy! You can adjust the texture by adding more water or more cornstarch.

3. Decorate with snowman accessories to enjoy the wintery theme. Or add plastic snowflakes for play!

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

What's Happening?

THE SCIENCE BEHIND THE SNOWY OOBLECK EXPERIMENT:

Oobleck is a fun substance made from a mixture of cornstarch and water. It's a bit messy too!

Oobleck is called a non-Newtonian fluid. This means it is neither a liquid nor a solid. You can pick up a clump of the substance like a solid and then watch it ooze back into the bowl like a liquid.

Touch the surface lightly and it will sink into it like a liquid. If you apply more pressure, it will feel firm and solid. If you slowly push your finger into it, it will feel like a liquid but if you tap the surface quickly it will feel like a solid.

THINK ABOUT IT:

What other mixtures can you think of that behave in a similar way? Do you think that non-Newtonian liquids move at the same rate that water flows?
Why or why not?

Test your theory: You will need 1 tray, 2 cups, and a couple of books. Prop up one end of the tray on the books. Pour water into one cup and the same amount of Oobleck into another cup. Now, at the same time pour both at the top incline of the tray.

Watch the flow of each.
Do they flow at the same or different rates?

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Snow Ice Cream

YOU WILL NEED:

- 8 Cups freshly fallen snow
- 10 oz. Sweetened condensed milk
- 1 tsp. Vanilla extract
- Sprinkles

DIRECTIONS:

1. Lay out a bowl to catch freshly fallen snow.

2. Scoop four cups into a bowl and pour the sweetened condensed milk on top.

3. Add in a teaspoon of vanilla extract and mix well.

4. Your ice cream will probably look soupy. Mix in another four cups of fresh snow and scoop out with an ice cream scoop. Additionally, you can pop it into the freezer for a frostier treat.

5. Serve with sprinkles or your favorite toppings.

Note: If you don't have snow where you live, try our homemade ice cream in a bag experiment instead.

What's Happening?

THE SCIENCE BEHIND THE SNOW ICE CREAM EXPERIMENT:

The ice cream in a bag recipe goes into the science of something called freezing point depression. When ice and salt are mixed in a bag or container, the result is a colder temperature that helps the ice cream to form.

Snow ice cream doesn't use salt, so really you have a fun treat made from a mixture of ingredients to create a new substance which is cool chemistry too!

THINK ABOUT IT:

What can you add to your ice cream for a tastier treat?

Chocolate, marshmallows, and root beer are good ideas.

What do you think would happen if you were to pour root beer over your ice cream?

Test your theory: measure 1 cup of ice cream into a bowl, then pour 1 cup of root beer over the top.

What is the reaction? What do you think is the reason for the reaction? Can other types of liquid cause a similar reaction?

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

DIY Thermometer

YOU WILL NEED:

- Mason® jar (with straw and lid)
- Clear straw
- Play dough
- Water
- Rubbing alcohol
- Red food coloring

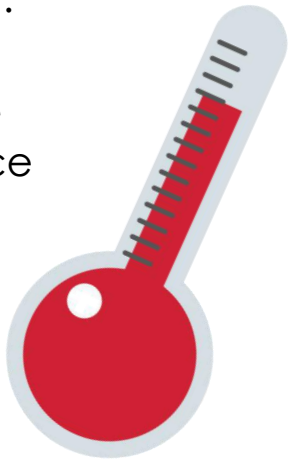
DIRECTIONS:

1. Make a hole in the center of the Mason® jar lid just big enough for your straw to slide through. Adult help required!

2. To the mason jar, add red food coloring, 1/4 cup water, and 1/4 cup alcohol. Mix.

3. Stick the straw through the hole and tighten the lid onto the jar. Mold a piece of play dough on the lid around the straw, which will hold the straw about 1/2" from the bottom of the jar.

4. Place your thermometer outside in the cold or in the fridge and inside the house and watch the difference in how high the water rises in the straw in different temperatures.



What's Happening?

THE SCIENCE BEHIND THE DIY THERMOMETER EXPERIMENT:

Many thermometers contain alcohol because it has a low freezing point. As the temperature of the alcohol increases, it expands and causes the level to rise.

The level of the alcohol corresponds to the printed lines/numbers on a thermometer indicating the degree of temperature.

This homemade version does a similar thing.

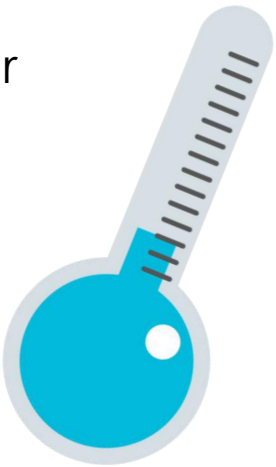
THINK ABOUT IT:

Try to predict how your thermometer will change in various areas of your home.

Make a chart listing each room of your home. Don't forget about the basement (if you have one), the garage, and your bathroom both before and after you've taken a shower.

Write a prediction of whether the liquid in your Thermometer will rise or fall in each room.

Test your theory: as you check each location write down the results on your chart.



These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Fizzing Snowmen

YOU WILL NEED:

- Baking soda
- Water
- White vinegar
- Glitter and sequins
- Googly eyes or beads
- Orange foam paper

DIRECTIONS:

1. Slowly add water to a bowl of baking soda until you get a crumbly but pack-able dough. It shouldn't be runny or soupy.

2. Add sequins, glitter, buttons, or confetti. Mix!

3. Make a snowball out of the mixture and gently press in googly eyes and a carrot nose. You can use plastic wrap to help shape the snowball if desired.

4. Place the snowmen in the freezer for at least a half hour. These can also be prepped the night before.

5. Place snowmen in a dish. Use a squirt bottle filled with vinegar or a baster and bowl of vinegar to "melt" your snowmen! You can add blue food coloring to vinegar if desired.

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

What's Happening?

THE SCIENCE BEHIND THE FIZZING SNOWMEN EXPERIMENT:

Fizzing, melting snowmen is another example of a classic baking soda and vinegar chemical reaction.

The acid in the vinegar and the base in the baking soda form a new substance which is a gas called carbon dioxide. As the gas forms and releases into the air you see the reaction as bubbling and fizzing!

THINK ABOUT IT:

What happens if you freeze the snowballs before you begin playing? Will the snowballs melt faster or slower?

Test your theory: Freeze half of the snowballs that you make, and don't freeze the other half. Then when you begin playing, use all the snowballs.

Which set dissolves faster?

Why do you think this is the result?

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

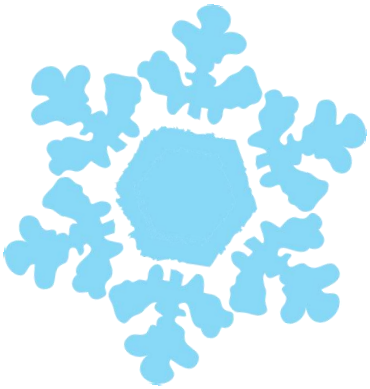
Crystal Snowflakes

YOU WILL NEED:

- Pipe cleaners
- Water
- Borax® laundry booster powder
- Glass jars
- Ribbon, craft sticks, scissors

DIRECTIONS:

1. Make your pipe cleaner snowflakes! Get creative with the arms of your snowflake.
2. Cut a length of ribbon so that your snowflake hangs freely in the middle of the jar. Use a craft stick to hang the snowflake. The snowflake should not touch the bottom or the sides.
3. Make a Borax® solution. Mix approximately 1 cup of boiling water with 3 tablespoons of Borax® powder. Make enough to fill however many jars you have. The snowflake should be completely immersed.
4. Set the jars aside for 24 hours where they will not be disturbed. Remove crystallized snowflakes from the solution, and let them dry on paper towels.



Note: Adult supervision is needed for boiling and pouring the water.

What's Happening?

THE SCIENCE BEHIND THE CRYSTAL SNOWFLAKES EXPERIMENT:

The borax powder has been suspended throughout the solution and remains that way while the liquid is hot. A hot liquid will hold more borax than a cold liquid will! This is also called a saturated solution.

As the solution cools, the particles settle out of the saturated mixture. The settling particles form the crystals that you see on the pipe cleaners. The impurities remain behind in the water.

Cube-like crystals will form if the process of cooling is slow enough.

THINK ABOUT IT:

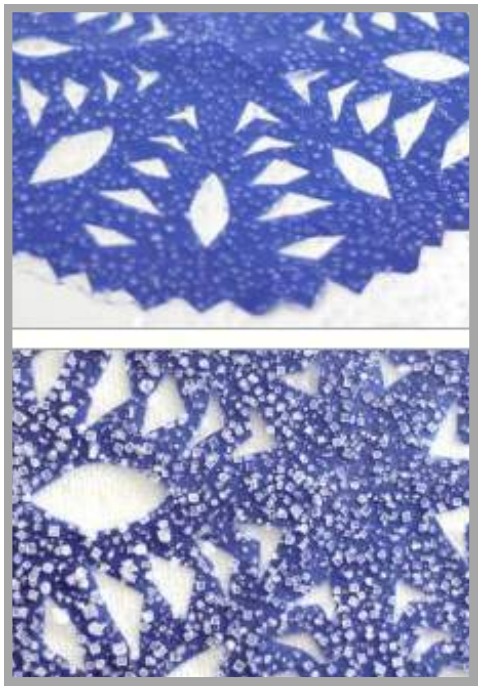
What would happen if you used sugar instead of Borax® powder? Do you think crystals would form?

Test your theory: Repeat the experiment using sugar for your solution.

After 24 hours, what results do you see?

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Salt Crystal Snowflakes

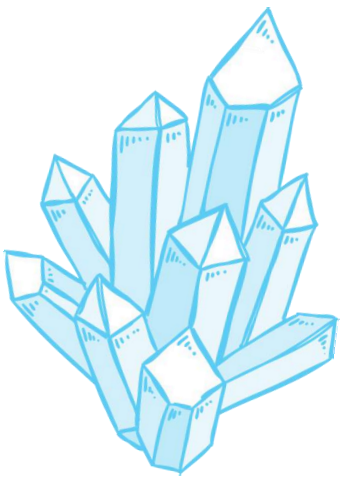


YOU WILL NEED:

- Construction paper
- Water
- Salt

DIRECTIONS:

- Cut out winter theme shapes or snowflakes from construction paper. You can even trace cookie cutters!
- Make a salt solution. Start with hot water. Let the tap water run really hot or boil the water if desired.
- Tablespoon by tablespoon add salt until the water can not hold anymore. The hotter the water, the more salt you will be able to add. The goal is to add as much salt as the water will hold to make a saturated solution.
- Place your shapes on a tray and pour just enough water to cover the paper. You may even see some salt left over in your container, that's ok!
- Set your tray aside for a few days to wait and watch the crystals form.
- Eventually, the water will evaporate. Be careful not to disturb the tray! Let the paper fully dry on paper towels.
  Note: Adult supervision is required with the hot or boiling water.



What's Happening?

THE SCIENCE BEHIND THE SALT CRYSTAL SNOWFLAKES EXPERIMENT:

As the salt solution cools and the water evaporates, the atoms (niacin and chlorine) are no longer separated by water molecules.

They begin to bond together and then bond further forming the special cube-shaped crystal for salt.

THINK ABOUT IT:

What would happen if you used different kinds of salt? Types of salt: table salt, sea salt, kosher salt

Experiment with various types of salt and make note of any differences you see in your resulting crystals.

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Polar Bear

YOU WILL NEED:

- Large bowl
- Ice
- Shortening
- 2 Plastic baggies
- Duct tape

DIRECTIONS:

1. Fill a bowl with ice water.

2. Place your hand in the water. It's cold!

3. Fill one plastic baggie with shortening.

4. Place your hand in another bag, then place your hand inside the blubber bag. Seal with duct tape.

5. Move the fat around so it covers your hand completely. Put in the water. The water feels less cold!

What's Happening?

THE SCIENCE BEHIND THE POLAR BEAR EXPERIMENT:

Polar bears use a combination of fur and blubber to keep warm. Thick fur and thick fat keep these warm-blooded mammals warm in up to 50-degree temps! The blubber is a thick layer below the skin that can be up to 4.5 inches thick! It not only helps them stay warm, it also helps to keep them afloat.

Blubber is simply stored up fat. It creates a cozy blanket for the polar bear when combined with the different types of fur. It also has another useful property in that it can help provide life-sustaining energy when food sources are scarce. Blubber is important to the life of a polar bear! Their black skin and two types of fur also help to keep them warm!

THINK ABOUT IT:

What other animals have blubber that keeps them warm?

Do some research to determine which animals have blubber.

Make a list of the animals, how thick their layer of blubber can get, and type of habitat where they live.

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Make Frost

YOU WILL NEED:

- Ice
- Salt
- Can with Lid (remove sharp edges)

DIRECTIONS:

1. First, fill the can with ice. Make sure there are no sharp edges!

2. Next, you will add a layer of salt and cover with the can's lid. Also be careful of any sharp edges.

3. Then all you need to do is shake the can! (Do this somewhat carefully so the contents don't spill everywhere).

4. Watch the frost form. (It can take up to 10 minutes)

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

What's Happening?

THE SCIENCE BEHIND THE FROST EXPERIMENT:

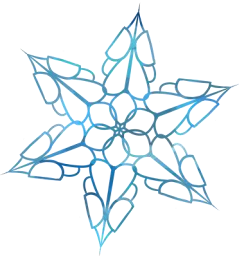
How do you end up with frost on the outside of the can when you are indoors?

Shaking the ice and salt together creates a chemical reaction. The melting ice reacts with the salt and actually creates a cooler temperature which drops below freezing.

The moisture from the air will collect on the outside of the can and will actually freeze because of this lower temperature. This freezing action is what forms the frost.

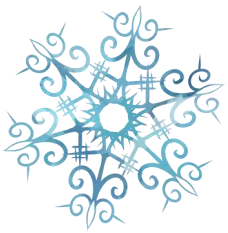
THINK ABOUT IT:

What would happen if you used different forms of ice? What if you used shaved ice, or crushed ice instead of ice cubes? How would the experiment be different?



Test your theory: repeat the experiment using crushed or shaved ice.

What are the results? Why do you think this happened?



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Salt Painting

YOU WILL NEED:

- Snowflake stencils (Included)
- Elmer's glue
- Salt
- Blue food coloring
- Water
- White card-stock
- Pipette or eyedropper

DIRECTIONS:

Prep ahead of time for best results.

- Print out the snowflake stencils.
- Lay out a piece of paper over the snowflakes as a stencil or you can use the printed out snowflakes.
- Use the glue to draw over the snowflakes, making sure to do each small arm of the snowflake.
- Cover the glue snowflakes with salt and carefully pour the excess salt off. Let the glue dry thoroughly.
- Mix a few tablespoons of water with blue food coloring and use your pipette to drip the coloring onto the salt painted snowflakes.
- Let the snowflake salt painting dry overnight.

What's Happening?

THE SCIENCE BEHIND THE SALT PAINTING EXPERIMENT:

Salt absorbs water moisture because it is attracted to highly polar water molecules. This property means that salt is hygroscopic.

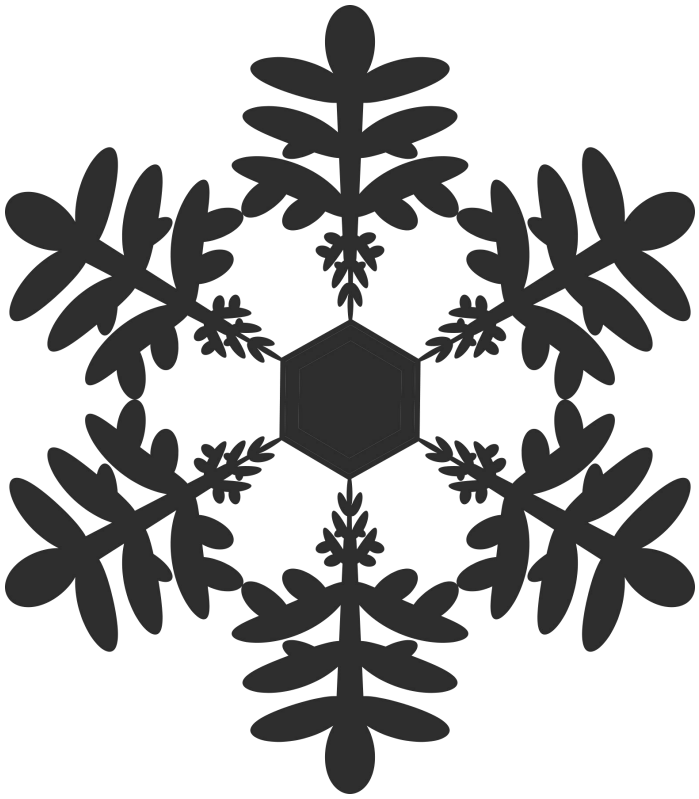
Hygroscopic means that it absorbs both liquid water (food coloring mixture) and water vapor in the air.

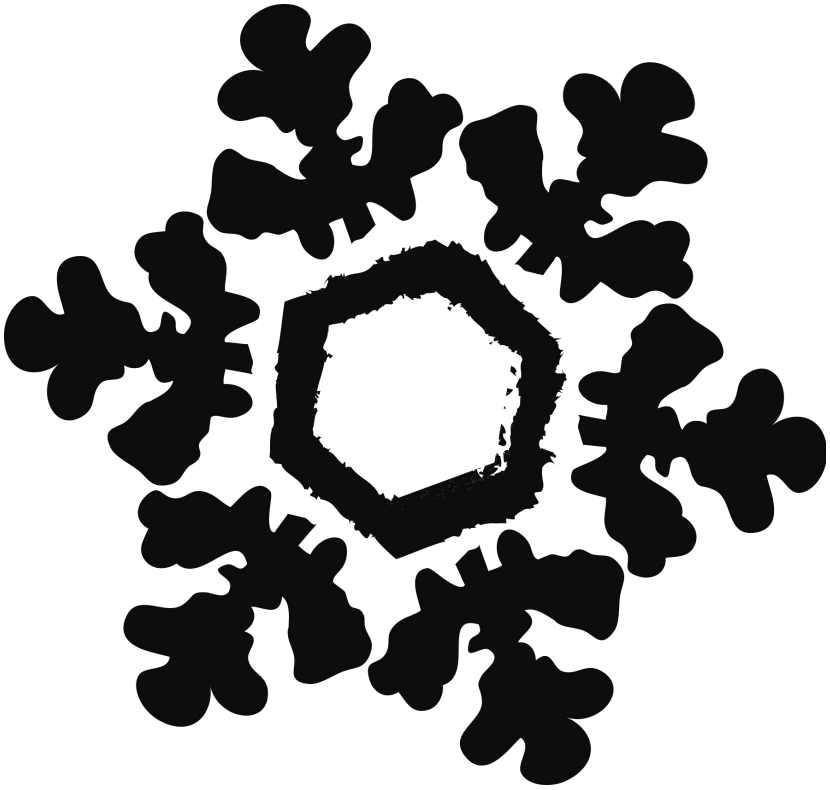
THINK ABOUT IT:

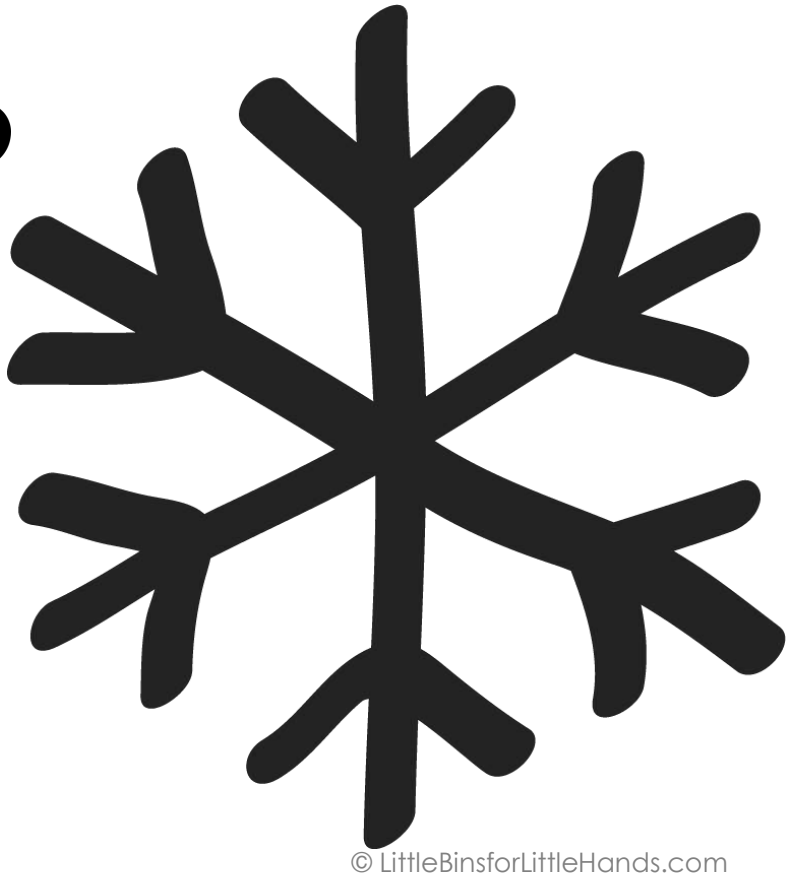
What would happen if you used sugar instead of salt? Would you get the same or similar results? Or, will the results be entirely different?

