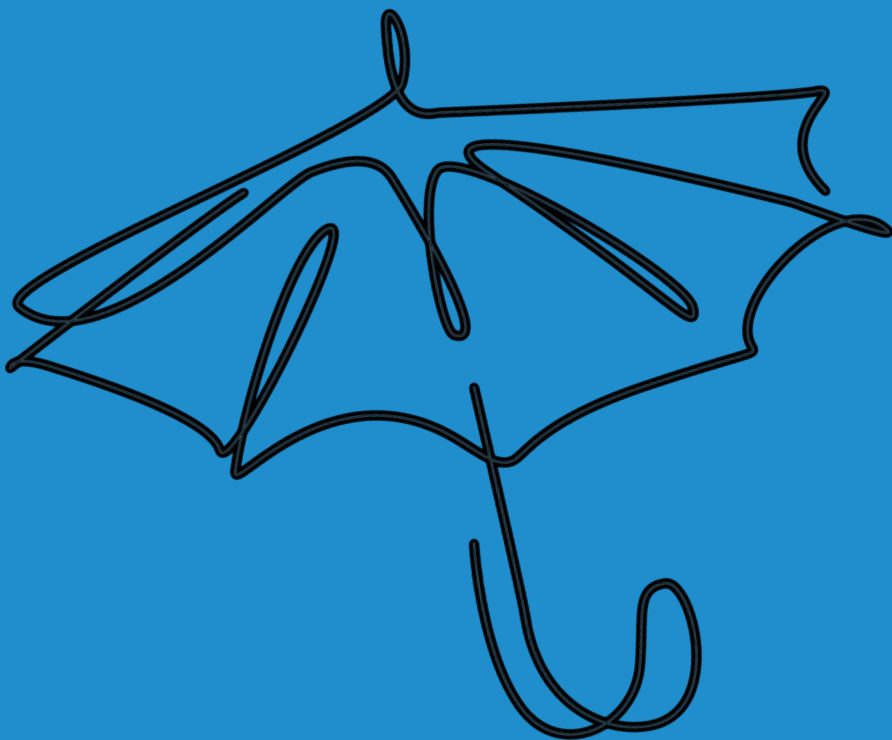


@magichomeschoolbus

weather study



INTRODUCTION

In this pack you will find a list of extension activities that compliment Lynn Seddons' Exploring Nature with Children curriculum. For specific information regarding such things as the weekly topics, nature walk activities and book lists, please refer to her complete year long study.

The following list of activities can be completed in the order that you see best for you family. They may not all be appropriate for your age group, so feel free to pick and choose those that are.

As this STEAM pack is rooted in nature, material suggestions may not always be appropriate for your location. Please adjust to what you have readily available in your region.

This pack is for personal use only. Do not redistribute.

Have fun!

Kristen Lindsay

[instagram.com/magichomeschoolbus](https://www.instagram.com/magichomeschoolbus)

Created November 2020

RESOURCES

BOOK LIST

- Lynn Seddon's recommended book list for this Weather Study can be found on pg 62 of Exploring Nature with Children. She recommends some of my favourite books!

Additional book recommendations not listed in the curriculum:

- Weather words and what they mean by Gail Gibbons
- Clouds by Anne Rockwell
- Oh Say Can You Say What's the Weather Today? by Tish Rabe
- Ultimate Weather-pedia by Stephanie Warren Drimmer

PRINTABLES

- Types of Clouds and Fact Cards
<https://www.teacherspayteachers.com/Product/Types-of-Clouds-3-Part-Cards-and-Fact-Cards-3090325>
- Weather Unit by Steph Hathaway Designs
<https://www.etsy.com/ca/listing/695676435/weather-bundle>

VIDEO

- The Magic Homeschool Bus "Kicks up a Storm" ; Season 1 Episode 13
- The Magic Homeschool Bus "Wet all over"; Season 2 Episode 6
- SciShow Kids "How do we know when it will rain?"
<https://www.youtube.com/watch?v=dLQ0IHpyZd8>
- What is a tornado? <https://www.youtube.com/watch?v=-s3UwOqIPIE>
- Exploring Air & Air Pressure <https://www.youtube.com/watch?v=Grziaq-caVE>

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5 DAY FORECAST

There is so much to learn about the weather, that I broke it up into a 5 day forecast to try and make it more digestible. If you do not regularly fit ENWC activities into your every day schedule, I hope you can review the forecast and adapt it to what works best for your family! There's no reason that this unit study can't last for weeks to come.

Day 1 - Setting Up your Weather Station

- meteorologists need a proper weather station and set of tools! Lets get set up for an awesome week ahead.

Day 2 - Water Cycle and Precipitation

- the water cycle is a crucial part of our weather. Make your own window water cycle and dive deeper into the types of precipitation

Day 3 - Clouds and Weather Prediction

- explore different types of clouds and how they can help predict the upcoming weather

Day 4 - Air Pressure and Density

- explore what happens to hot and cold air. Create a homemade barometer. Using knowledge gained earlier in the week, explore the meanings of air pressure and density.

Day 5 - Extreme Weather

- end the week exploring extreme weather. Find a video recommendation on the resources page and try out an experiment based on your child's favourite severe weather!

*as always, get outside and experience the topic first hand. Dress for the weather, observe the clouds, check on your weather tracking tools and predict what tomorrow might look like based on the information you gather and the knowledge you gain each day.

DAY 1: WEATHER STATION

A meteorologist needs proper equipment in order to read and predict the weather! Today, we are going to set up our weather station so that we can interpret, document and predict the weather.

Each day, record the weather at approximately the same time so that you have accurate rain gauge readings (every 24hr). Use the tools you set up today to read the weather every day this week (and beyond).

Ideas to get your weather station set up

Daily Weather Report

- print off at least 5 reports so that you can fill one in each day. If you have an outdoor thermometer, place it against a window that the children can see. If you don't have a thermometer, you can use your phone app to record the temperature.