Test your theory: repeat the experiment using sugar.

What are the results? Why do you think this happened?





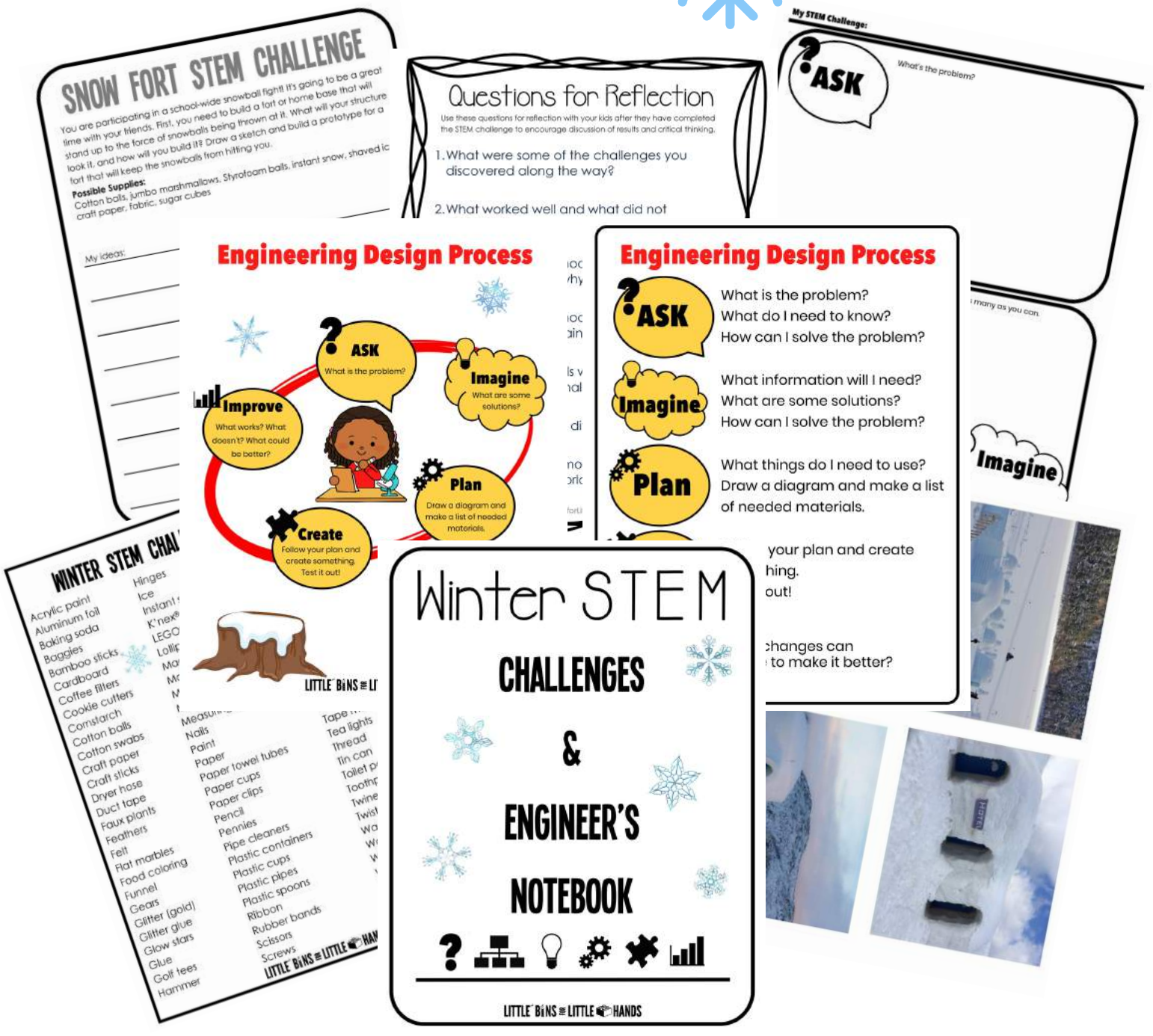


WINTER ENGINEERING PACK

Try these Winter themed, problem-based challenges, and get the kids thinking about the engineering design process.

What's Included:

- Winter STEM Challenges
- STEM Journal Pages
- Engineering Design Process



Winter STEM

CHALLENGES

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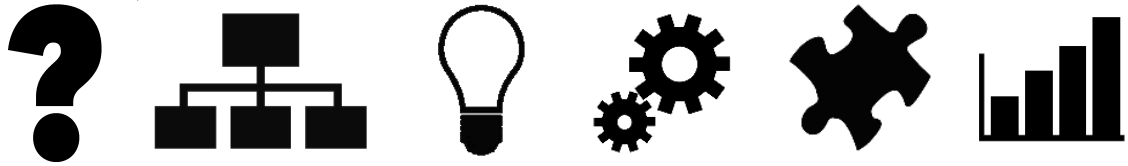
ENGINEER'S NOTEBOOK



LITTLE BINS FOR LITTLE HANDS

ANIMAL SHELTER STEM CHALLENGE

You are on a walk in the woods and you notice the favorite hollowed-out tree some animals use for winter hibernation has been destroyed. You think about how nice it would be of you to build a shelter for an animal.
Can you design and build a model of a shelter an animal might use for hibernation? Don't forget a sturdy outside material to keep out the winter weather.

Possible Supplies:
cotton balls, twigs, leaves, scrap metal, wood logs, clay, raffia, scrap umber, fabric, yarn, thread, needle, bamboo sticks, straws, leaves, hammer, nails

My ideas:

WRITE IT, TEST IT, KNOW IT

Write it: What type of animal do you think will live in your shelter? How will they use it during the winter? Do they hibernate or not?

WINTER STEM CHALLENGES SUPPLY LIST

Acrylic paint
Aluminum foil
Baking soda
Baggies
Bamboo sticks
Cardboard
Clay
Coffee filters
Cookie cutters
Cornstarch
Cotton balls
Cotton swabs
Craft paper
Craft sticks
Dryer hose
Duct tape
Faux plants
Feathers
Felt
Flat marbles
Food coloring
Funnel
Gears
Glitter (gold)
Glitter glue
Glow stars
Glue
Golf tees

Hammer
Hinges
K'nex®
Leaves
LEGO® bricks
Lollipop sticks
Magnets
Marbles
Markers
Measuring cups
Nails
Paint
Paper
Paper towel tubes
Paper cups
Paper clips
Pencil
Pennies
Pipe cleaners
Plastic containers
Plastic cups
Plastic pipes
Plastic spoons
Raffia
Rubber bands
Scissors
Scrap lumber
Scrap metal

Screws
Screwdriver
Shredded paper
Skewers
Soil
Sponges
Springs
Stapler
Stickers
Straws
String
Styrofoam balls
Tape
Tape measure
Tea lights
Thread
Tin can
Toilet paper rolls
Toothpicks
Twigs
Twine
Twist ties
Washi Tape
Water
Wire
Wooden logs
Yarn
Zip ties

LITTLE BINS FOR LITTLE HANDS

Engineering Design Process

ASK
What is the problem?

Imagine
What are some solutions?

Plan
Draw a diagram and make a list of needed materials.

Create
Follow your plan and create something. Test it out!

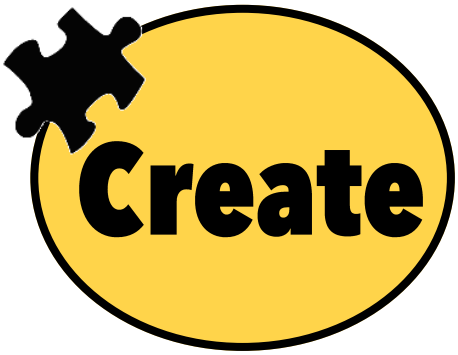
Improve
What works? What doesn't? What could be better?

Engineering Design Process

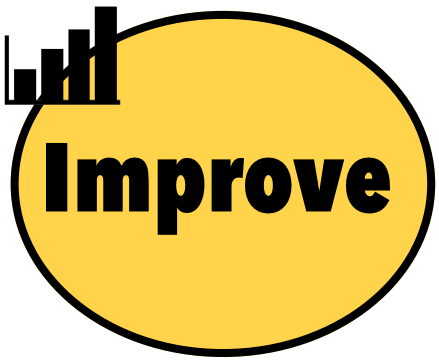
What is the problem?
What do I need to know?
How can I solve the problem?

What information will I need?
What are some solutions?
How can I solve the problem?

What things do I need to use?
Draw a diagram and make a list of needed materials.



Follow your plan and create something.
Test it out!



What changes can
I make to make it better?

My STEM Challenge:

ASK

What's the problem?

BRAINSTORM AND RECORD possible solutions, as many as you can.

Imagine

My STEM Challenge:

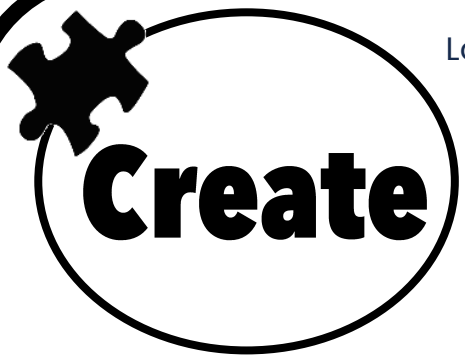
Draw a diagram and make a list of needed materials.

My STEM Challenge:

Plan

Make a plan for solving your problem.

My STEM Challenge:



Look at the materials provided for use in creating your models.

My STEM Challenge:

Improve

Create a new drawing incorporating your ideas as well as the feedback you received on your prototype. Create an improved version of your original model.

Questions for Reflection

Use these questions for reflection with your kids after they have completed the STEM challenge to encourage discussion of results and critical thinking.

1. What were some of the challenges you discovered along the way?

2. What worked well and what did not work well?

3. What part of your model or prototype do you really like? Explain why.

4. What part of your model or prototype needs improvement? Explain why.

5. What other materials would you like to use if you could do this challenge again?

6. What would you do differently next time?

7. What parts of your model or prototype are similar to the real world version?

Winter STEM

CHALLENGES

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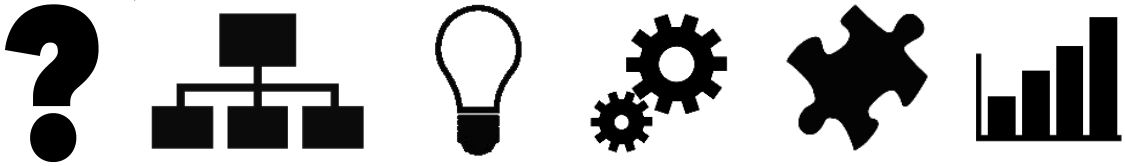
ENGINEER'S

NOTEBOOK



LITTLE BINS FOR LITTLE HANDS

NEW SHOVEL STEM CHALLENGE

It's a snow day! Your friends are coming over to play but the driveway needs to be cleared. You can't find last year's shovel anywhere, and they will be here soon. Can you design and build a new shovel? Draw a sketch and build a prototype for a shovel that will move lots of snow.

Possible Supplies:
wood planks, sticks, bamboo, toothpicks, skewers, fabric, string, building blocks, glue, tape, duct tape, foil

My ideas:

WRITE IT, TEST IT, KNOW IT

Test it: Make a batch of instant snow to see how your shovel prototype works. Write your procedure for making instant snow. Use a small kitchen scale to weigh how much instant snow your shovel will hold.

WINTER STEM CHALLENGES SUPPLY LIST

Acrylic paint
Aluminum foil
Baking soda
Baggies
Bamboo sticks
Cardboard
Coffee filters
Cookie cutters
Cornstarch
Cotton balls
Cotton swabs
Craft paper
Craft sticks
Cranberries
Dryer hose
Duct tape
Faux plants
Feathers
Felt
Flat marbles
Food coloring
Funnel
Gears
Glitter (gold)
Glitter glue
Glow stars
Glue
Golf tees
Hammer
Hinges
K'nex®
Leaves
LEGO® bricks
Lollipop sticks
Magnets
Marbles
Markers
Measuring cups
Nails
Paint
Paper
Paper towel tubes
Paper cups
Paper clips
Pencil
Pennies
Pipe cleaners
Plastic containers
Plastic cups
Plastic pipes
Plastic spoons
Ribbon
Rubber bands
Scissors
Screws
Screwdriver
Shredded paper
Skewers
Soil
Sponges
Springs
Stapler
Stickers
Straws
String
Styrofoam balls
Tape
Tape measure
Tea lights
Thread
Tin can
Toilet paper rolls
Toothpicks
Twine
Twist ties
Washi Tape
Water
Whirly gig
Wire
Wooden planks
Yarn
Zip ties

LITTLE BINS FOR LITTLE HANDS

Engineering Design Process

ASK

What is the problem?

Imagine

What are some solutions?

Plan

Draw a diagram and make a list of needed materials.

Create

Follow your plan and create something. Test it out!

Improve

What works? What doesn't? What could be better?

Engineering Design Process

What is the problem?
What do I need to know?
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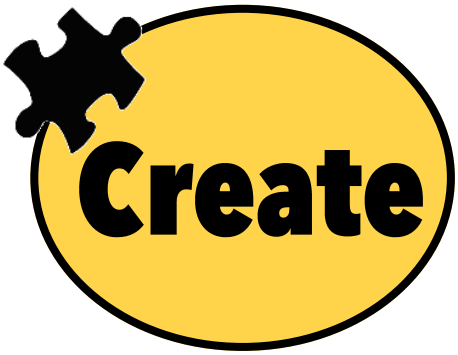

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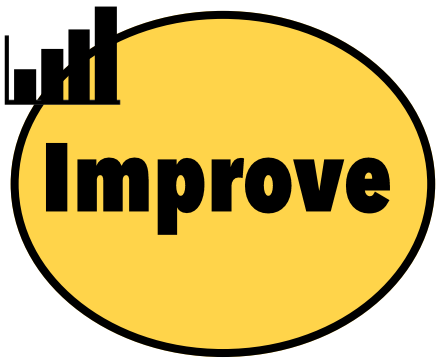

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Make a plan for solving your problem.

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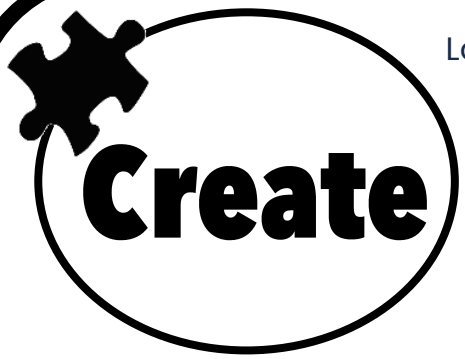

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Winter STEM

CHALLENGES

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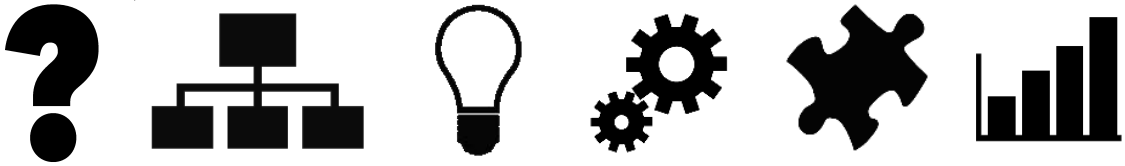


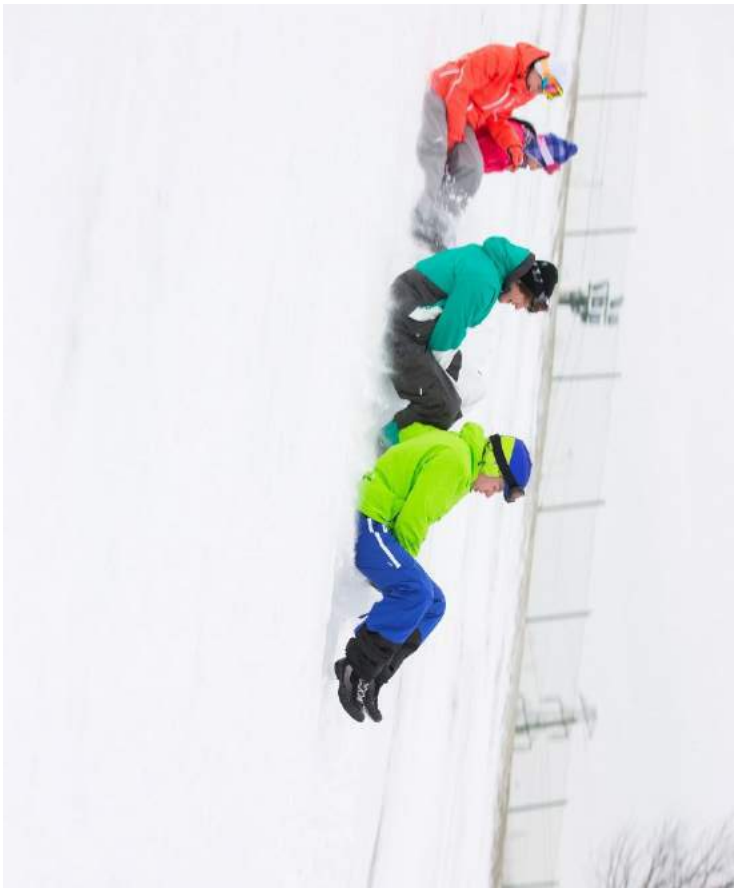
LITTLE BINS FOR LITTLE HANDS

SLED STEM CHALLENGE

You have a big sledding race coming up for a town event, and you need to make a homemade sled to race. It needs to go fast! Can you design and build a special sled to win the race? You don't want friction stopping you now! Draw a sketch and build a prototype for a sled that will go fast!

Possible Supplies:
wood planks, sticks, bamboo, toothpicks, skewers, fabric, string, building blocks, glue, tape, duct tape, foil

My ideas:



WRITE IT, TEST IT, KNOW IT

Test it: Design and set up a ramp or inclined plane to see how your sled model performs.

WINTER STEM CHALLENGES SUPPLY LIST

Acrylic paint
Aluminum foil
Baking soda
Baggies
Bamboo sticks
Cardboard
Coffee filters
Cookie cutters
Cornstarch
Cotton balls
Cotton swabs
Craft paper
Craft sticks
Cranberries
Dryer hose
Duct tape
Faux plants
Feathers
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Pencil
Pennies
Pipe cleaners
Plastic containers
Plastic cups
Plastic pipes
Plastic spoons
Ribbon
Rubber bands
Scissors
Screws
Screwdriver
Shredded paper
Skewers
Soil
Sponges
Springs
Stapler
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String
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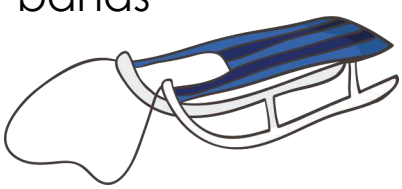

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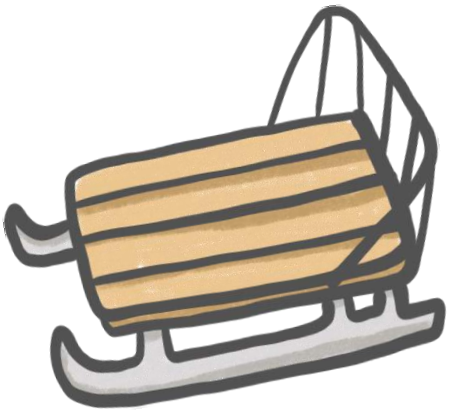

LITTLE BINS FOR LITTLE HANDS

Engineering Design Process

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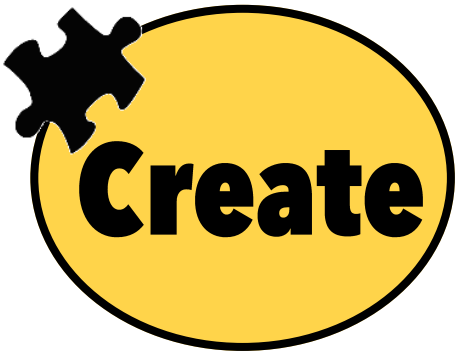

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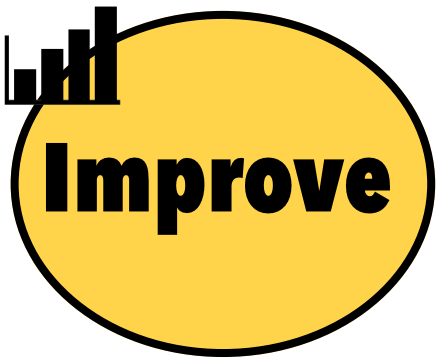

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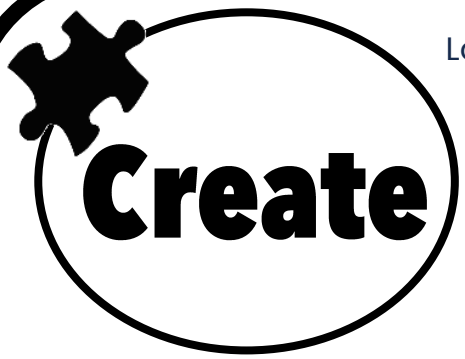

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Winter STEM

CHALLENGES

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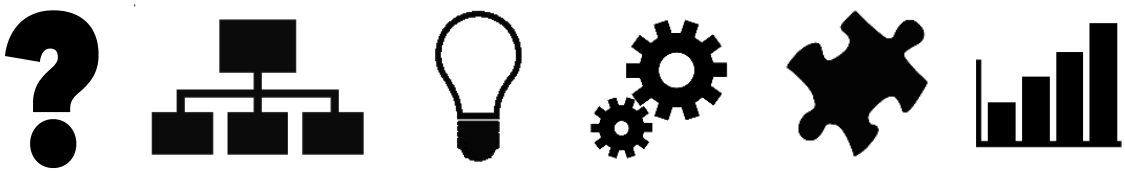
ENGINEER'S

NOTEBOOK



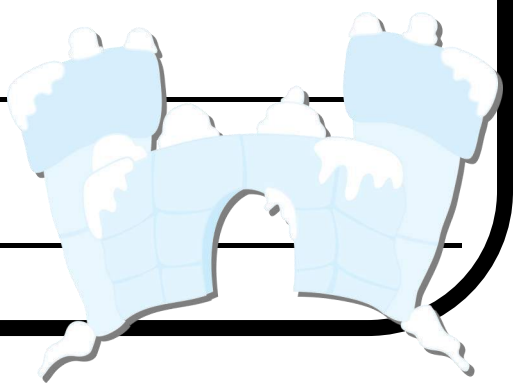
LITTLE BINS FOR LITTLE HANDS

SNOW FORT STEM CHALLENGE

You are participating in a school-wide snowball fight! It's going to be a great time with your friends. First, you need to build a fort or home base that will stand up to the force of snowballs being thrown at it. What will your structure look it, and how will you build it? Draw a sketch and build a prototype for a fort that will keep the snowballs from hitting you.

Possible Supplies:
Cotton balls, jumbo marshmallows, Styrofoam balls, instant snow, shaved ice, craft paper, fabric, sugar cubes

My ideas:




HOTEL

WRITE IT, TEST IT, KNOW IT

Write it: Why did you choose the type of fort you did? What makes it perfect for the ultimate snowball fight?

WINTER STEM CHALLENGES SUPPLY LIST

Acrylic paint
Aluminum foil
Baking soda
Baggies
Bamboo sticks
Cardboard
Coffee filters
Cookie cutters
Cornstarch
Cotton balls
Cotton swabs
Craft paper
Craft sticks
Dryer hose
Duct tape
Faux plants
Feathers
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Food coloring
Funnel
Gears
Glitter (gold)
Glitter glue
Glow stars
Glue
Golf tees
Hammer
Hinges
Ice
Instant snow
K'nex®
LEGO® bricks
Lollipop sticks
Magnets
Marbles
Markers
Marshmallows, (giant)
Measuring cups
Nails
Paint
Paper
Paper towel tubes
Paper cups
Paper clips
Pencil
Pennies
Pipe cleaners
Plastic containers
Plastic cups
Plastic pipes
Plastic spoons
Ribbon
Rubber bands
Scissors
Screws
Screwdriver
Shredded paper
Skewers
Soil
Sponges
Springs
Stapler
Stickers
Straws
String
Styrofoam balls
Sugar cubes
Tape
Tape measure
Tea lights
Thread
Tin can
Toilet paper rolls
Toothpicks
Twine
Twist ties
Washi Tape
Water
Whirly gig
Wire
Wooden planks
Yarn
Zip ties

Engineering Design Process

ASK

What is the problem?

Imagine

What are some solutions?

Plan

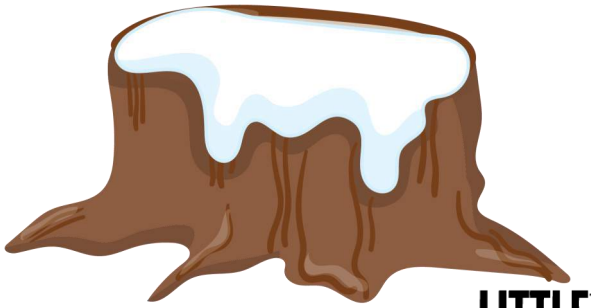
Draw a diagram and make a list of needed materials.

Create

Follow your plan and create something. Test it out!

Improve

What works? What doesn't? What could be better?



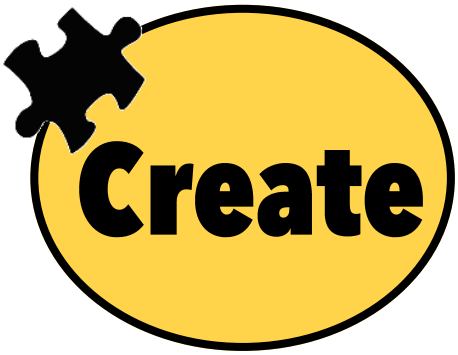
LITTLE BINS FOR LITTLE HANDS

Engineering Design Process

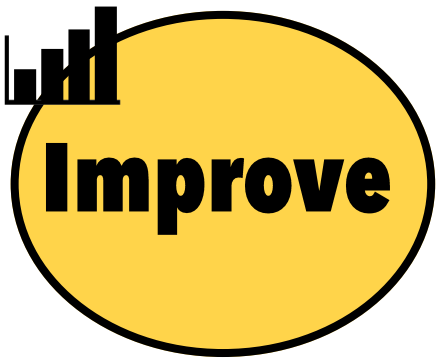
What is the problem?
What do I need to know?
How can I solve the problem?

What information will I need?
What are some solutions?
How can I solve the problem?

What things do I need to use?
Draw a diagram and make a list of needed materials.



Follow your plan and create something.
Test it out!



What changes can
I make to make it better?

My STEM Challenge:

ASK

What's the problem?

BRAINSTORM AND RECORD possible solutions, as many as you can.

Imagine

My STEM Challenge:

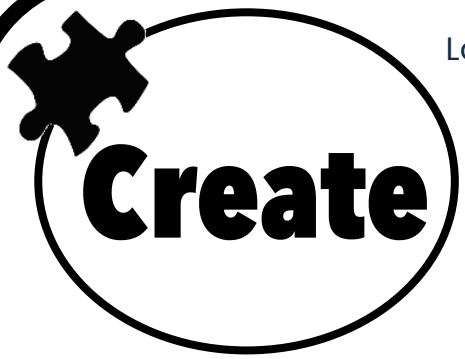
Draw a diagram and make a list of needed materials.

My STEM Challenge:

Plan

Make a plan for solving your problem.

My STEM Challenge:



Look at the materials provided for use in creating your models.

My STEM Challenge:

Improve

Create a new drawing incorporating your ideas as well as the feedback you received on your prototype. Create an improved version of your original model.

Questions for Reflection

Use these questions for reflection with your kids after they have completed the STEM challenge to encourage discussion of results and critical thinking.

1. What were some of the challenges you discovered along the way?

2. What worked well and what did not work well?

3. What part of your model or prototype do you really like? Explain why.

4. What part of your model or prototype needs improvement? Explain why.

5. What other materials would you like to use if you could do this challenge again?

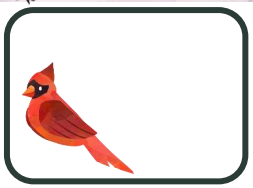
6. What would you do differently next time?

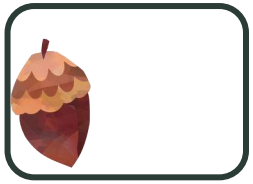
7. What parts of your model or prototype are similar to the real world version?

BONUS: WINTER FUN PACK

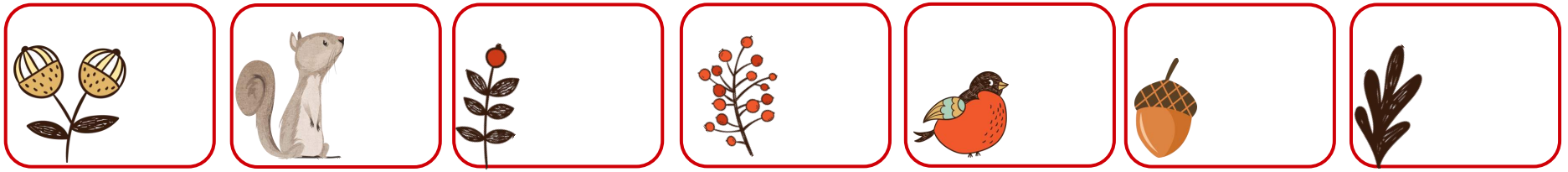
Play a game, make some matches, ask a question or two, play bingo, go on a scavenger hunt, or try an I-Spy! Print and play.

I Spy a Winter Woodland





I Spy Winter Woods



Border Graphics by: PaulaKimStudio

Would you rather?

have a pet penguin or a pet reindeer

Would you rather?

make snow angels or go skiing

Would you rather?

get your feet frozen in a block of ice or have to dig your car out of 6 feet of snow

Would you rather?

have to walk your pet out in the cold or scrape ice off your car windows

Would you rather?

compete in the winter Olympic games or help build the world's largest snow fort

Would you rather?

play football in the snow or golf in the snow

Would you rather?

shovel the driveway or help a squirrel collect acorns

Would you rather?

eat a bowl of chicken soup or a bowl of vegetable beef

Would you rather?

wake up a hibernating bear or try to ride a moose

Would you rather?

live in an igloo for a year or have brain freeze for a month

Would you rather?

stick your tongue to a frozen pole or have a cold for 2 weeks

Would you rather?

wear sandals outside in the cold or have gloves you can't use with your phone

Would you rather?

slip on ice or get hit in the face with a snowball

Would you rather?

accidentally lose your gloves or lose your hat

Would you rather?

have icicles for hair or a snow cone for a nose

Would you rather?

have a snowflake for a nose or skiis as feet

Would you rather?

wear no coat in the winter or wear a winter coat in the summer

Would you rather?

eat ice cream in the winter or hot soup in the summer

Would you rather?

live in a snowy mountain cabin or a house near the beach

Would you rather?

build a snowman or a snow fort

Would you rather?

take a bath in a warm chocolate drink or in a tub of tomato soup

Would you rather?

have icicles for fingers or ice skates as feet

Would you rather?

go ice skating or ice fishing

Would you rather?

have a snowball fight or go sledding

SNOWMAN MATCH GAME

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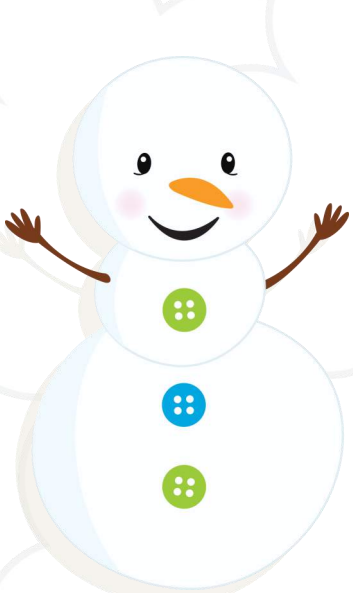


START

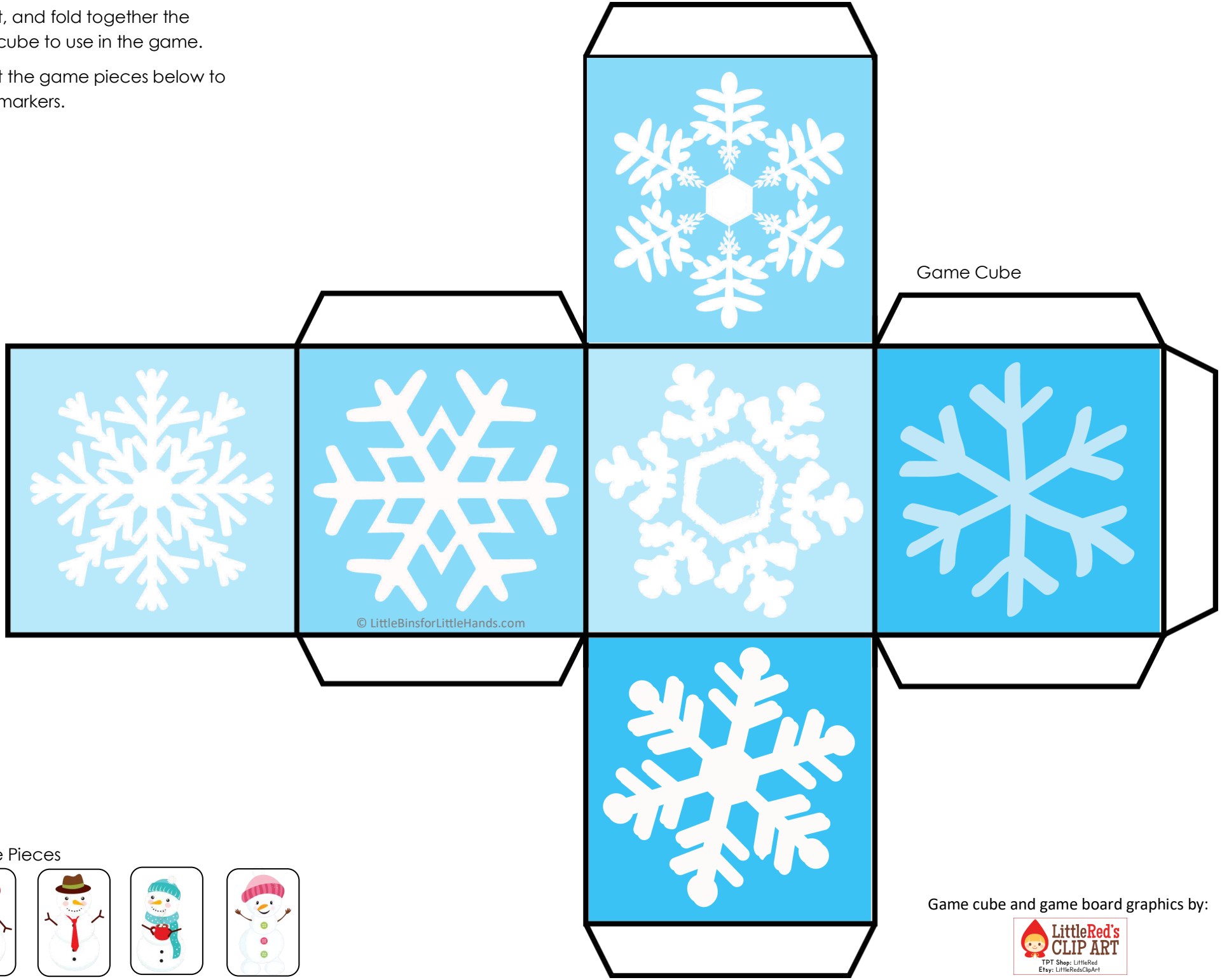
SNOWMAN SHUFFLE BOARD GAME

Roll the cube, then move your game piece to the next matching snowflake. The first player to the end is the winner.

Cut out, and fold together the game cube to use in the game.

Cut out the game pieces below to use as markers.