Weather Wheel

- Stephanie Hathaway has provided us with her coloring page weather wheel! (thank you Steph) After your child has colored it in, use a fastener to turn it into a weather wheel and place it out on your weather station for your child to manipulate as the weather changes.

Books, Printables, Words

- set out any books and resources you have available to you (owned or rented from the library). Place printables on display and write some weather related words down and hang them on the wall.

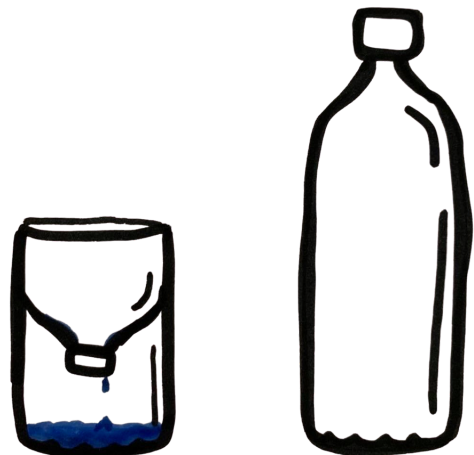
DAY 1: WEATHER STATION CONT'D

DIY Windssock

- When reading weather, we discuss the wind based on the direction wind is coming FROM. Therefore if we have north winds, the wind is coming from the North. There are some simple ways you can figure out which direction the wind is coming from each day.
 - have your child hold up a plastic grocery bag with two hands (one holding each handle). Hold the bag out in front of you and slowly turn around on spot to see when the wind catches inside of the bag to fill it up. You might need to slowly raise and lower the bag while it's out in front of you to help it "open" and catch the wind.
 - Glue long 20" strips of tissue paper down from one end of a toilet paper roll. On the other end of the toilet paper roll, poke two holes and tie a string so you can hang it outside. Once it's hanging, see which direction the wind is blowing your tissue paper streamers.

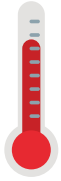
Rain Gauge

- This is a very simple way to see how much precipitation there has been in the last 24 hours. Using a plastic waterbottle/ soda bottle, cut the top 1/3 off and flip it upside down. This creates a bit of a funnel. Tape in place. Now, the rain will collect inside of the bottle as it falls, but much of the possible evaporation will be trapped within the bottle, allowing for a more accurate reading. You can use a ruler to measure the readings, or use a permanent marker right on the bottle to mark measurements. Dump the bottle every 24 hours to start fresh. You can secure the bottle outside by stacking rocks around it.



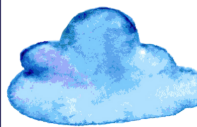
date:

today's weather report



The thermometer says
it's _____ C / F
degrees outside.

Today's precipitation is:
(circle on)



none



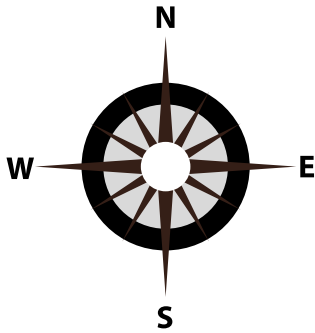
rain



snow

Wind direction:

what direction is the wind coming from?



24 hr precipitation:

I predict tomorrow will be:

(write your prediction. sunny? rainy? snowy?)

Draw a picture of today's sky.

WEATHER WHEEL COLORING PAGE

by Steph Hathaway Designs

A BIG THANK YOU to Stephanie from StephHathaway Designs for including this coloring page weather wheel in this weeks pack. You can find the link to her entire weather unit on the resource page! Steph is an amazing resource for homeschool unit studies. You must check her out!

The Weather Wheel is a fun daily learning tool to get kids excited about learning weather patterns. It's the perfect way to start your morning rhythm.

Print the following wheel for your child to color in. Then cut around the outer lines and use a brass fastner to create your spinning wheel. Set it on your weather station so your child can adjust the wheel to the current weather.

Stephanie Hathaway

[IG instagram.com/stephhathawaydesigns](https://www.instagram.com/stephhathawaydesigns)
<https://www.stephaniehathawaydesigns.com/>