Game Cube

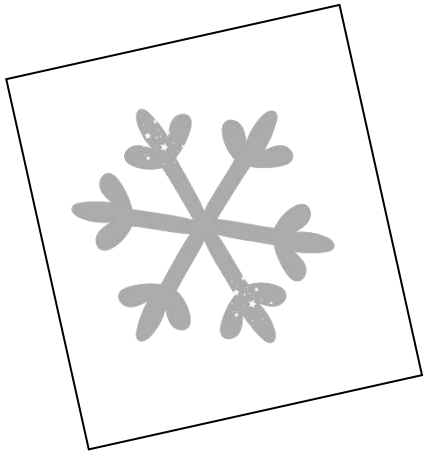


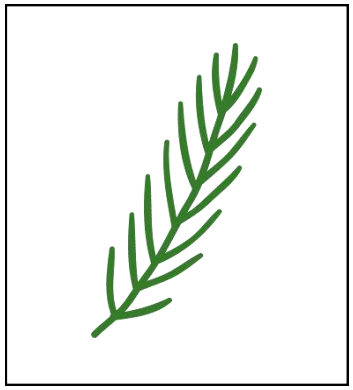
Game Pieces

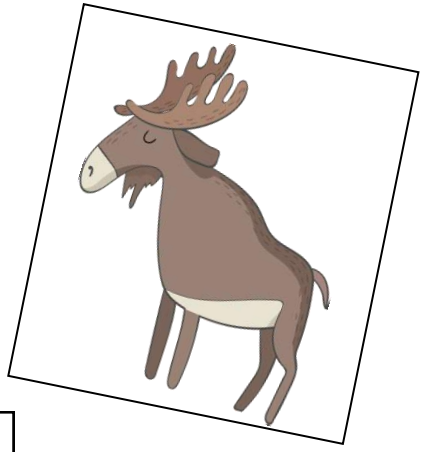
Game cube and game board graphics by:

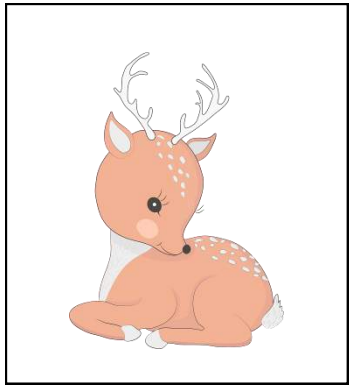
LittleRed's CLIP ART
TPT Shop: LittleRed
Etsy: LittleRedsClipArt

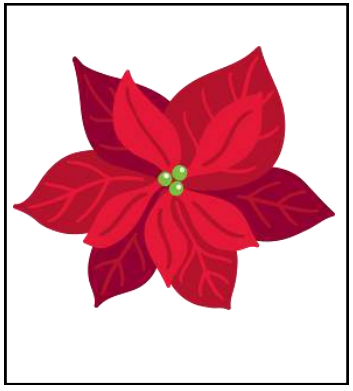
WINTER WOODLAND BINGO GAME



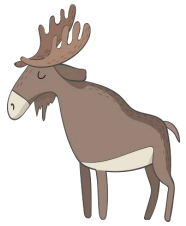
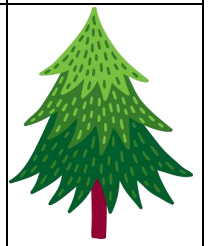
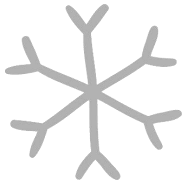
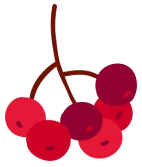




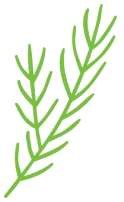
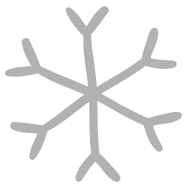
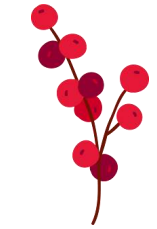
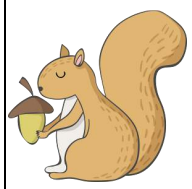




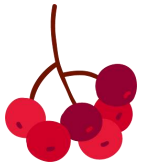
WINTER WOODLAND BINGO

				
				
		FREE		
				
				

WINTER WOODLAND BINGO

				
				
		FREE		
				

WINTER WOODLAND BINGO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		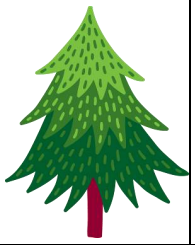		
	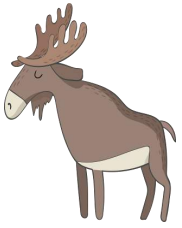			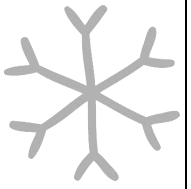

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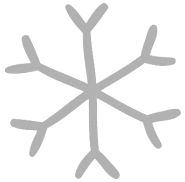
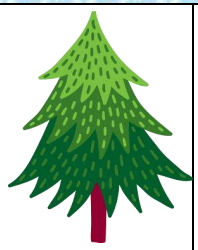
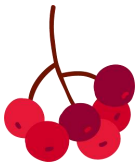
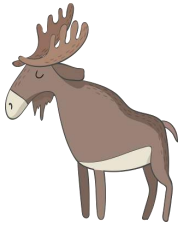
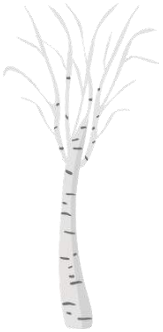
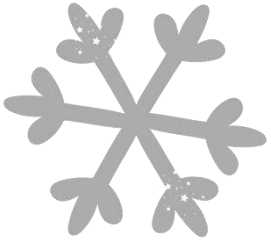
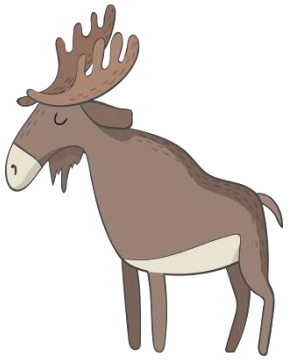
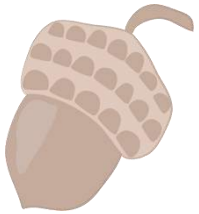
				
				
		FREE		
				



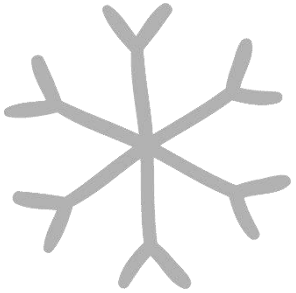
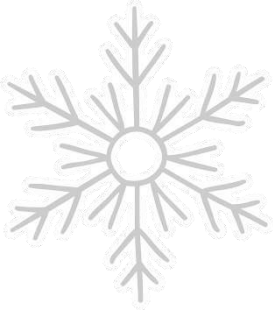



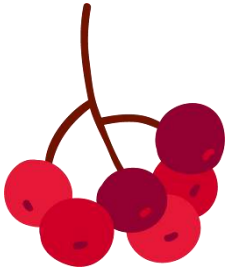


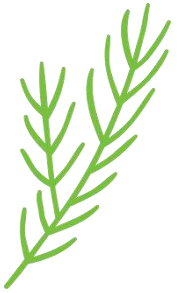














WINTER Mad Libs

It was the day after the _____ winter blizzard
ADJECTIVE

ended. I woke up and saw _____ feet of snow
NUMBER

out my window. I was _____ and couldn't wait to
EMOTION

go outside and _____. The snow was every-
PRESENT TENSE VERB

where and it looked so _____ and _____. I put
ADJECTIVE ADJECTIVE

on my _____ and _____ outside as quick as I
ITEM OF CLOTHING VERB ENDING IN -ED

could. The first thing I did was have a snowball

fight with _____. Next, I built a snowman and
FAMOUS PERSON

used _____ for its eyes and _____ for its nose.
FOOD NOUN

At the end of the day, I was so tired that I

slept for _____ hours in my _____ bed.
NUMBER ADJECTIVE

adjective _____

number _____

emotion _____

present tense verb _____

adjective _____

adjective _____

item of clothing _____

verb ending with -ed _____

famous person _____

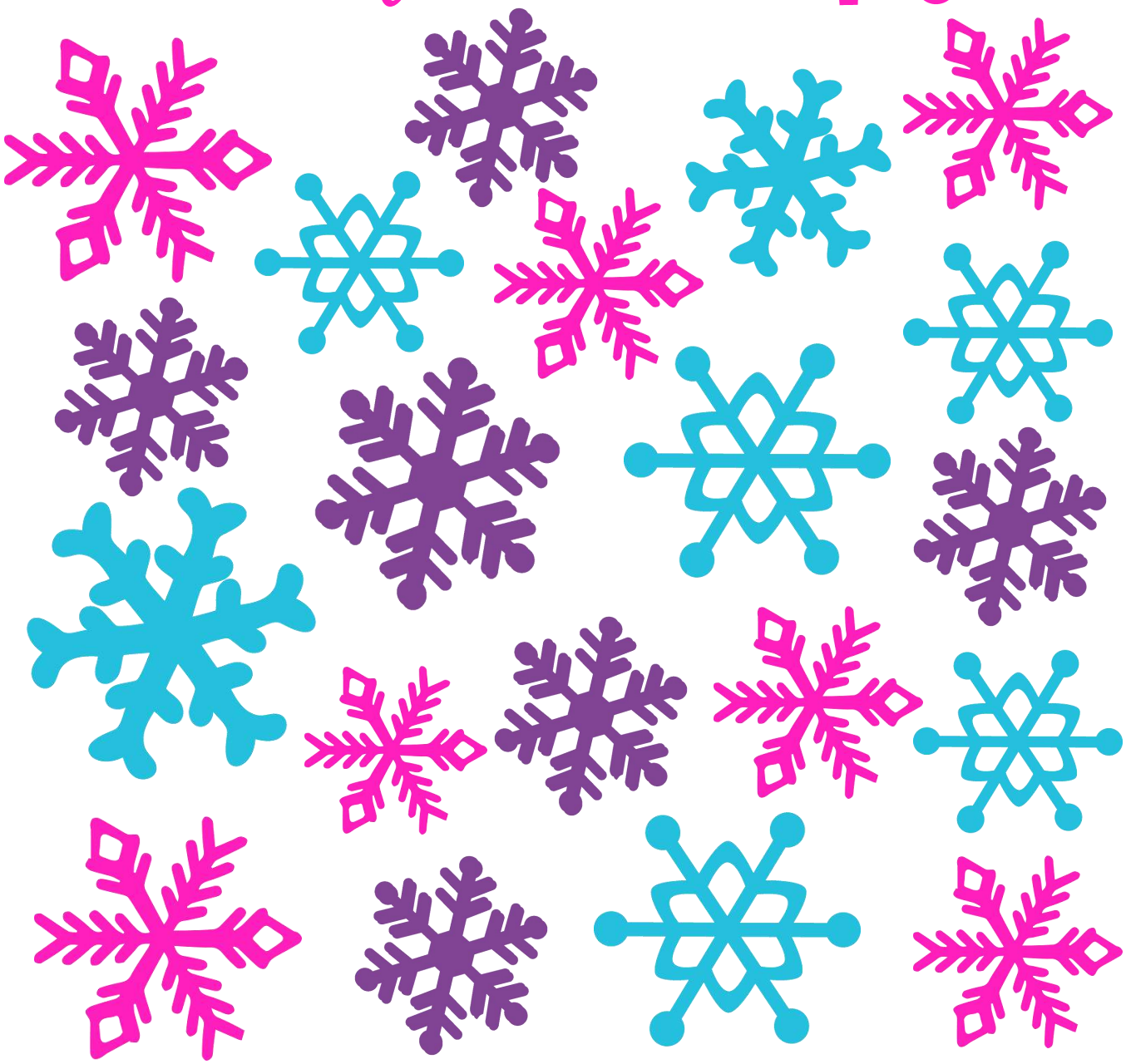
food _____

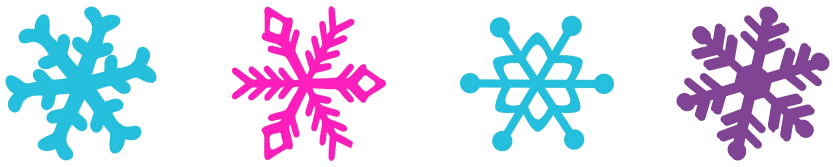
noun _____

number _____

adjective _____

Snowflake I Spy





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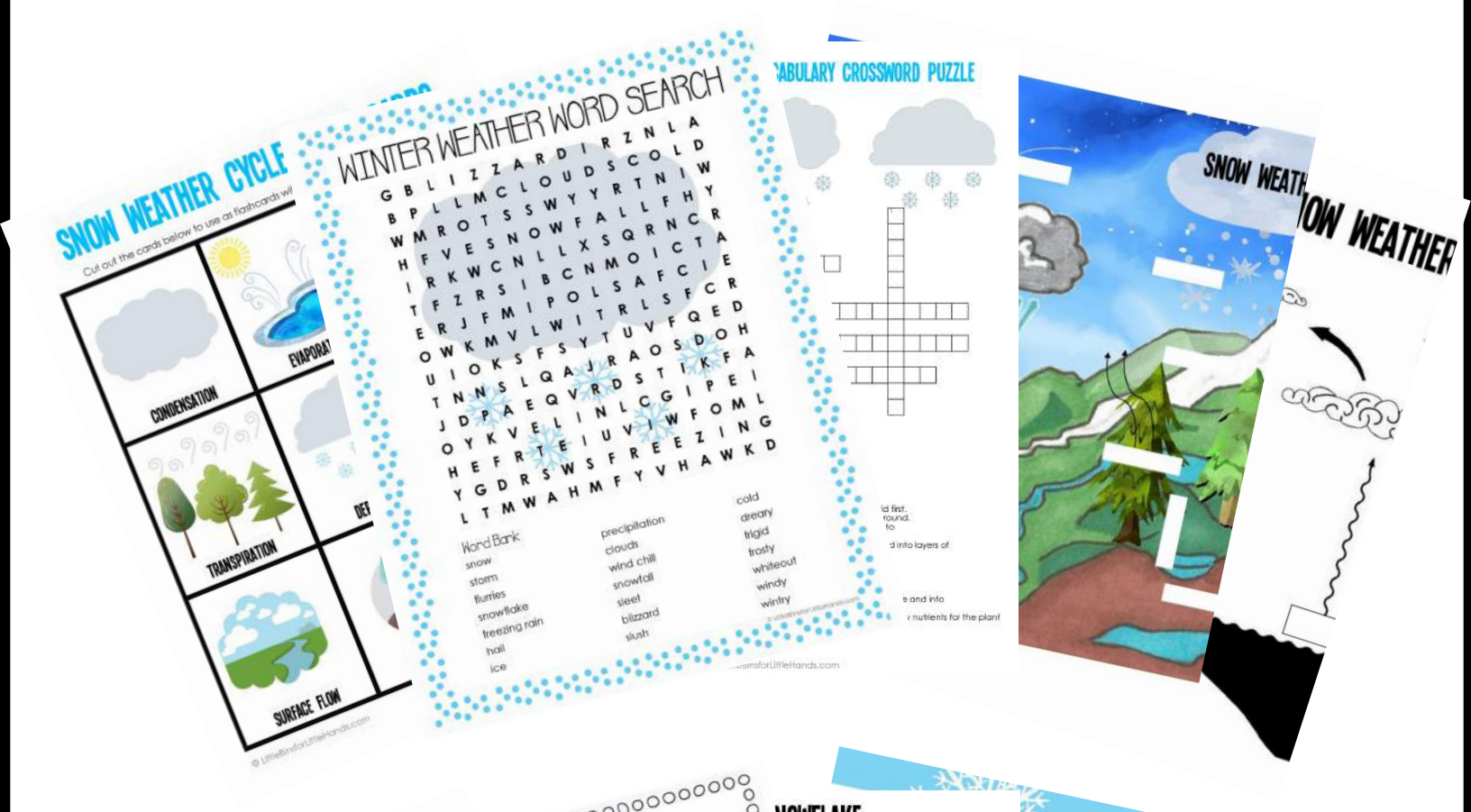
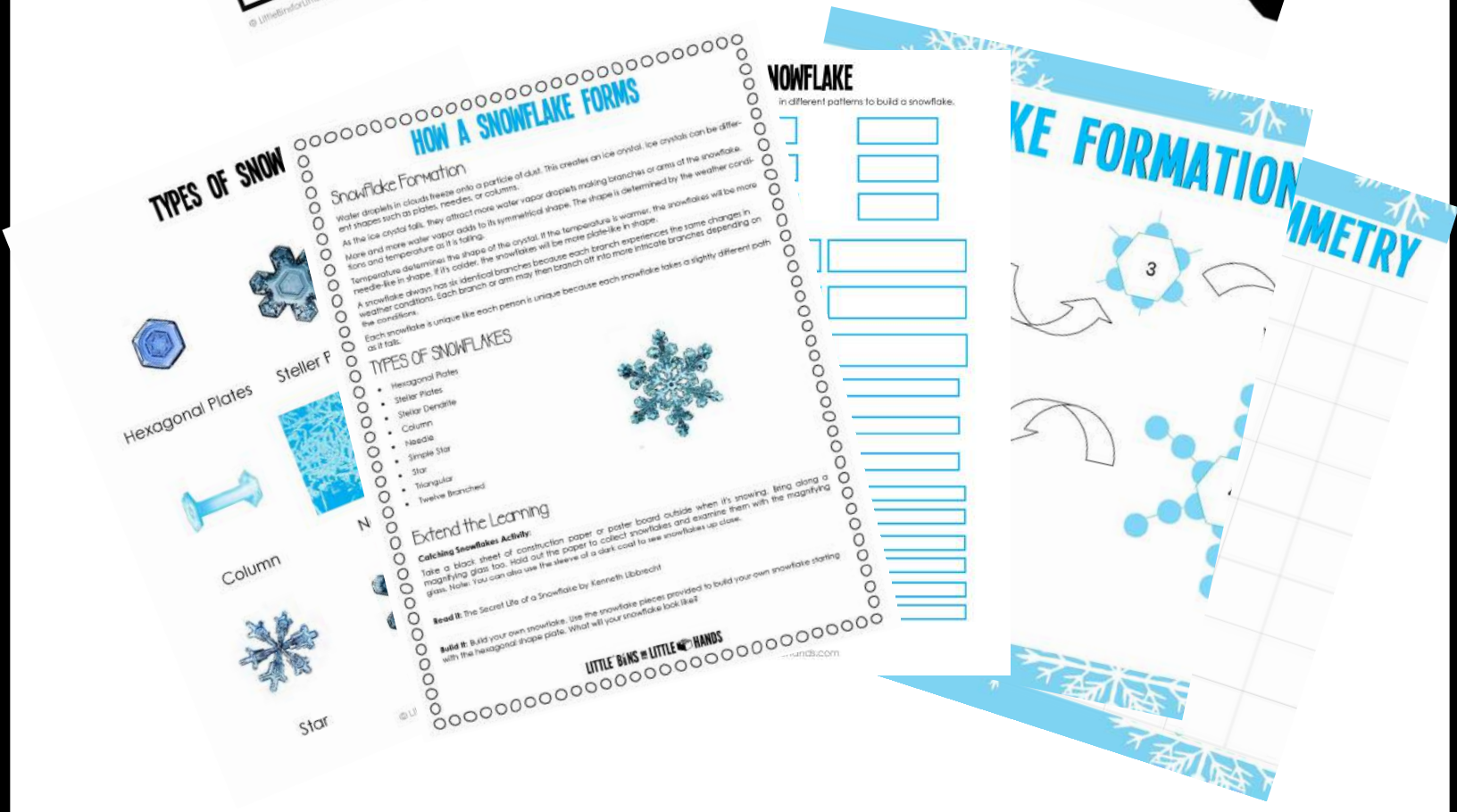
ALL ABOUT SNOW PACK

Explore snow, learn about snowflakes, and investigate Winter weather with fun science and STEM activities.





WINTER WEATHER WORD SEARCH

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

Word Bank

snow
storm
flurries
snowflake
freezing rain
hail
ice
precipitation
clouds
wind chill
snowfall
sleet
blizzard
slush
cold
dreary
frigid
frosty
whiteout
windy
wintry

HOW A SNOWFLAKE FORMS

Snowflake Formation

Water droplets in clouds freeze onto a particle of dust. This creates an ice crystal. Ice crystals can be different shapes such as plates, needles, or columns.

As the ice crystal falls, they attract more water vapor droplets making branches or arms of the snowflake.

More and more water vapor adds to its symmetrical shape. The shape is determined by the weather conditions and temperature as it is falling.

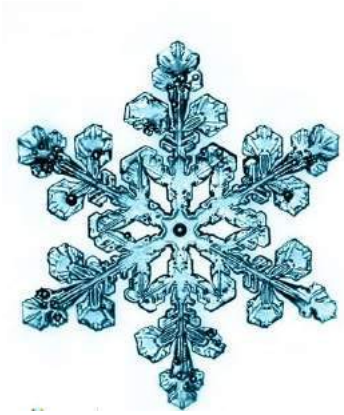
Temperature determines the shape of the crystal. If the temperature is warmer, the snowflakes will be more needle-like in shape. If it's colder, the snowflakes will be more plate-like in shape.

A snowflake always has six identical branches because each branch experiences the same changes in weather conditions. Each branch or arm may then branch off into more intricate branches depending on the conditions.

Each snowflake is unique like each person is unique because each snowflake takes a slightly different path as it falls.

TYPES OF SNOWFLAKES

- Hexagonal Plates
- Steller Plates
- Stellar Dendrite
- Column
- Needle
- Simple Star
- Star
- Triangular
- Twelve Branched



Extend the Learning

Catching Snowflakes Activity:

Take a black sheet of construction paper or poster board outside when it's snowing. Bring along a magnifying glass too. Hold out the paper to collect snowflakes and examine them with the magnifying glass. Note: You can also use the sleeve of a dark coat to see snowflakes up close.

Read it: The Secret Life of a Snowflake by Kenneth Libbrecht

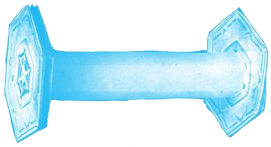
Build It: Build your own snowflake. Use the snowflake pieces provided to build your own snowflake starting with the hexagonal shape plate. What will your snowflake look like?