WEATHER WHEEL

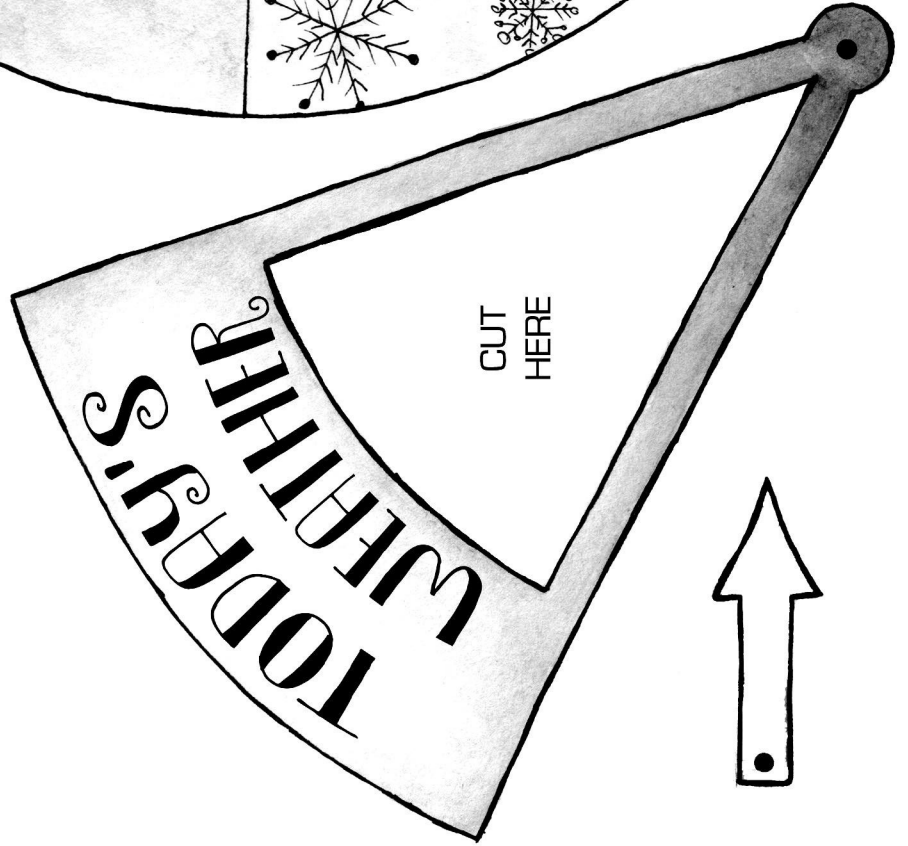
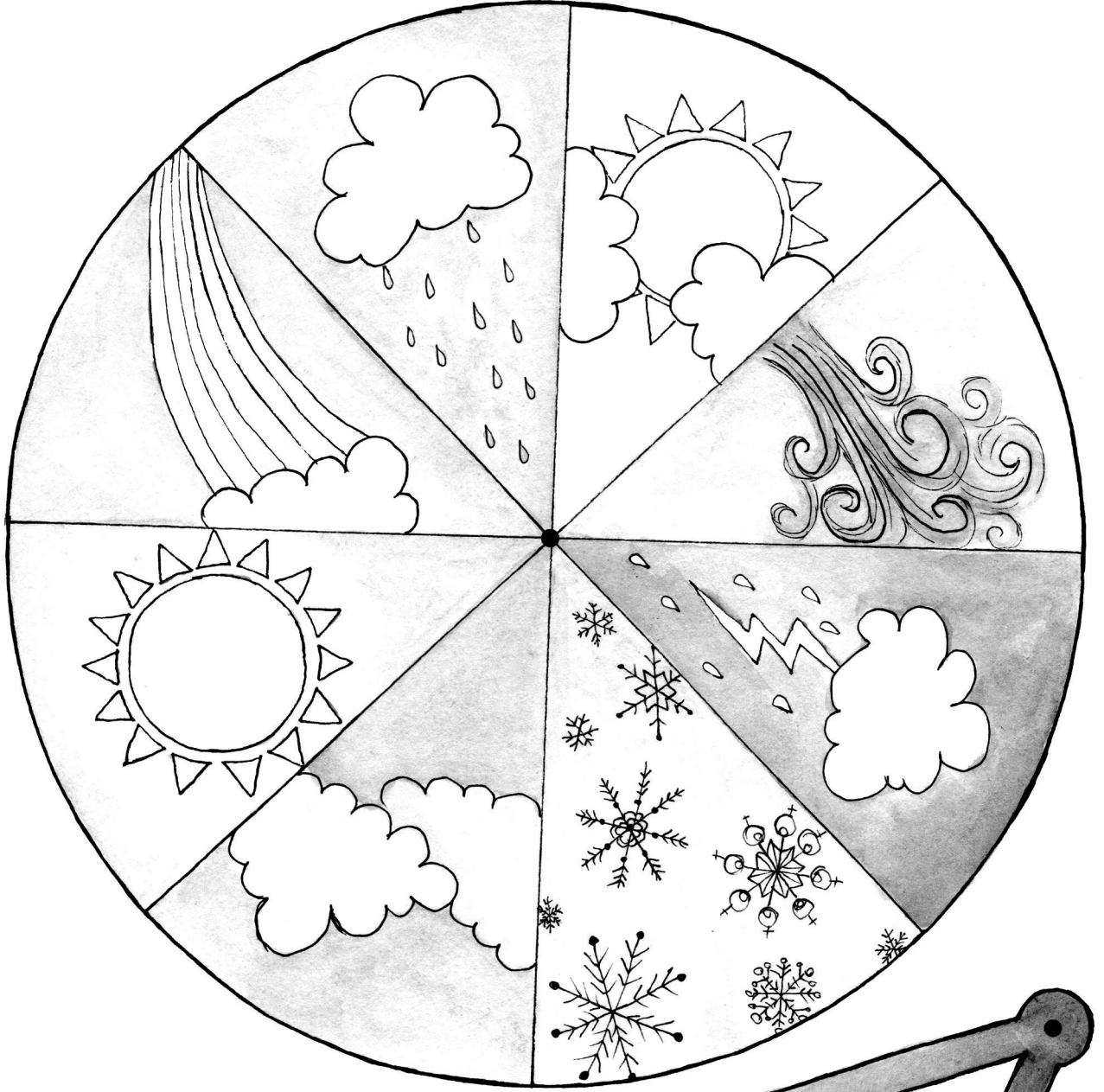
Instructions:

You'll need: paper or card stock, scissors, hole punch and brass fastener. Optional: laminator

1. Cut along the black outer lines.
2. Choose either the arrow spinner or "Today's Weather" spinner and assemble with a brass fastener.
3. Have your child identify the weather each morning and move the wheel to reflect what they've observed.

Enjoy!

Can be laminated for extra protection.

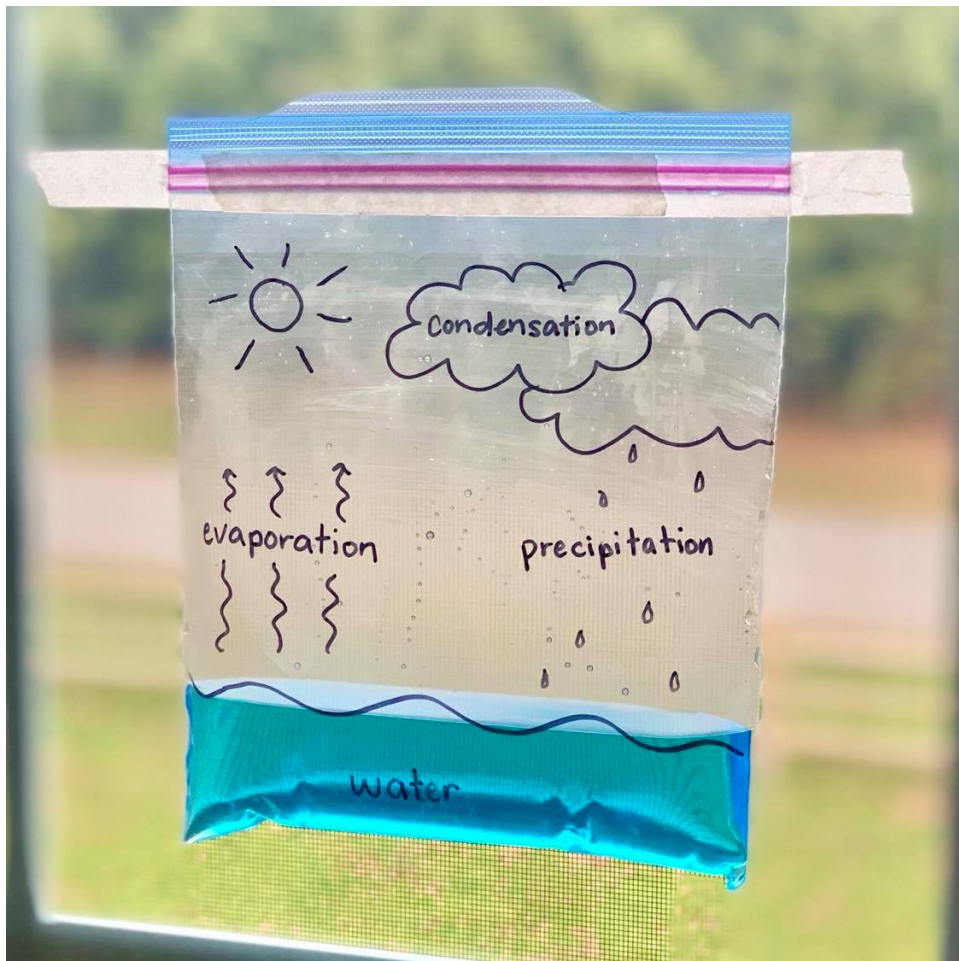


DAY 2: WATER CYCLE

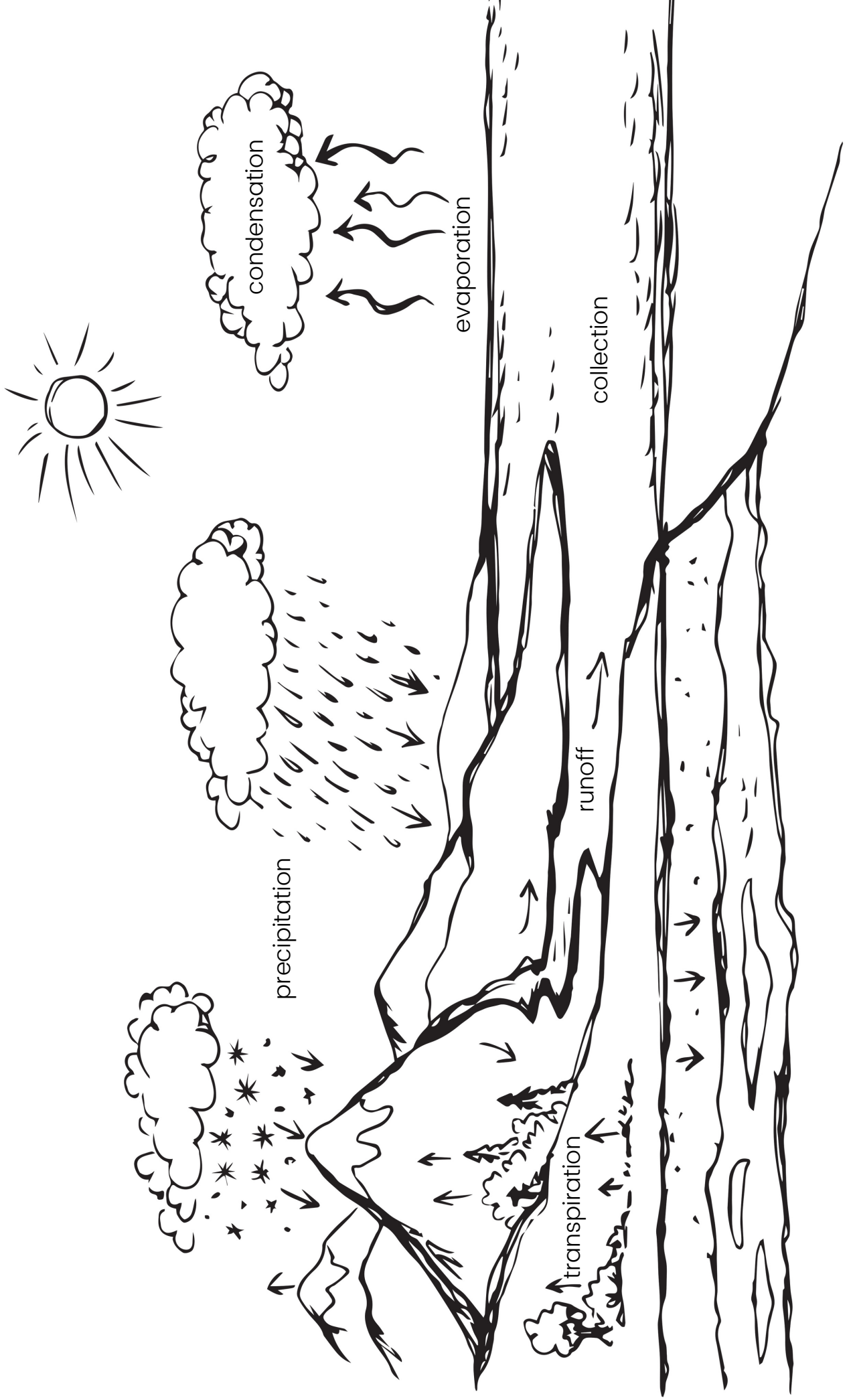
Water Cycle Bag

Demonstrate the water cycle right on your window! Check it daily to see what's happening and to get a better understanding of the cycle.