TYPES OF SNOWFLAKES

Hexagonal Plates

Steller Plates

Stellar Dendrite



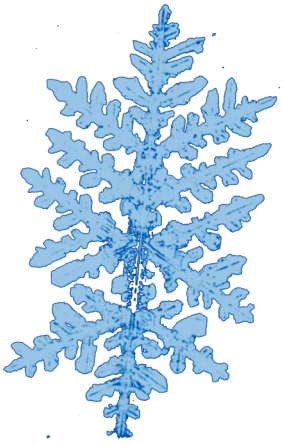
Column

Needle

Simple Star

Star

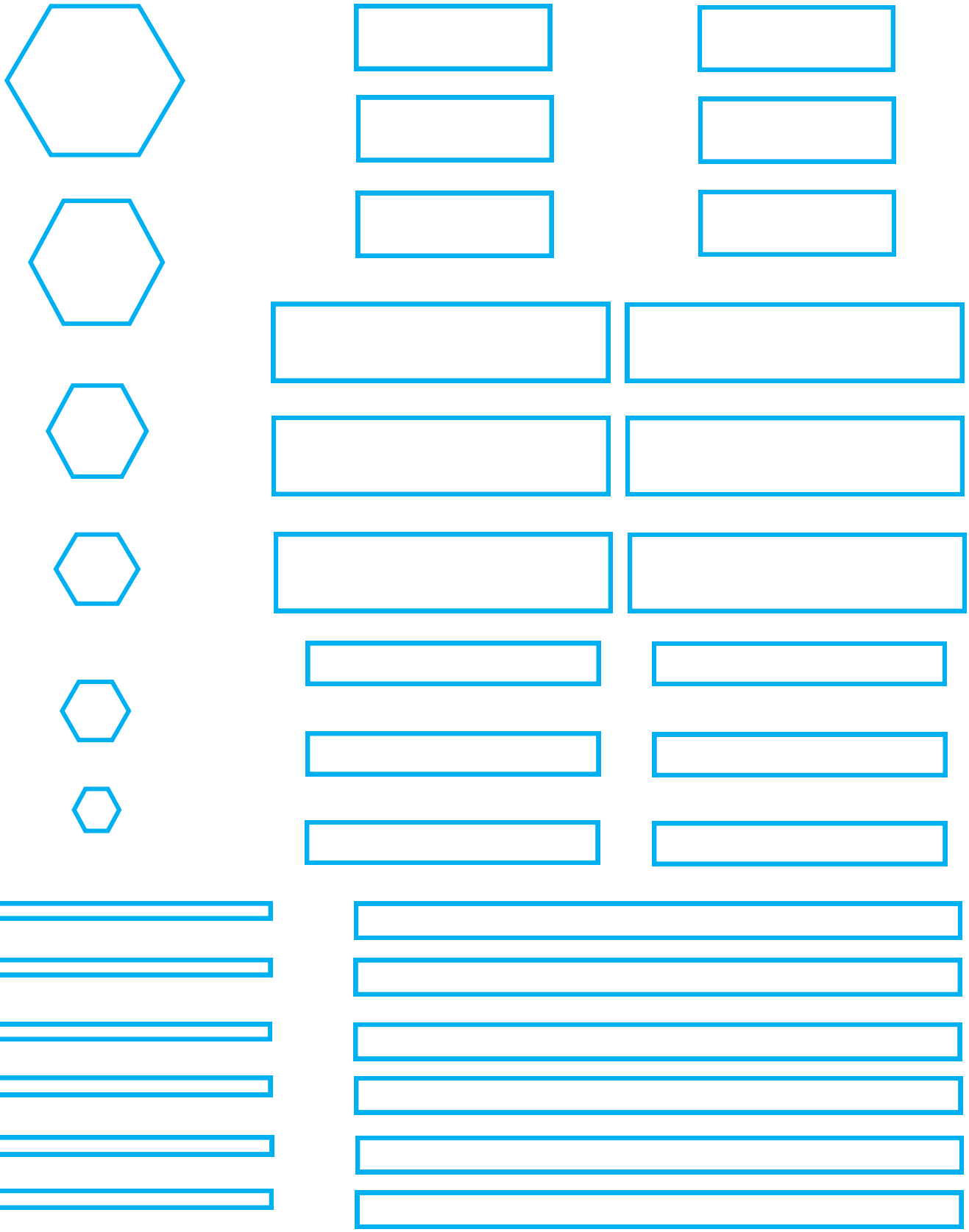
Triangular



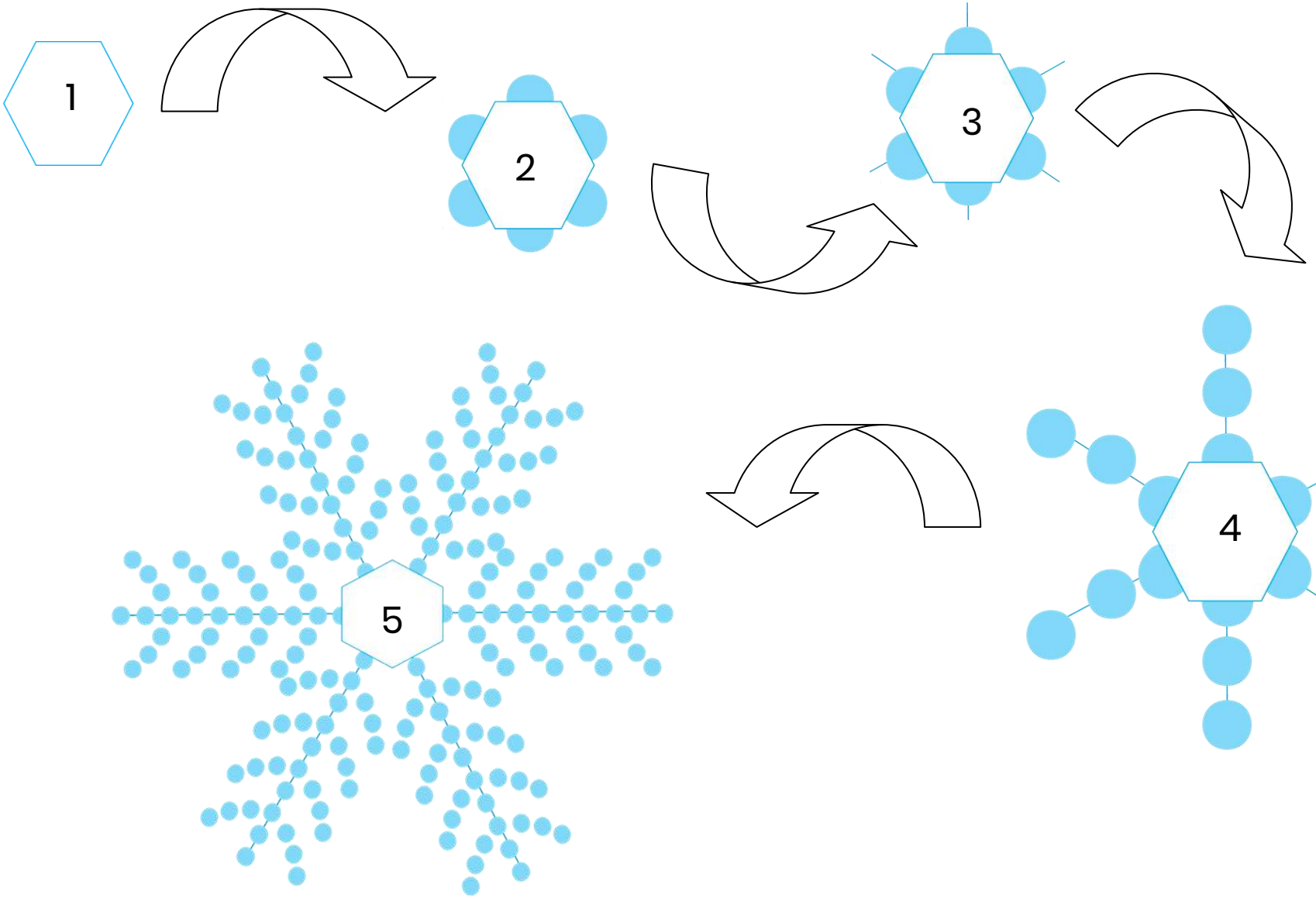
Twelve Branched

BUILD A SNOWFLAKE

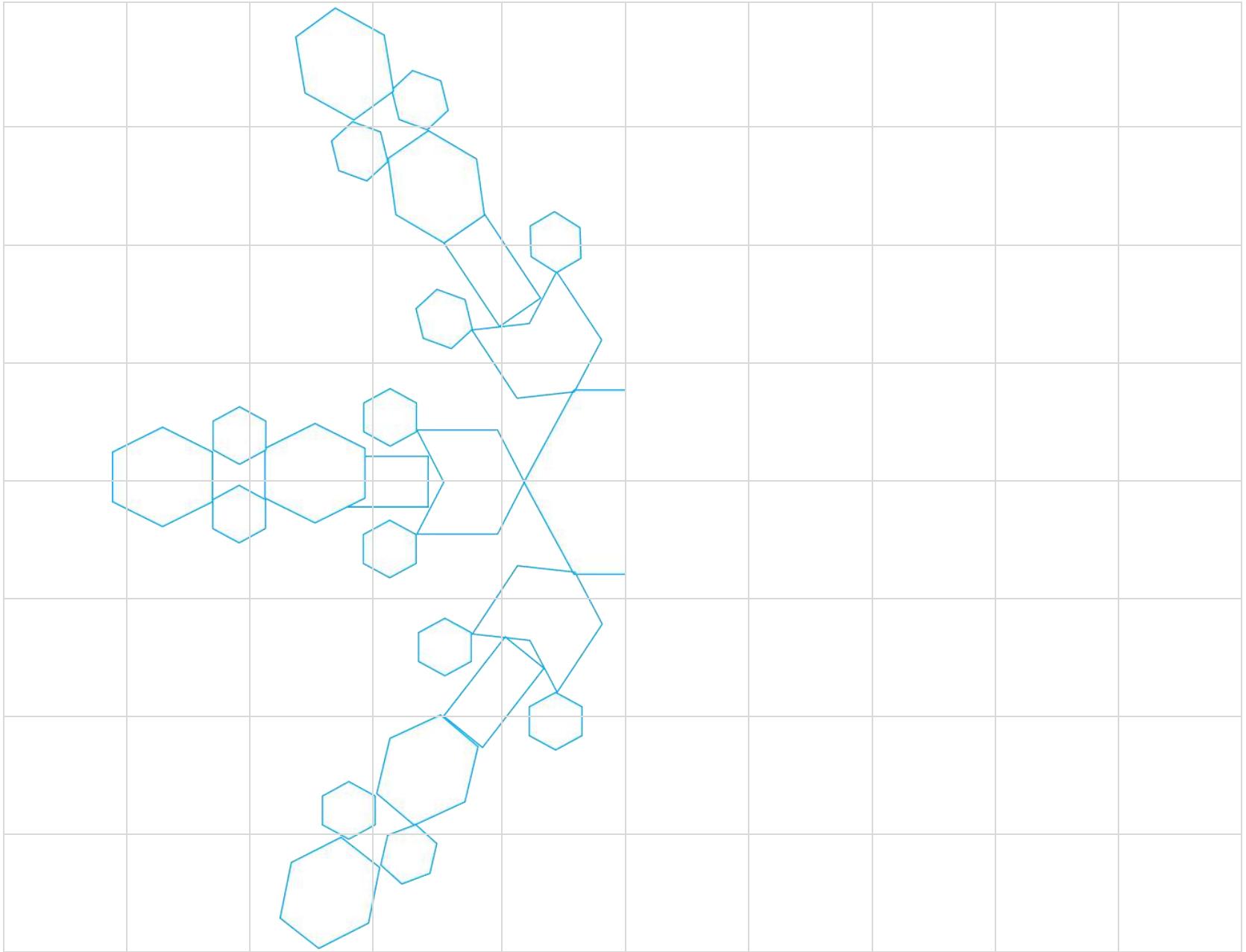
Cut out the shapes, then place them together in different patterns to build a snowflake.



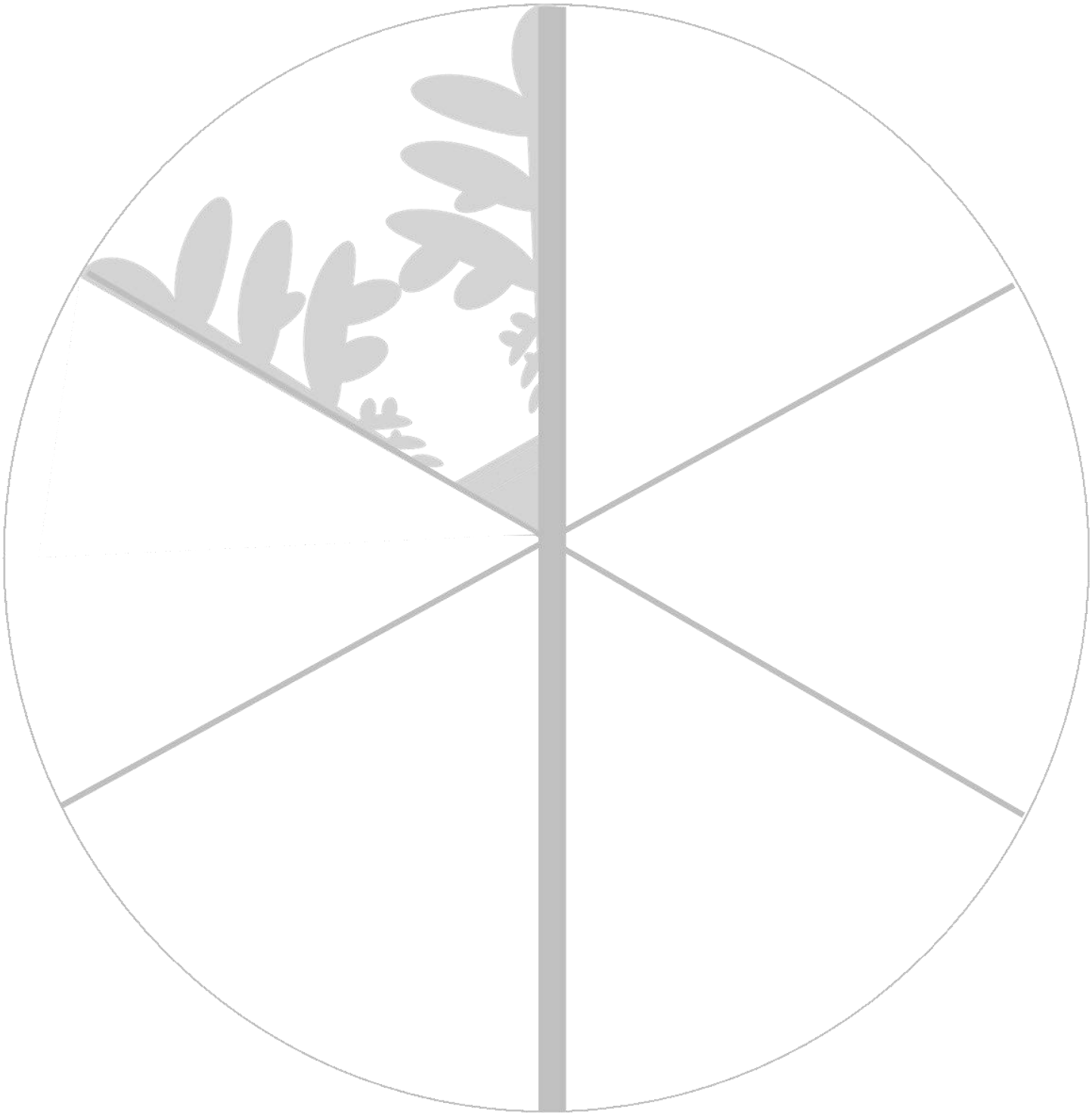
SNOWFLAKE FORMATION



SNOWFLAKE SYMMETRY



Step 1: Fold the paper along the center line. Fold the left triangle section back, then the right triangle section back, being careful to match the lines on each side from the rear. The template should remain at the top.
Step 2: Cut out the circle.
Step 3: Cut carefully around the template lines, avoiding cutting through the triangular guide lines.
Step 4: Carefully unfold.
Step 5: Flatten the paper, then flip to the blank side.

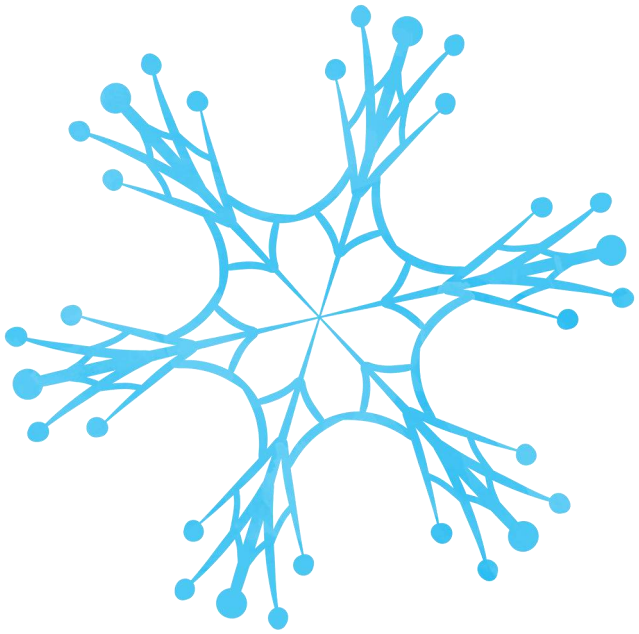


SNOWFLAKE STEM CHALLENGES

Add these Winter STEM challenge cards to a simple engineering kit filled with easy to find supplies. Encourage the kids to get creative! Fun individual or group activity that's perfect for maker spaces or tinker tables.

SNOWFLAKE STEM TINKER SUPPLY LIST

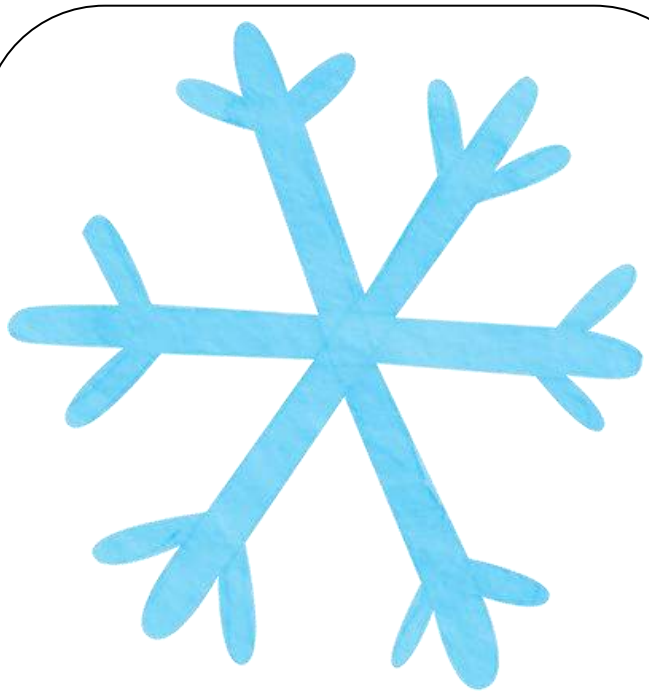
Beads
Bows Buttons
Candy sticks
Clothes pins
Cotton balls
Cotton swabs
Doilies
Dried cereal
Dried pasta
Feathers
Felt
Flat marbles
Gems
Glitter
Glitter glue
Glow stars
Glue
Golf tees
Gumdrops
LEGO® bricks
Marbles
Marshmallows
Paint
Paper
Paper clips
Pipe cleaners
Pom-poms
Popsicle sticks
Pretzel Sticks
Ribbon
Rubber Bands
Scissors
Sequins
Shells
Skewers
Sponges
Straws
Tape
Toilet paper rolls
Toothpicks
Twist ties
Washi® tape
Wooden planks
Yarn
Zip ties



Build a LEGO® Snowflake

Possible Supplies:

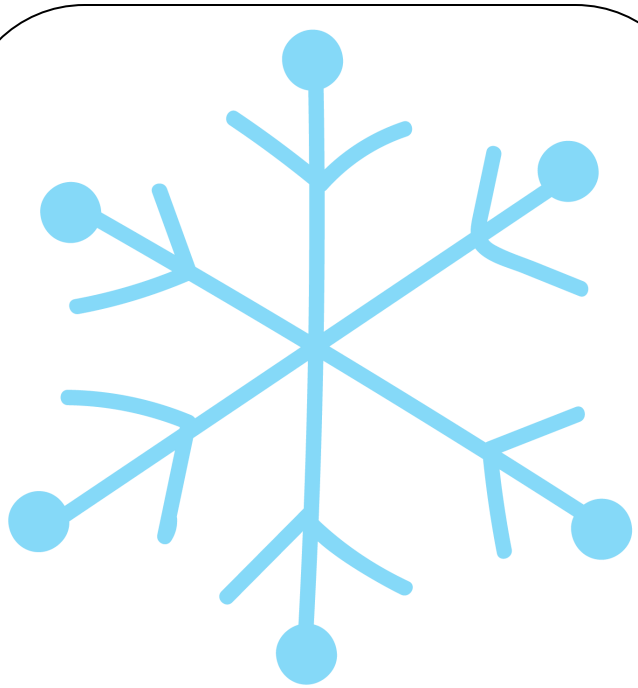
LEGO® bricks,
snowflake template (or build your own)