1. Grad a plastic zip bag and draw the watercycle onto the bag. ** you can first use a little bit of rubbing alcohol to remove the brands label from the bag if needed*.
2. Add water with a drop of blue food coloring to represent the water (just easier to see).
3. Tape it to a window that gets warm midday sun and watch the water get "stuck" inside of the bag as it tries to be evaporated. You get to watch the water cycle right at home!



Water Cycle Coloring page



DAY 2: TYPES OF PRECIPITATION

Snow is defined as 'solid precipitation which occurs in a variety of tiny tiny ice crystals at temperatures well below 0 °C but as larger snowflakes at temperatures near 0 °C. They grow while suspended in the atmosphere—usually within clouds—and then fall, accumulating on the ground where they undergo further changes.

For many of us, snow is just around the corner. But if it hasn't arrived yet, or it won't arrive go ahead and make a sensory table using fake snow!

Ingredients:

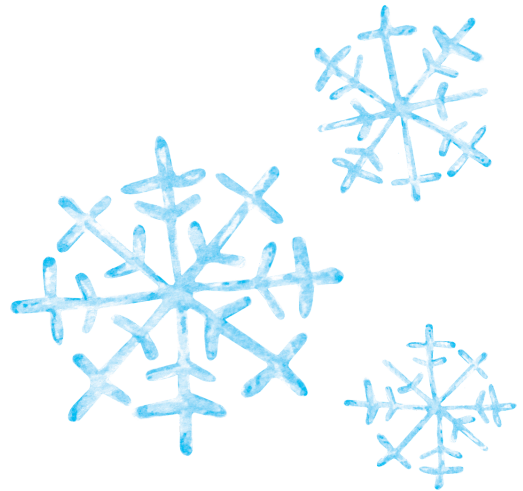
- 1 cup baking soda
- 1/2 cup sugar
- 1/2 cup corn starch
- 1 tbsp cream of tartar
- 4 tbsp of water (seperated)

Directions:

1. Follow these directions closely for best results!

@mothercould

<https://www.instagram.com/p/CHdXvXZAn-7/>



DAY 3: COTTON BALL CLOUDS

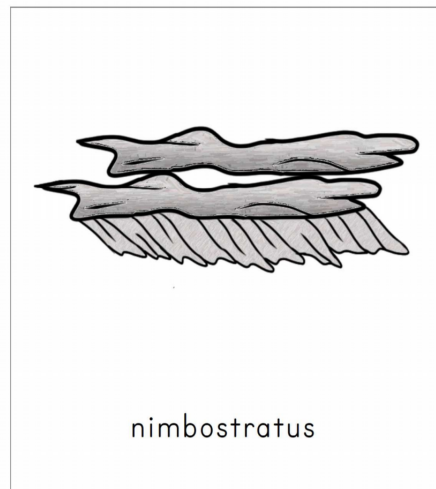
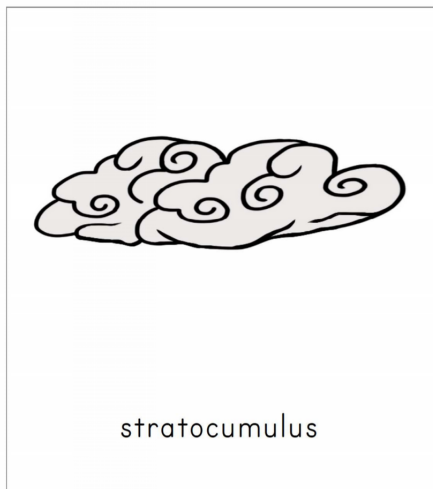
This was always a class favourite!

Materials

- cotton balls
- glue
- blue cardstock or attached cloud mats printed on dark paper
- grey marker/paint
- [FREE download Cloud Cards](#)
- Clouds by Anne Rockwell (childrens book)

Directions

1. Hold up a cotton ball and ask your child to describe it. (white, fluffy, soft..) Ask "are clouds similar to a cotton ball?"
2. Even though clouds look soft and fluffy, clouds are actually made of teeny tiny drops of water that are so small they can float in the air. But to us, from here on the ground, that floating water looks like big cotton balls. As long as the cloud and the air that it's made of are warmer than the air around it, it floats.
3. Stretch another cotton ball into an elongated shape and add that clouds have different shapes and sometimes colors. The shapes and colors can help us predict the weather. And that's what we are going to do today! We are going to use cotton balls and marker/paint to create different cloud shapes and learn more about what that means.
4. Hand out the following cloud boards and recreate each type of cloud using cotton balls.



cirrostratus

cirrus

cirrocumulus

altostratus

altocumulus

cumulus

stratocumulus

nimbostratus

stratus

cumulonimbus

DAY 4: HOT AIR, COLD AIR

So much of our weather and weather patterns have to do with the temperature of the air.

This activity really gives children a visual of what happens to hot and cold air, and therefore what will happen when the two air masses meet.