Build a Snowflake with Cotton Swabs

Possible Supplies:

popsicle sticks, glue, shells, stickers, gems, glitter glue, cotton balls, sequins, snowflake template (or design your own)



Build a Snowflake with Pipe Cleaners

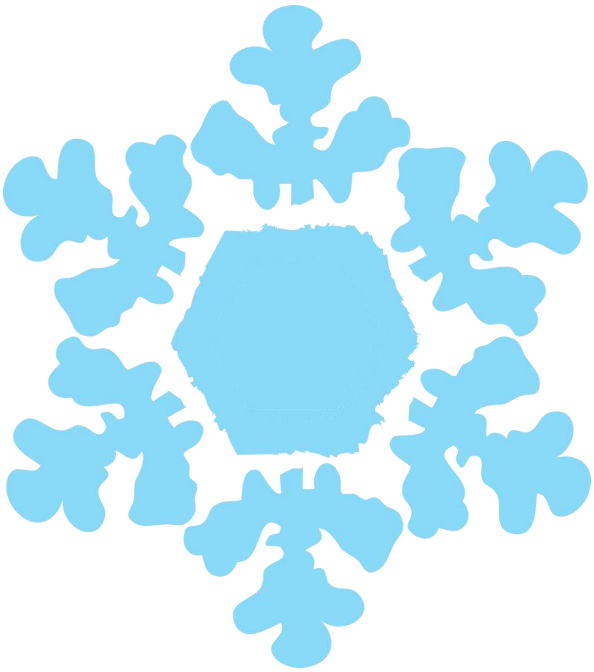
Possible Supplies:

pipe cleaners, gems, paper, twist ties, pom-poms, twist ties, buttons, feathers, snowflake template (or design your own)

Build a Snowflake with Paper

Possible Supplies:

paper, sequins, twist ties, glue, toothpicks, tape, Washi tape, skewers, gems, snowflake template (or design your own)



Build a Snowflake with Marshmallows

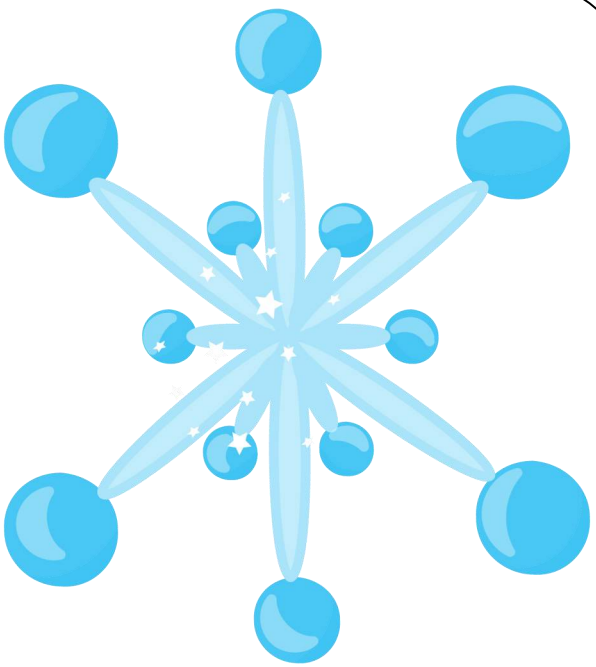
Possible Supplies:

marshmallows, candy sticks, dried cereal, pretzel sticks, dried pasta, toothpicks, snowflake template (or build your own)

Build a Snowflake with Beads

Possible Supplies:

popsicle sticks, glue, shells, stickers, gems, glitter glue, cotton balls, marbles, snowflake template (or design your own)



Build a Snowflake Buttons

Possible Supplies:

buttons, toothpicks, popsicle sticks, glue, glitter glue, pom-poms, tape, zip ties, snowflake template (or design your own)

Build a Snowflake with Feathers

Possible Supplies:

feathers, sequins, twist ties, glue, toothpicks, tape, Washi tape, snowflake template (or design your own)

Build a Snowflake with Straws

Possible Supplies:

straws, pipe cleaners, gems, beads, buttons, tape, glue, snowflake template (or design your own)

Build a Snowflake with Popsicle Sticks

Possible Supplies:

popsicle sticks, glue, shells, stickers, gems, glitter glue, cotton balls, marbles, snowflake template (or design your own)

Build a Snowflake Wooden Planks

Possible Supplies:

wood planks (Keva®, Kapla®, or even Lincoln Logs®) snowflake template (or design your own)

Build a Snowflake with Twist Ties

Possible Supplies:

pom-poms, twist ties, cotton swabs, cotton, paper, glue, toothpicks, tape, Washi® tape, snowflake template (or design your own)

SNOWFLAKE SALT PAINTING TEMPLATE

SNOW WEATHER CYCLE

SUPPLIES:
Printable Snow Cycle Sheets
Scissors
Tape

INSTRUCTIONS:
Cut out the winter snow cycle words and tape to appropriate areas. Both a color version and black & white version are provided.

Print the vocabulary page, along with the flashcard page. Cut out the flashcards and use as prompts to help students remember the definition of each word.

The vocabulary word search and crossword puzzles will help build spelling and definition retention.

SNOW CYCLE:
This snow/water cycle shows how water evaporates from the surface of the earth and goes up into the atmosphere, where it cools and condenses into rain or snow in clouds.

Then it falls again to the ground or surface as precipitation (rain, snow, hail).

Rivers, lakes, and some porous rocks collect this water., Much of it flows back into the oceans, where it will evaporate again. It's a cycle!

SNOW WEATHER CYCLE VOCABULARY

Condensation: The process in which a gas or vapor turns into a liquid.

Evaporation: The process in which a liquid turns into a gas or vapor.

Precipitation: Rain, sleet, snow or hail that falls to the ground is called precipitation.

Transpiration: The process of water moving through a plant and its evaporation into the atmosphere.

Deposition: The process in which gas turns into a solid without becoming a liquid first.

Sublimation: When a solid turns into a gas without first melting like snow on the ground.

Surface Flow or Surface Run-Off: This is the water from snow, rain, or ice that flows over the land or surface and into streams, rivers, and then back into the oceans.

Infiltration: The process in which precipitation or water soaks into the ground and into layers of porous rock.

Plant Uptake: The process in which water travels up the plant tissue providing necessary nutrients for the plant to grow.

SNOW WEATHER CYCLE FLASH CARDS

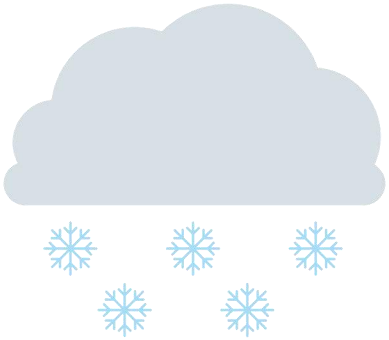
Cut out the cards below to use as flashcards with snow cycle vocabulary page.

CONDENSATION

EVAPORATION

PRECIPITATION

TRANSPIRATION



DEPOSITION

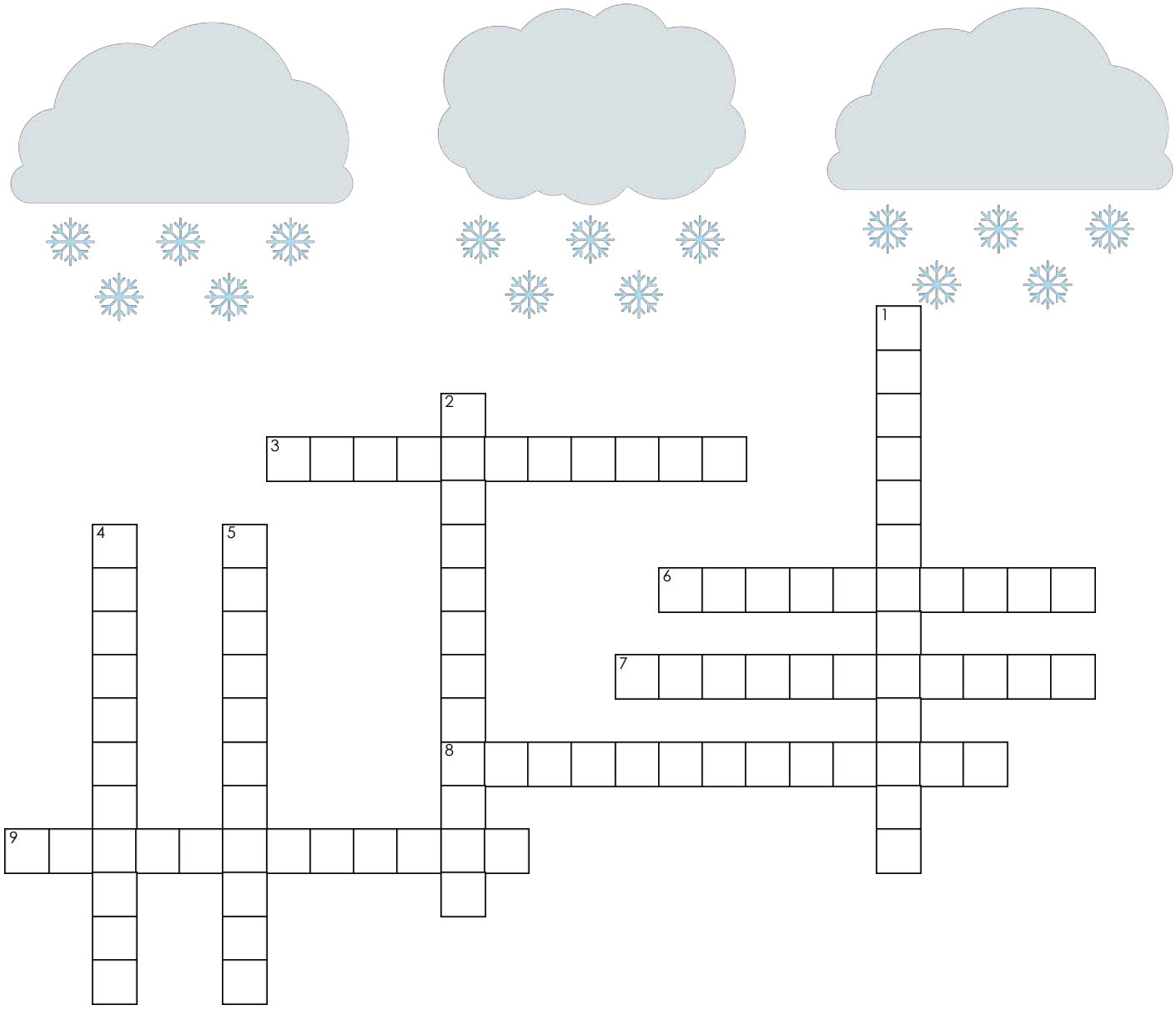
SUBLIMATION

SURFACE FLOW

INFILTRATION

PLANT UPTAKE

SNOW WEATHER CYCLE VOCABULARY CROSSWORD PUZZLE



ACROSS

3 The process in which a liquid turns into a gas or vapor.
6 The process in which gas turns into a solid without becoming a liquid first.
7 When a solid turns into a gas without first melting like snow on the ground.
8 The process of water moving through a plant and its evaporation into the atmosphere.
9 The process in which precipitation or water soaks into the ground and into layers of porous rock.

DOWN

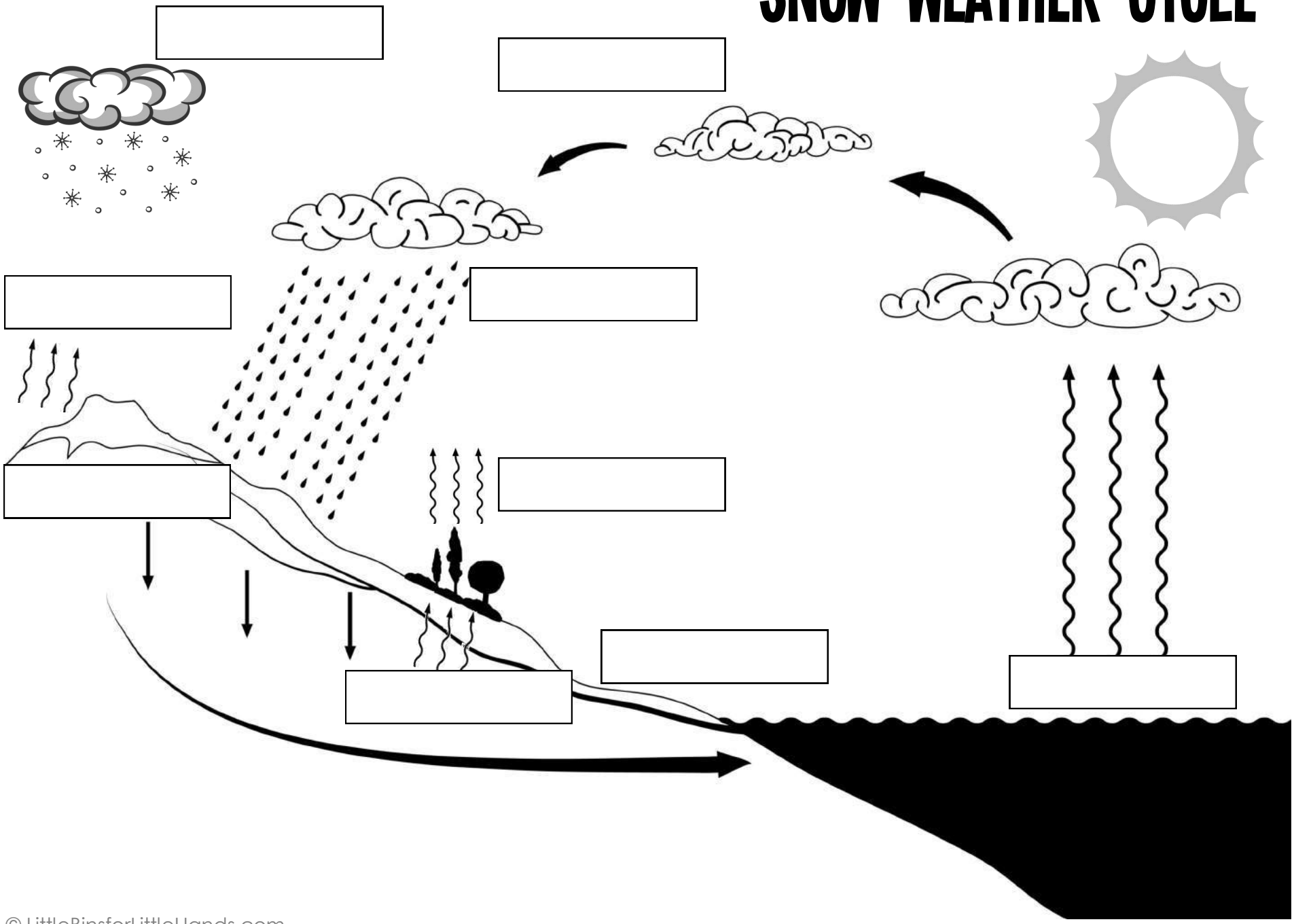
1 Rain, sleet, snow or hail that falls to the ground is called precipitation.
2 The process in which a gas or vapor turns into a liquid.
4 This is the water from snow, rain, or ice that flows over the land or surface and into streams, rivers, and then back into the oceans
5 The process in which water travels up the plant tissue providing necessary nutrients for the plant to grow.

SNOW WEATHER CYCLE WORD SEARCH

Condensation
Sublimation
Precipitation
Evaporation
Infiltration
Deposition
Surface Flow
Plant Uptake
Transpiration

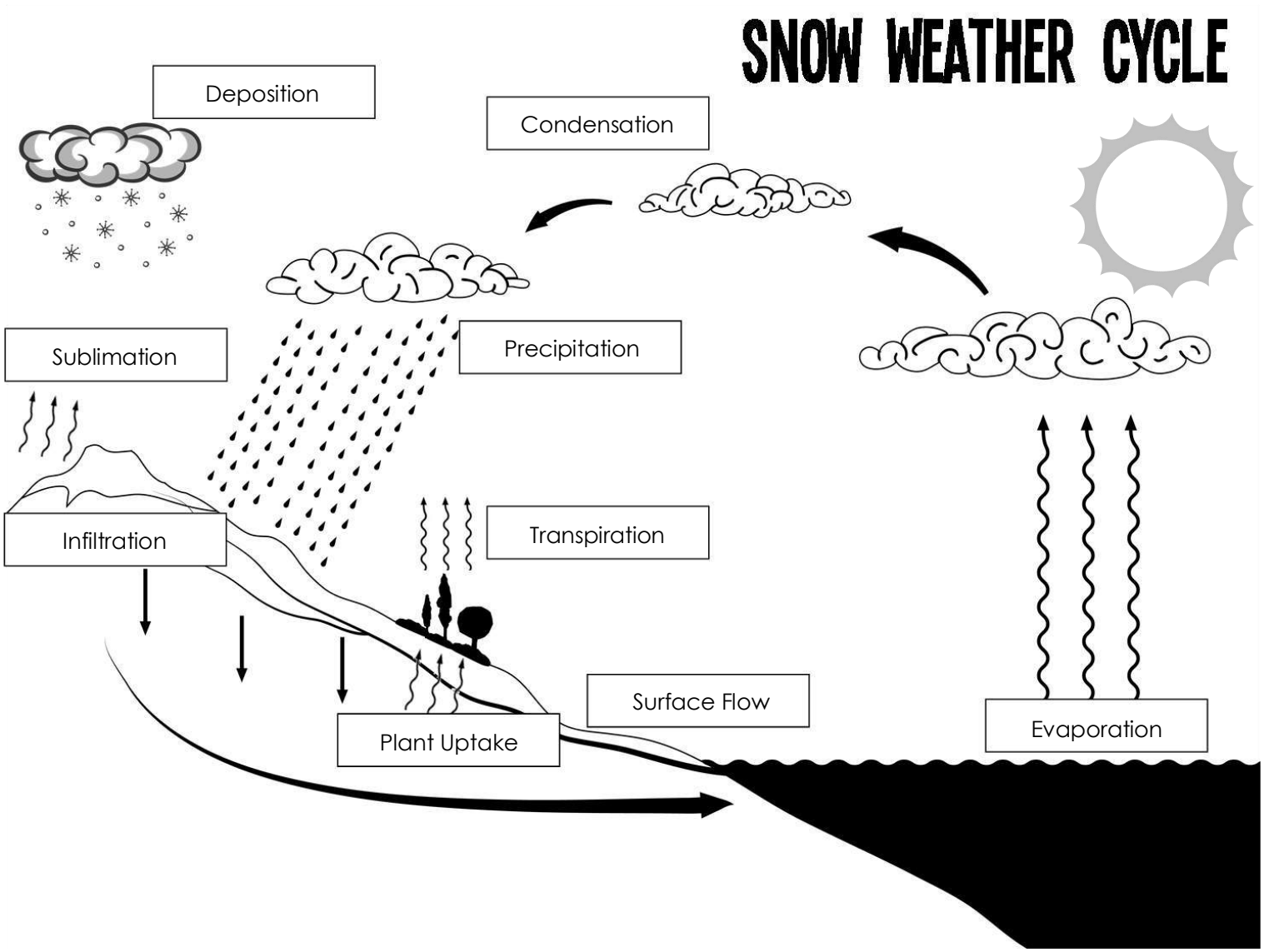
R W E U D E P O S I T I O N Y
N O I T A M I L B U S X M P V
L H Q I N F I L T R A T I O N
N W O L F E C A F R U S E D O
N O I T A T I P I C E R P W I
K B I K C B V L K X F Q U O T
S E A T W Y B A G G M G A N A
J C B B A Z Y N Z U X A W D R
Z D C F S R E T B C K Z S I I
N H G M D T O U N C F H I F P
C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

SNOW WEATHER CYCLE



Answer Key:

Cut out the labels below, and place on the cycle diagram.



Condensation

Transpiration

Precipitation

Sublimation

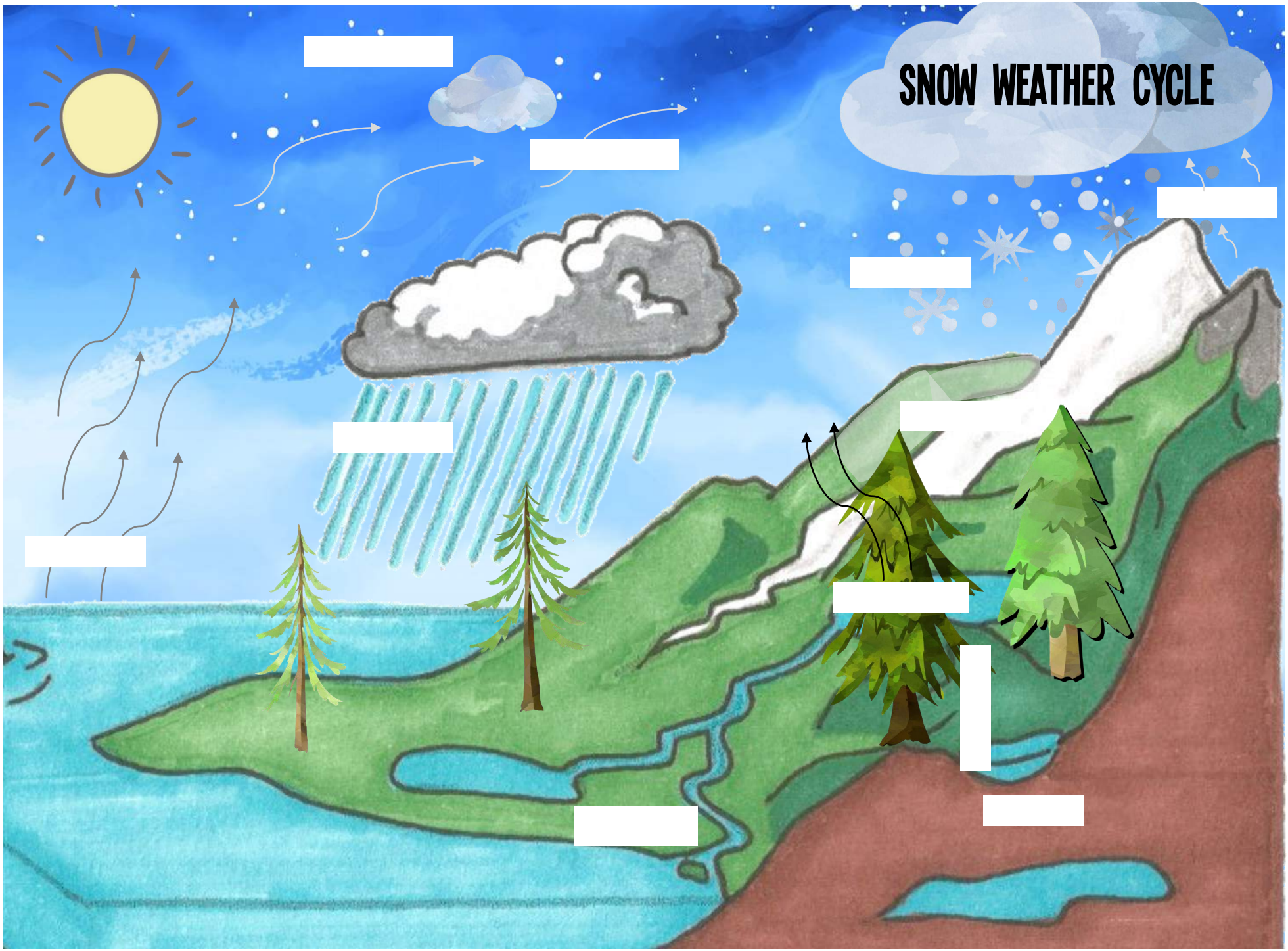
Deposition

Infiltration

Plant Uptake

Surface Flow

Evaporation

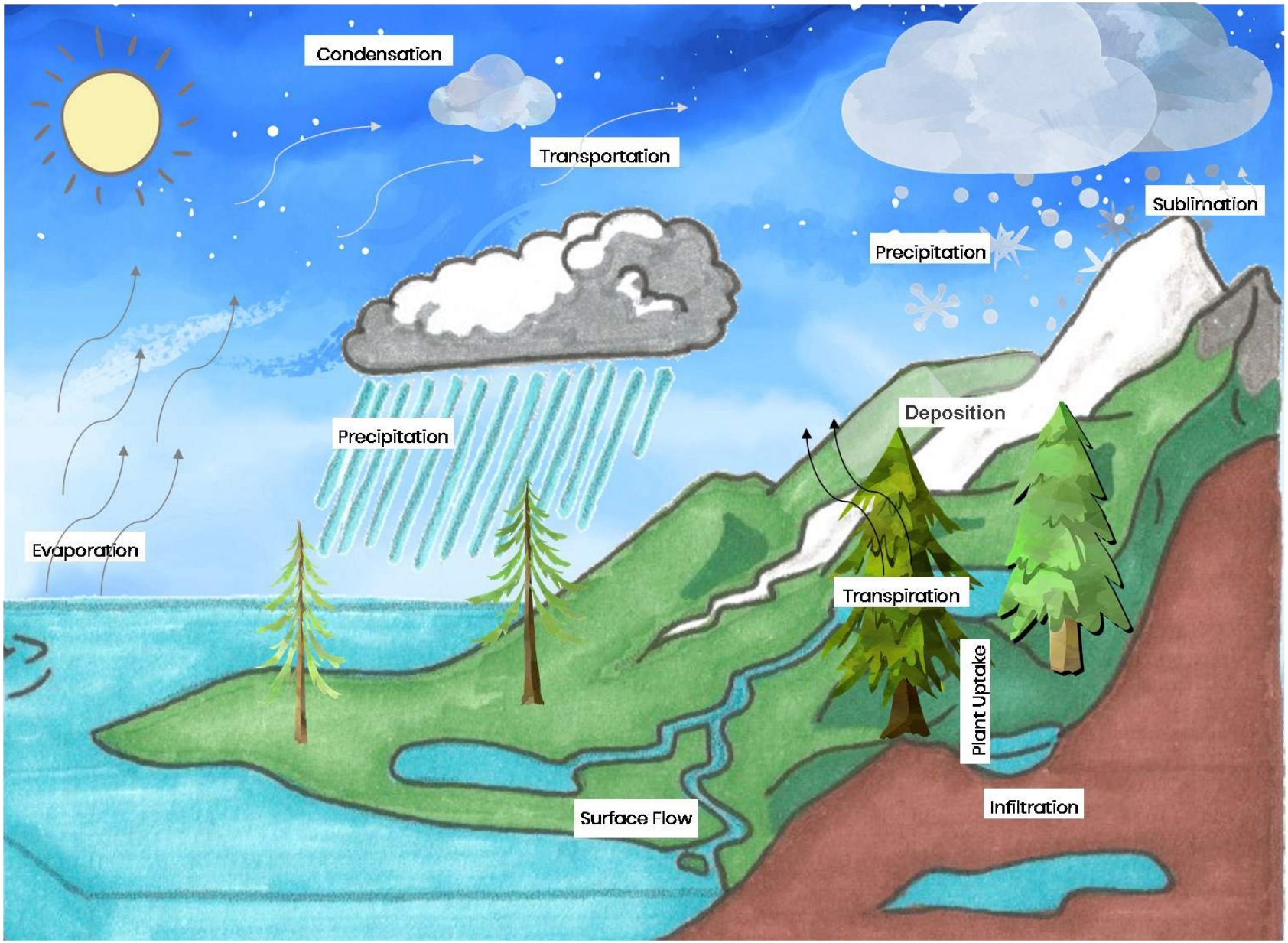


Cut out the listed answers to the blank water cycle page. Let kids sort the correct words to the blanks.

Answer Key

Cut & Sort

- Condensation
- Evaporation
- Precipitation
- Precipitation
- Transportation
- Deposition
- Sublimation
- Transpiration
- Surface Flow
- Infiltration
- Plant Uptake

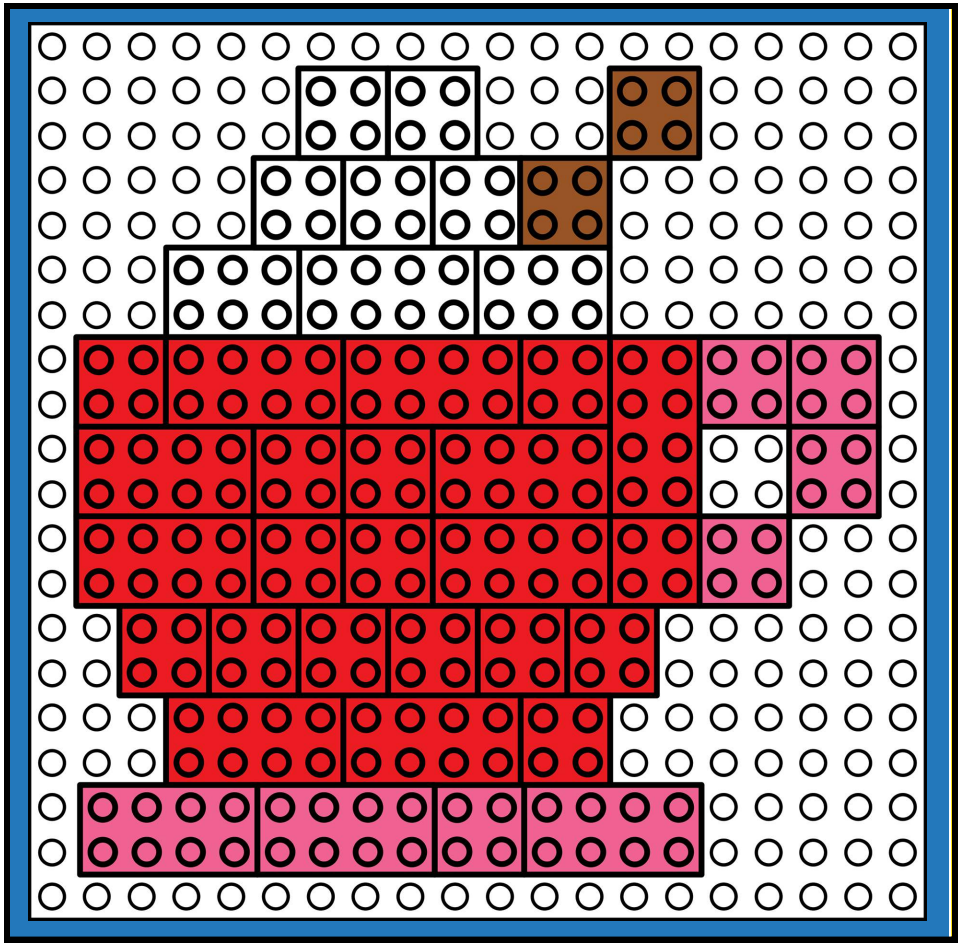


WINTER BRICK BUILDING

Try these Winter themed brick building activities perfect for your brick building fans.

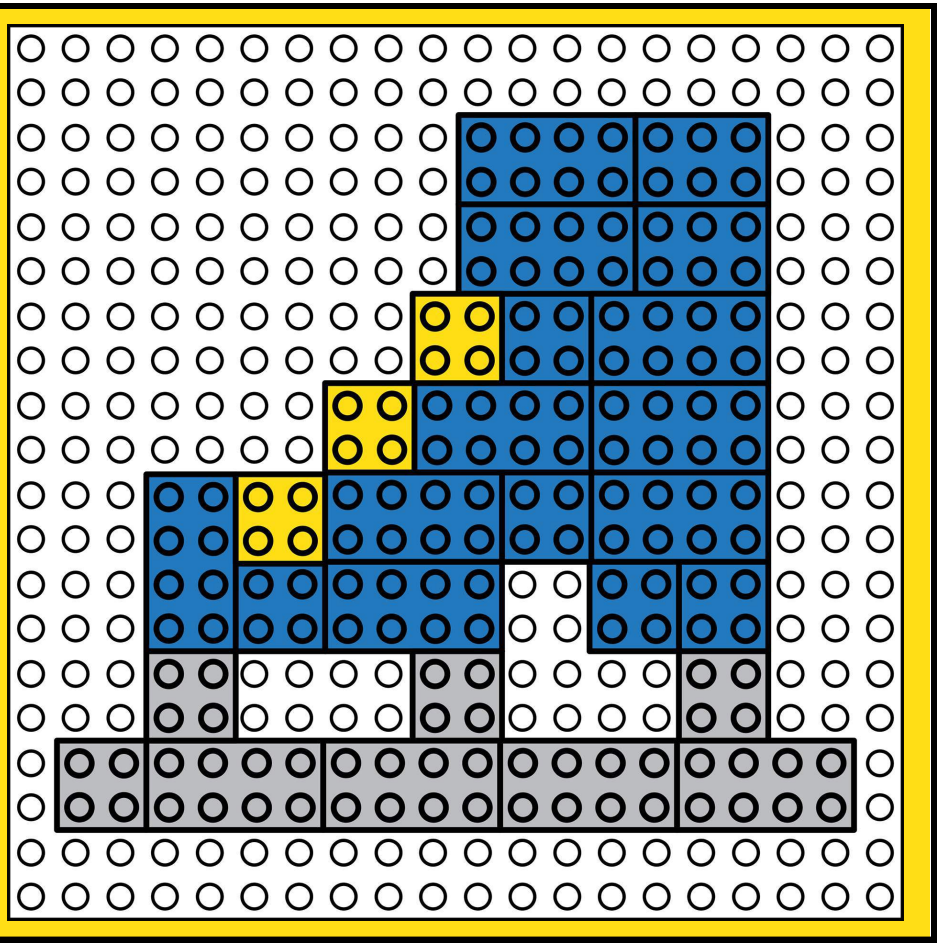
What's Included:

- Brick Building Math
- Brick Building Challenges



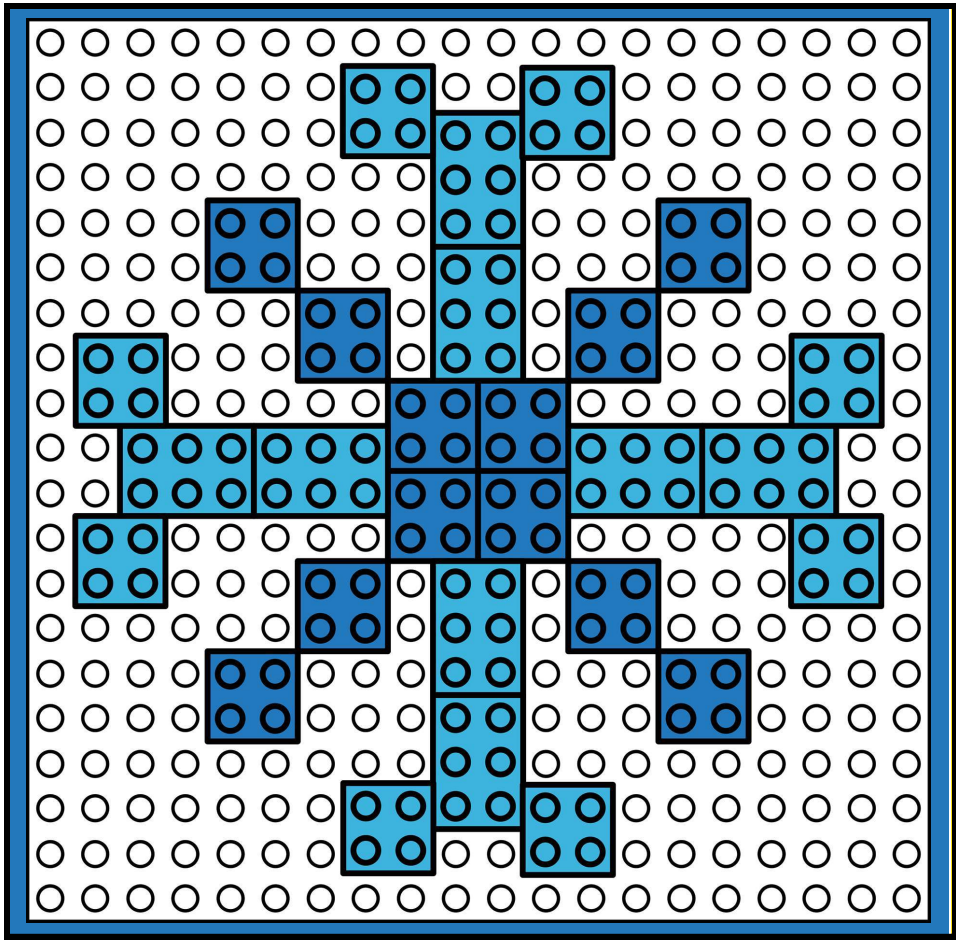
COCOA CHALLENGE

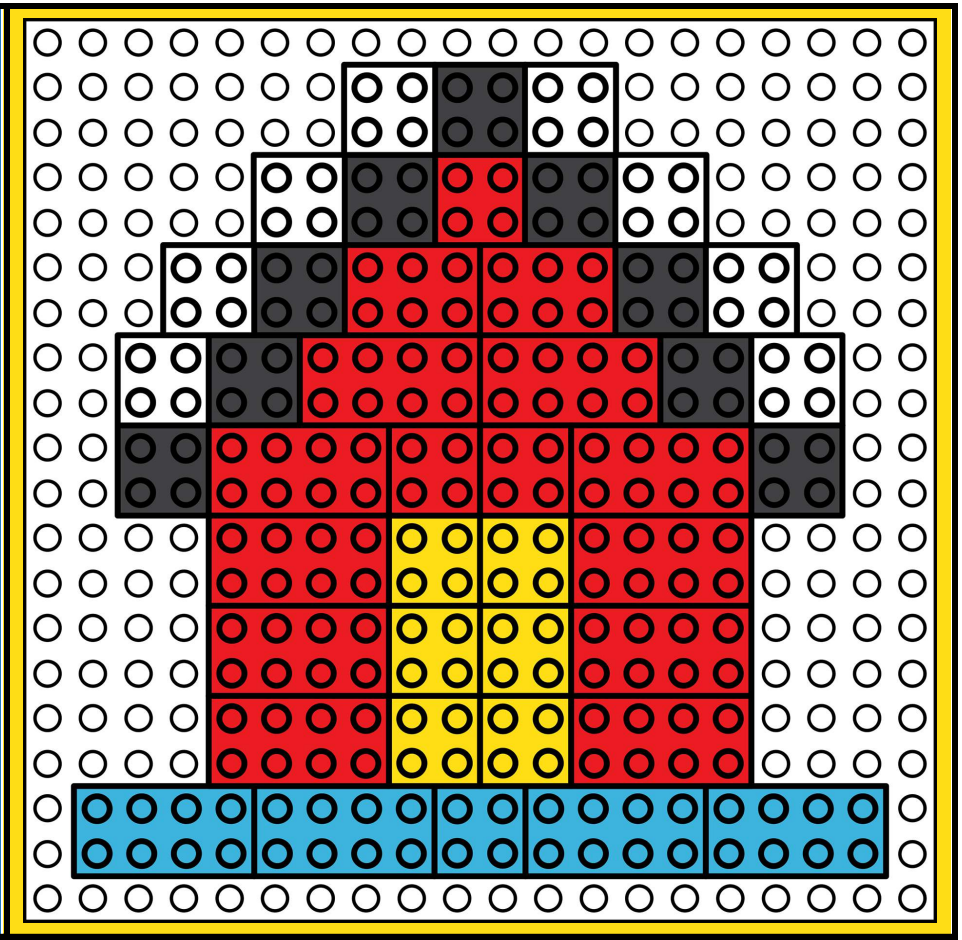
With an adult's help, make a cup of hot tea or cocoa. Build the design before your drink cools!