Materials

- 1.5/2L plastic drinking bottle with a thin neck
- 1 balloon
- 2 bowls large enough to fit the base of your drinking bottle in with additional room for water

1. Blow up your balloon a few times to stretch it out.
2. Cover the neck of your empty drink bottle with a balloon.
3. Place ice water into one bowl and hot tap water into the next.
4. Place the balloon covered bottle into the hot water and hold it. Young kids need to be careful as the water is hot! Wait and watch the balloon lift up with air. If it does not "stand up" like pictured below, then the water was not hot enough or you did not hold it for long enough.
5. Next, remove it from the hot water and place it into the ice water. Hold and wait to see what happens.
6. Repeat steps 4 and 5 a few times. Discuss your findings!



DAY 4: HOT AIR, COLD AIR CONT'D

Discussion: why is this happening?

When we heat air, the molecules shake and zip around faster, which causes them to spread out and take up more space.

This experiment shows us how hot air takes up more space. When we heat up the air inside of the bottle, the molecules warm and spread out. Sort of like what people do on a hot day. The only place for the hot molecules to create more space is by going into the balloon.

Cold air on the other hand is more dense because the molecules are closer together, making there be more molecules in smaller amount of space. They are closer together because the bonds are absorbing less energy and therefore do not move as much. When we put the bottle in cold water it causes the molecules to snuggle up to one another (again, sort of like what people do when they are cold) and take up less space. They no longer need the space in the balloon so it deflates.

Warm air rises when it's surrounded by cold air because of its lower density and less weight.

Relating it to weather

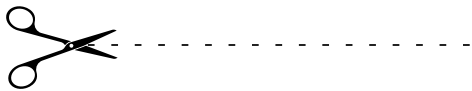
Precipitation/storms form either when a cold front pushes a warm mass of air up, or when a warm surface temperature (from a hot summer day, for example) heats the air above it. This causes an updraft and the warm air, which holds moisture, forms a cloud as it reaches cooler temperatures.
(review water cycle)

Tornados occur when cold dry air moving from one direction bumps into warm wet air from another directions. Because the cold air is heavier, it slides down under the warm air and pushes it up really, really quickly. All of this fast moving air moving up and down can create a sort of spinning thunderstorm, and if it continues to grow, it can cause a tornado.

DAY 4: HOT AIR, COLD AIR CONT'D

Labels (optional)

Print these hot and cold labels, or create your own to set out on the table in front of water as an additional visual aid.



DAY 4: MEASURE AIR PRESSURE

If you want to dive deeper into air pressure, this experiment uses similar materials as the hot/cold density experiment above and furthers understanding of how you can use air pressure to predict the weather.

If you don't want to make the barometer yourself, this video shows it in action and can be a good learning tool.

<https://www.youtube.com/watch?v=pL6BthjvTZ4>



DAY 5: EXTREME WEATHER

Severe weather is any dangerous act of nature fueled by changes in the atmosphere, that puts people, animals or buildings at risk.

Plan to spend the day exploring severe weather. Which type is your child most interested in? Use that as inspiration! I've listed an idea for lightning as it is what my children are most fascinated with right now.

More info on extreme weather:

<https://www.youtube.com/watch?v=QVZExLO0MWA>

Tornado: clouds, strong wind, rain, hail.

Hurricane or cyclone: strong wind, heavy rain.

Blizzard: heavy snow, ice, cold temperatures.

Dust storm: strong winds, arid conditions.

Flood: heavy rainfall.

Hail storm: cold or warm temperatures, rain, ice. Ice storm: freezing rain.

Drought: is a period of time when an area or region experiences below-normal precipitation.

DAY 5: EXTREME WEATHER CONT'D

We're continuing our weather experiments by talking about lightning. In this demonstration, you can create the same type of energy that creates bolts of lightning to turn on a light bulb.

Materials

- low watt lightbulb
- balloon

Directions

1. Blow up the balloon.
2. Hold the balloon in one hand and the lightbulb in the other.
3. Rub the balloon (a lot) against your hair or on a wool coat/sweater.
4. Move the balloon towards the end of the lightbulb and watch it light up.
Get it nice and close without touching and move it around to turn on and off the lightbulb.

How did you "power" the lightbulb?!

The friction between the balloon and your head created static electricity!

This is similar to the process inside of a storm cloud. Small particles like dust, ice, and water droplets rub up against each other creating an electrical charge inside of a cloud.

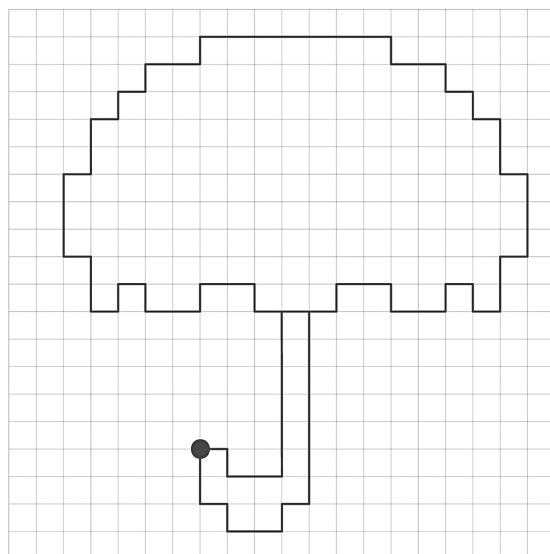
The light bulb lit up because negative charges from the balloon jumped across the air and connected with the positive charges inside of the light bulb. This sort of happens with lightning during a storm too, however, it can happen inside of a single cloud, from one cloud to another, or even from the cloud to the ground! What type of lightning have you seen before?

FIND, COUNT AND COLOR

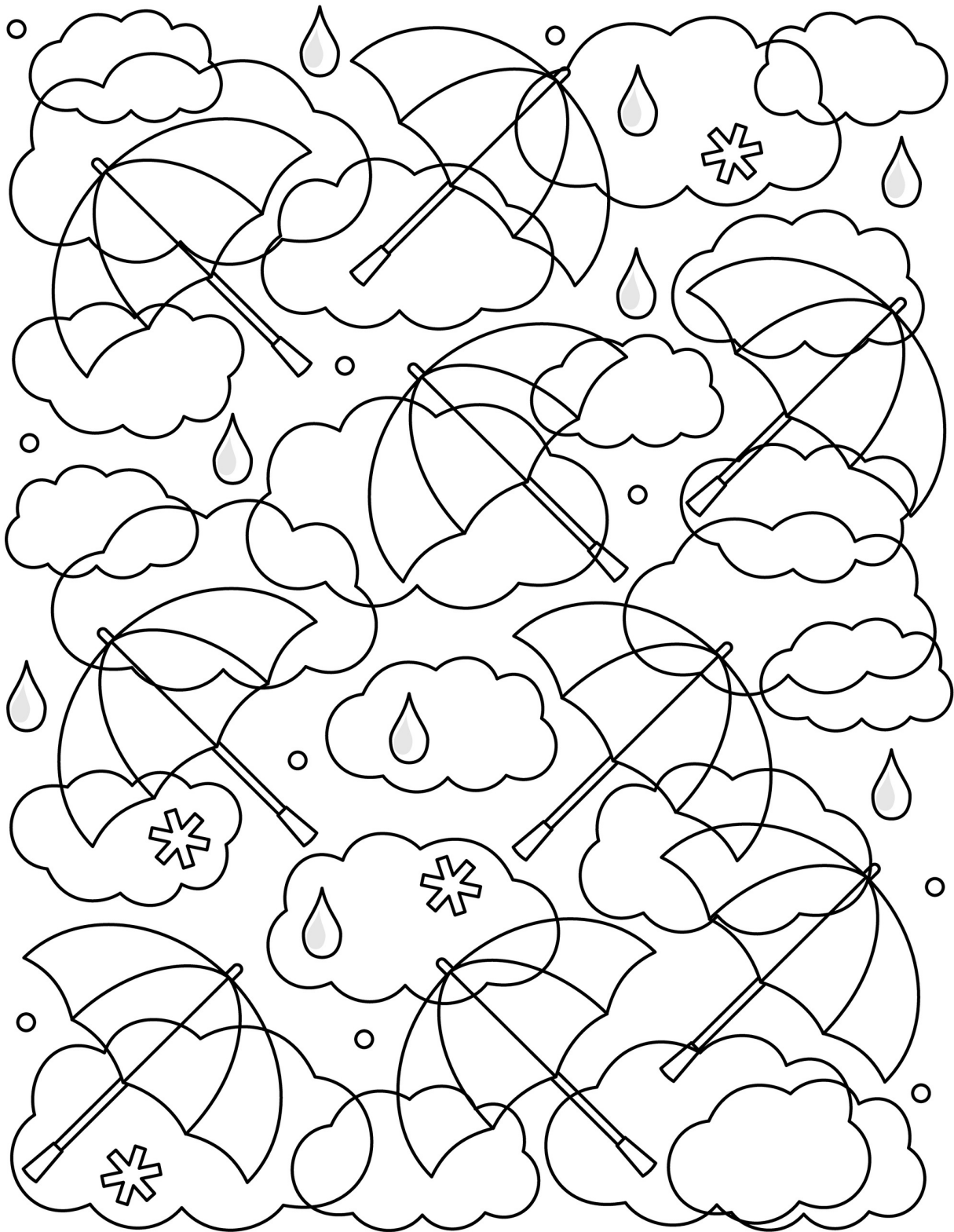
- depending on the age of your child, be sure to set out small counters, blocks or extra paper to help them keep track of their counting.

GRAPHIC DICTATION

- Graphic dictation is drawing along a set of cells. It's a playful way of developing children's spatial imagination, attention, memory and coordination.
- On the next page, learners will start on the dot and follow the directions to complete the image. If your learner is not quite ready for this activity, consider writing out the steps one by one on paper or reading the cues out loud for them to follow. Discuss strategies with them to help keep track of where they are in the directions.