TWICE IS NICE CHALLENGE

Time yourself building the ice skate. Build it a second time and try to beat your first time.





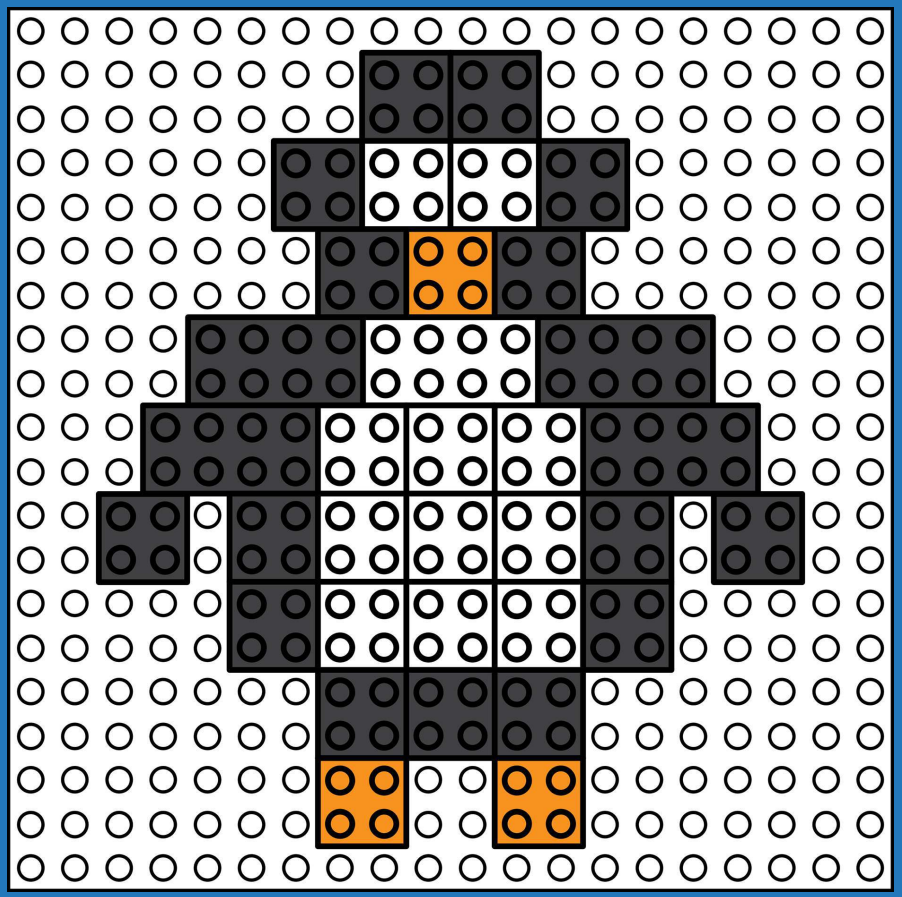
TWO-STORY CHALLENGE

Build it two times as tall!

Make sure the entire snowflake has two layers of bricks.

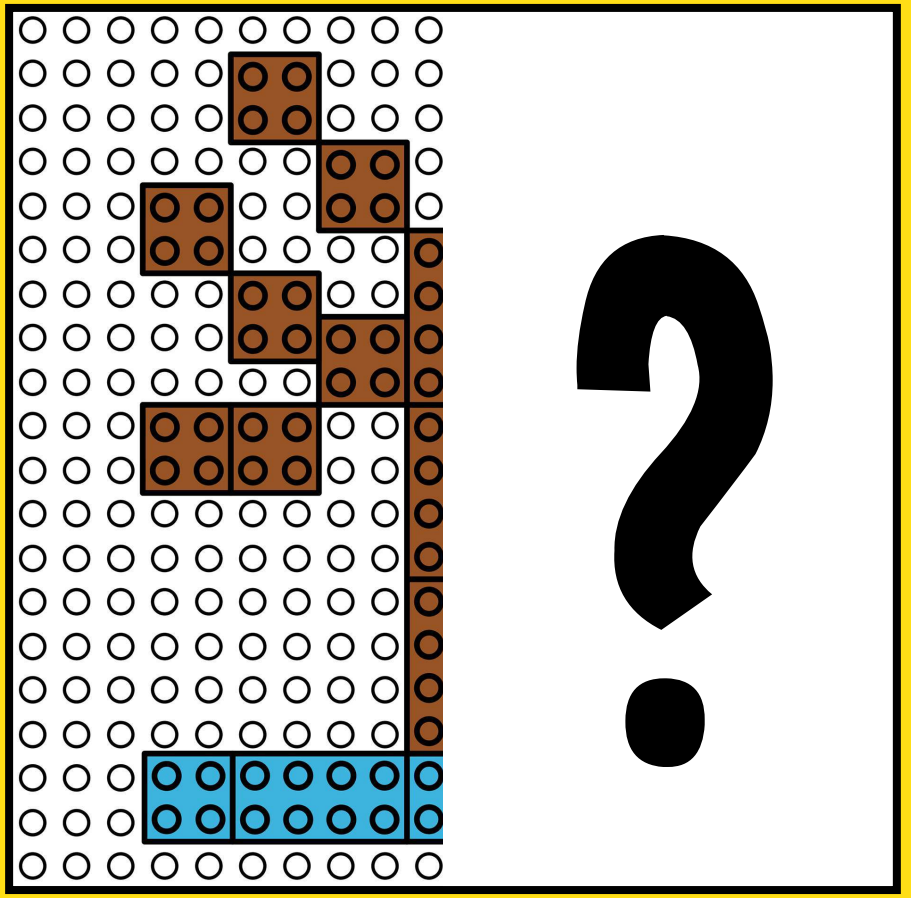
TIMER CHALLENGE

Build the house in **three** minutes or less. On your mark, get set, go!



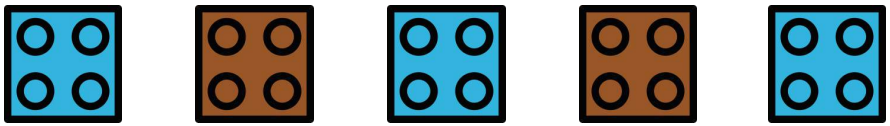
RACE CHALLENGE

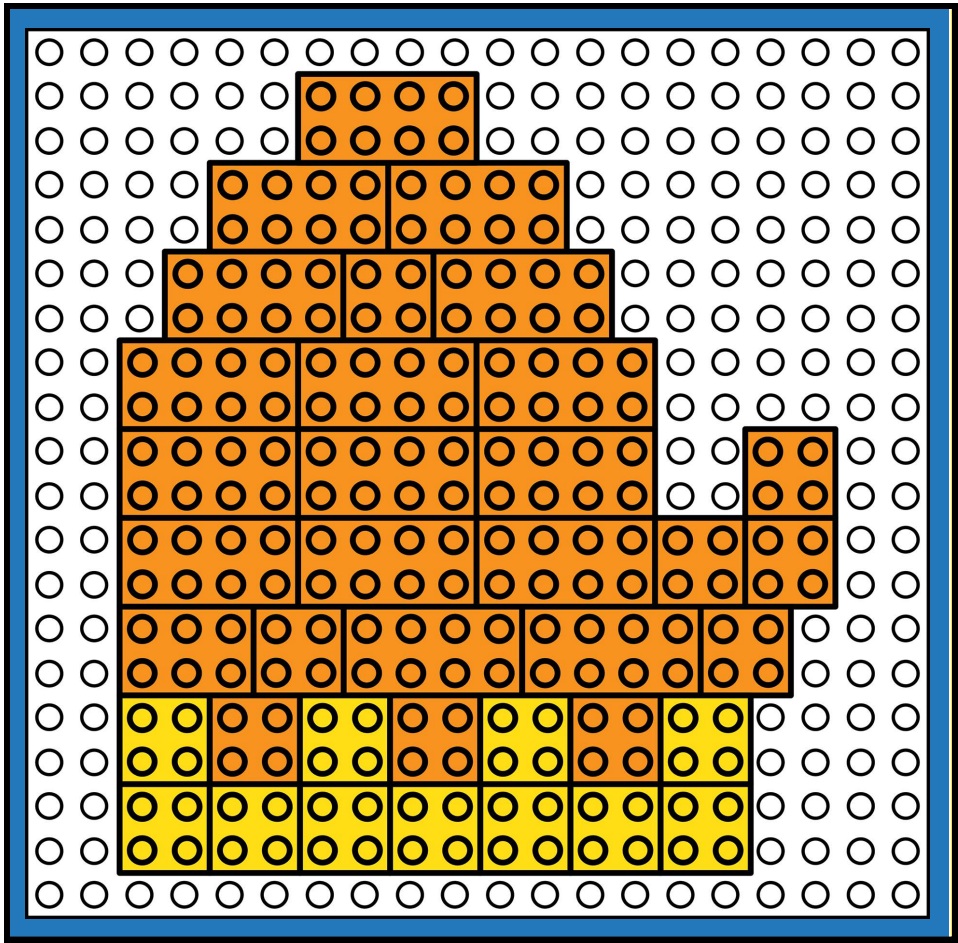
Find someone to race with you. Your challenge is to be the first person to finish building the design.



SYMMETRY CHALLENGE

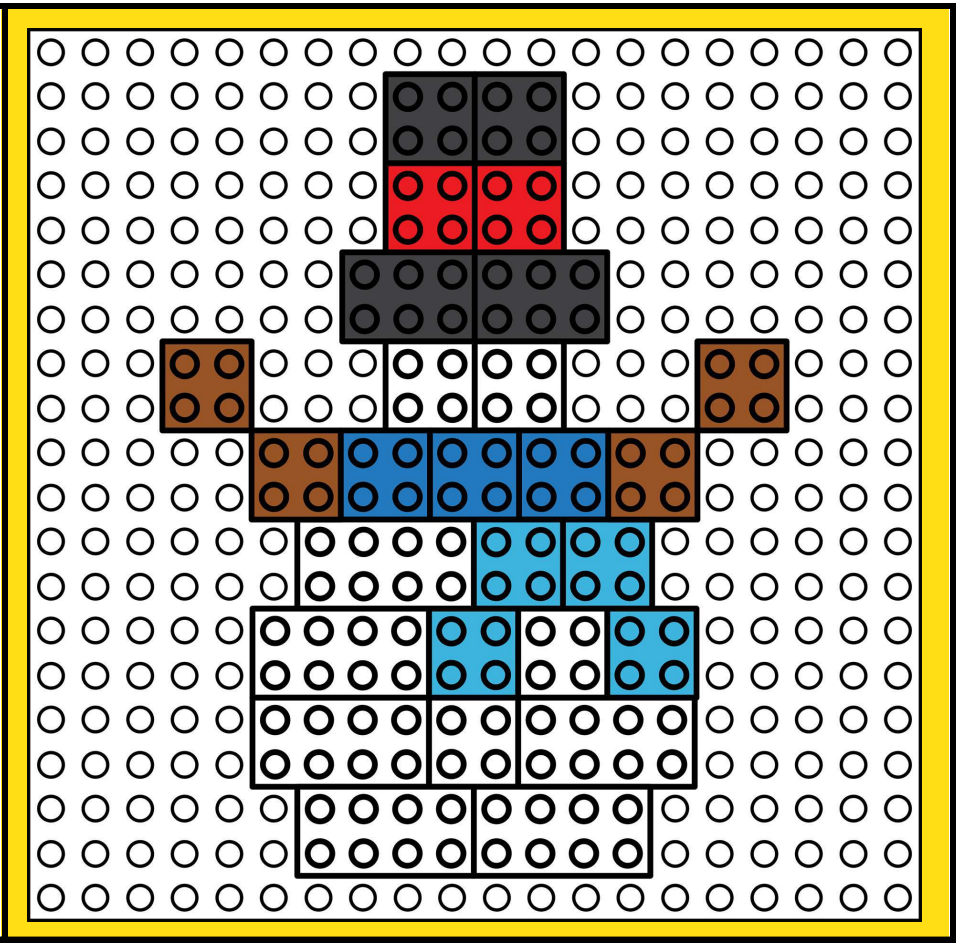
The winter tree is symmetrical. Your challenge is to build both halves.





COLOR SWAP CHALLENGE

Your challenge is to build this mitten with a new color scheme. You can use any color of bricks except for yellow and orange.



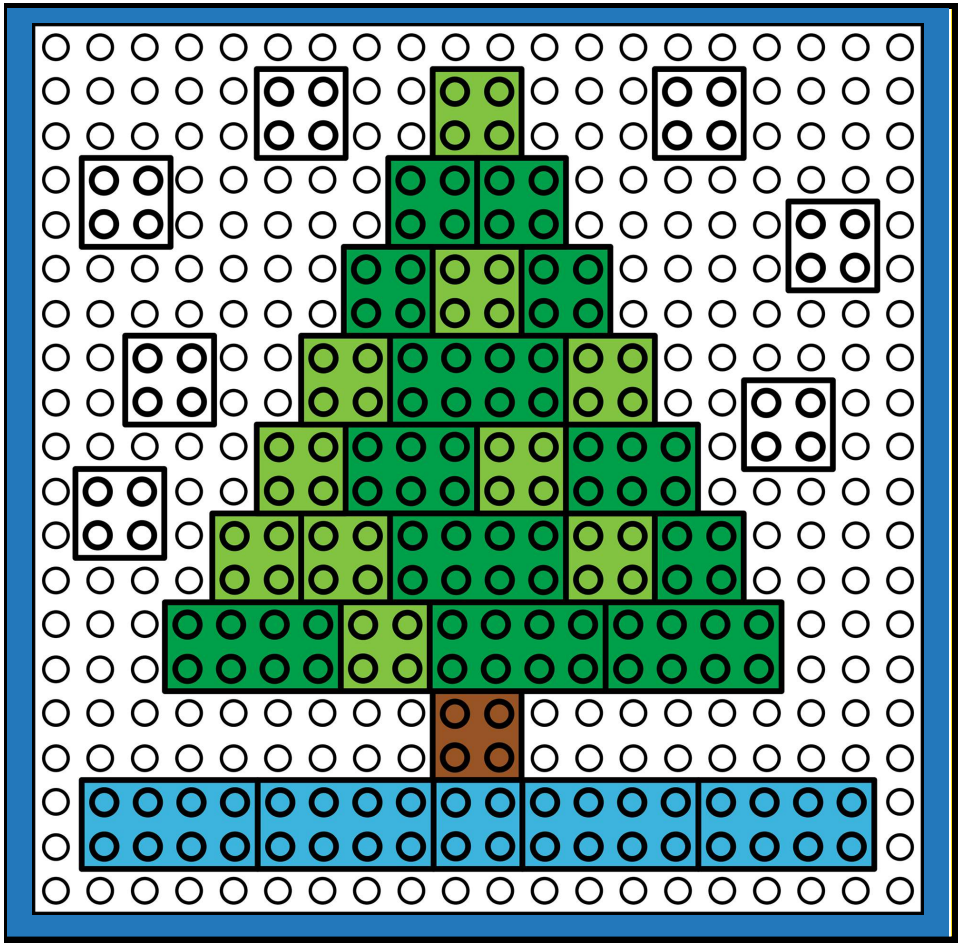
ESTIMATION CHALLENGE

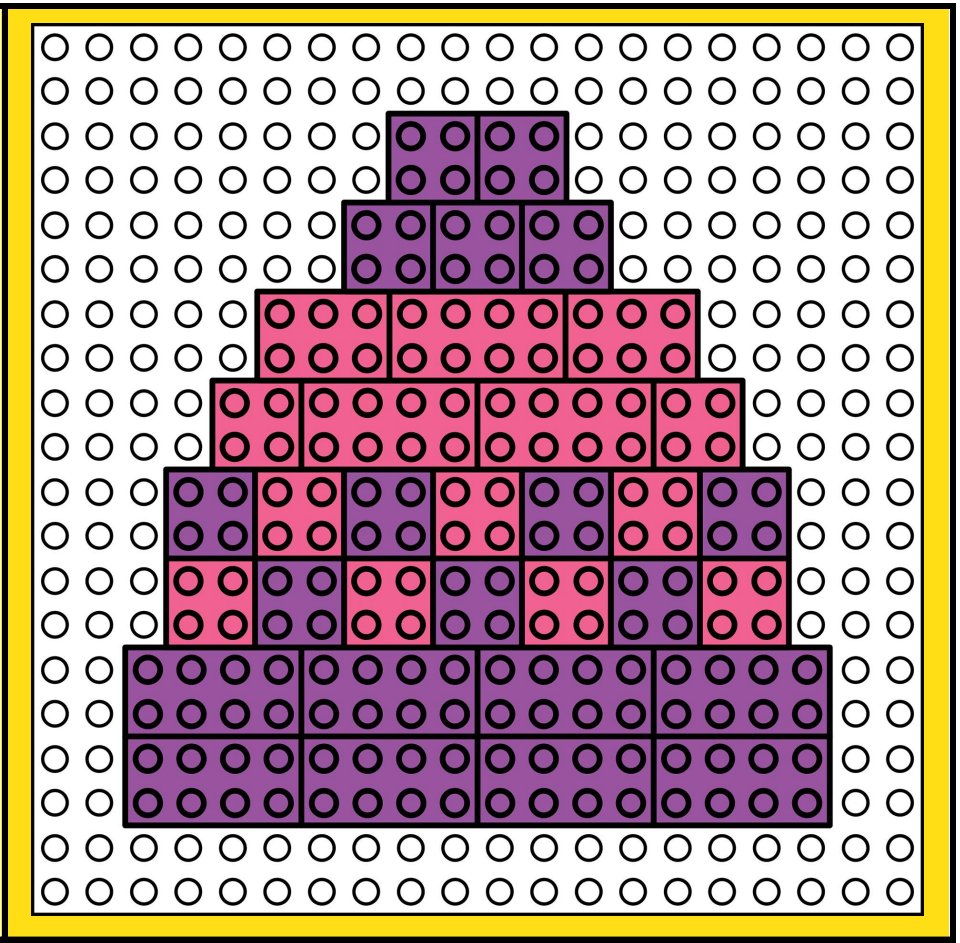
1. Estimate 2. Build 3. Count

How many bricks do you think you will use?

_____

How many bricks did you use? _____





OPPOSITE HAND CHALLENGE

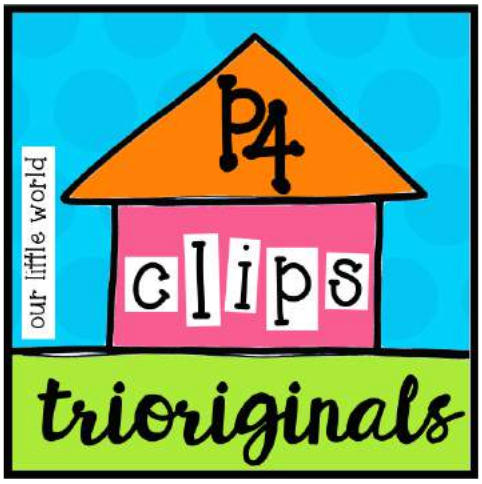
Are you right-handed?
Build with your left hand.
Are you left-handed?
Build with your right hand.

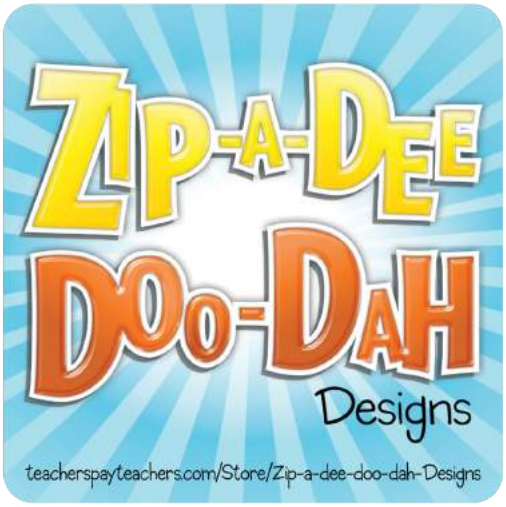
UPSIDE DOWN CHALLENGE

Your challenge is to build an upside down hat. Make sure you keep the template ride-side up.

CLIP ART CREDIT PAGE

Credit is given to the following:





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