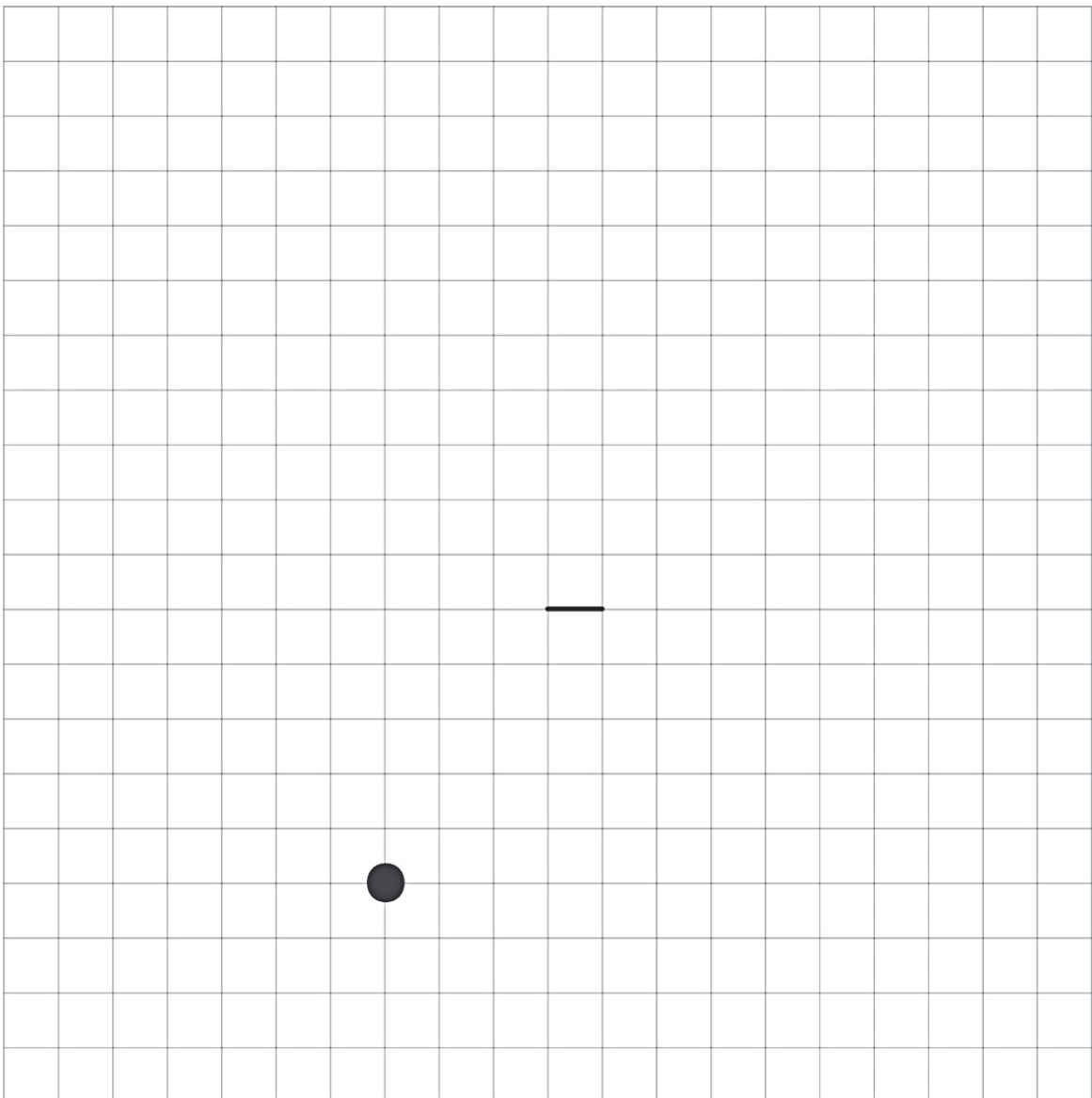
find, count and color



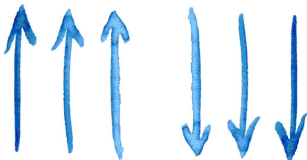
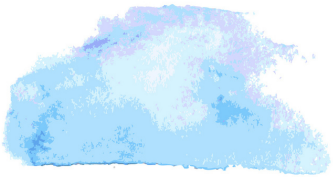
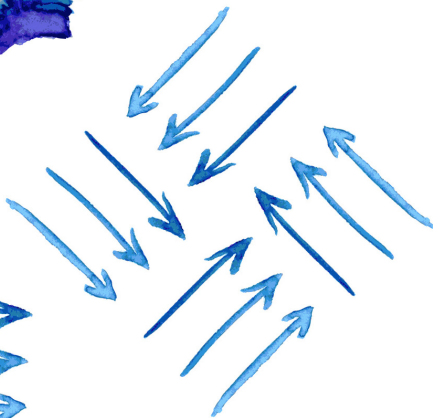
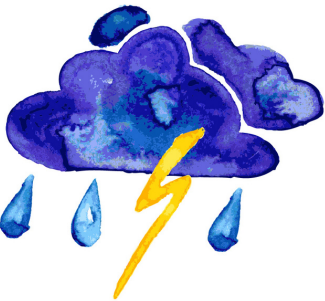
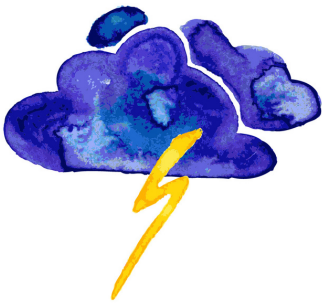
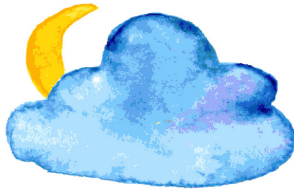
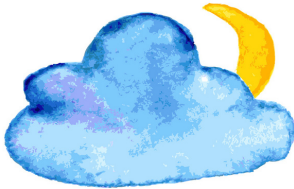
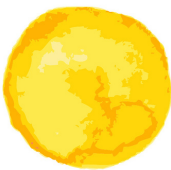
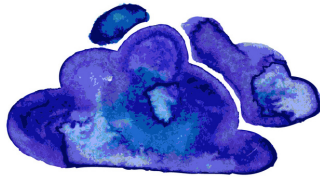
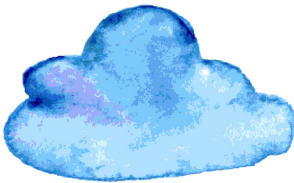
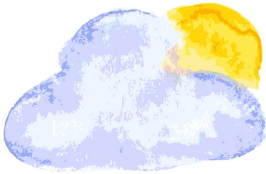
clouds: raindrops: umbrellas: snowflakes:

graphic dictation

1→	1↓	2→	6↑	1←	1↑	2←	1↓	2←	1↑
1←	1↓	1←	2↑	1←	3↑	1→	2↑	1→	1↑
1→	1↑	2→	1↑	7→	1↓	2→	1↓	1→	1↓
1→	2↓	1→	3↓	1←	2↓	1←	1↑	1←	1↓
2←	1↑	2←	1↓	1←	7↓	1←	1↓	2←	1↑
1←	2↑								



Weather forecast



about the author

Hi! I'm Kristen, former K-6 teacher turned home school mom to my 6 children (9,8,6,3,1,1). We live outside of Toronto, Canada and spend as much time as possible in the great outdoors. The activities that I share online are most often rooted in nature, and always have a hands on component. Young learners absolutely love to touch and feel, so let's get them involved! I hope that the activities included in this pack help in even the smallest of ways.

Until next week,
Kristen Eps
[@magichomeschoolbus](https://www.instagram.com/magichomeschoolbus)

