

SNOW & ICE



Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

OBJECTIVES

EXPERIMENT WITH SNOW AND ICE TO LEARN ABOUT ITS BASIC PROPERTIES. MAKE YOUR OWN SNOWFLAKE ART PROJECT.

MATERIALS

COPY PAPER
MAGNIFYING GLASS
SCISSORS
CLEAR PLASTIC 16OZ. CUP
SNOWFLAKE TEMPLATE
RULER

GUIDING QUESTIONS

1. WHAT CAUSES IT TO SNOW?
2. HOW DOES WATER CHANGE FORMS?

CONCEPTS

- WATER CAN COME IN DIFFERENT FORMS (STATES OF MATTER).
- SNOWFLAKES AREN'T THE ONLY FORM OF SNOW.
- DIFFERENT TYPES OF MATTER TAKE UP A DIFFERENT AMOUNT OF SPACE.

FACTS

- MATTER IS THE "STUFF" THAT MAKES UP THE UNIVERSE. EVERYTHING THAT TAKES UP SPACE AND HAS MASS IS MATTER AND IT CAN TAKE DIFFERENT FORMS.
- THE THREE MOST COMMON FORMS OF MATTER ARE SOLID, LIQUID, AND GAS.
- WATER CAN TAKE ALL THREE FORMS HERE ON EARTH.
- SNOW CAN ALSO PRECIPITATE (FALL) AS GRAUPEL OR SLEET. NOT TO BE CONFUSED WITH HAIL, GRAUPEL (OR SNOW PELLETS) ARE OPAQUE ICE PARTICLES THAT FORM IN THE ATMOSPHERE AS ICE CRYSTALS AND FALL THROUGH FREEZING CLOUD DROPLETS.
- SNOW AND HAIL ARE EXAMPLES OF A SOLID MASS. SLEET HAS SOLIDS WITHIN A LIQUID MASS. RAIN IS A LIQUID MASS. WATER VAPOR IN THE CLOUD IS AN EXAMPLE OF A GAS MASS.
- SNOW IS FORMED WHEN TEMPERATURES ARE LOW AND THERE IS MOISTURE IN THE ATMOSPHERE IN THE FORM OF TINY ICE CRYSTALS. TINY ICE CRYSTALS IN CLOUDS STICK TOGETHER TO BECOME SNOWFLAKES. IF ENOUGH CRYSTALS STICK TOGETHER, THEY'LL BECOME HEAVY ENOUGH TO FALL TO THE GROUND.



INTEREST APPROACH-ENGAGEMENT

ASK A QUESTION(S):

1. HOW DO YOU THINK SNOW FORMS?
2. WHAT NAME WOULD YOU GIVE THE TYPE OF SNOW THAT FELL? INDIGENOUS PEOPLE LIVING IN THE ARTIC CIRCLE HAVE NUMEROUS NAMES FOR SNOW DEPENDING ON THEIR CHARACTERISTICS.
3. HOW DO YOU THINK SCIENTISTS STUDY SNOW?



ACTIVITY 1: SNOW VS RAIN

- AFTER IT SNOWS, GO OUTSIDE AND FIND AN AREA OF UNDISTURBED SNOW. USING A MAGNIFYING GLASS LOOK CLOSELY AT THE SNOW, DISCUSS WHAT YOU SEE. FOR EXAMPLE, IS IT GRAUPEL OR SNOWFLAKES? WHAT STATE OF MATTER IS IT?
- GATHER A CUP FULL OF SNOW USING THE PROVIDED PLASTIC CUP.
- TAKE IT INSIDE AND MEASURE HOW MUCH SNOW IS IN THE CUP. RECORD IT ON ONE OF THE PIECES OF PAPER PROVIDED.
- LET THE SNOW MELT AND THEN REMEASURE HOW MUCH WATER IS IN THE CUP. OLDER STUDENTS CAN CALCULATE THE DIFFERENCE, OR FIGURE OUT A RATIO DEPENDING ON CURRENT MATH SKILLS.
- DISCUSS WHAT YOU FOUND OUT. DID IT SURPRISE YOU?

Graupel



ACTIVITY 2: CREATE YOUR OWN EXPERIMENT

- ASK THEM TO THINK OF THEIR OWN EXPERIMENT(S) WITH SNOW.
- WHAT HAPPENS IF YOU ADD SOMETHING TO THE SNOW? (THINK SALT, OIL, BAKING SODA, ETC.)
 - SALT WILL SIT ON TOP, BUT IF YOU STIR IT THE SALT WILL MAKE THE SNOW MELT FAST. OIL MAKES SNOW MELT TOO. IF LEFT LONG ENOUGH THE WATER AND OIL WILL SEPARATE CREATING 2 DISTINCT LAYERS. BAKING SODA WILL TAKE LONGER TO MELT.
- ASK THEM WHAT IS THEIR HYPOTHESIS (GUESS) AS TO WHAT WILL HAPPEN?
- PLAN OUT THE STEPS THEY WILL TAKE AND HOW THEY WILL DOCUMENT THEIR OBSERVATIONS AND RESULTS.
- CONDUCT YOUR EXPERIMENTS.
- ASK THEM WHY THEY THINK THEY GOT THE RESULTS THEY DID (DRAWING A CONCLUSION).

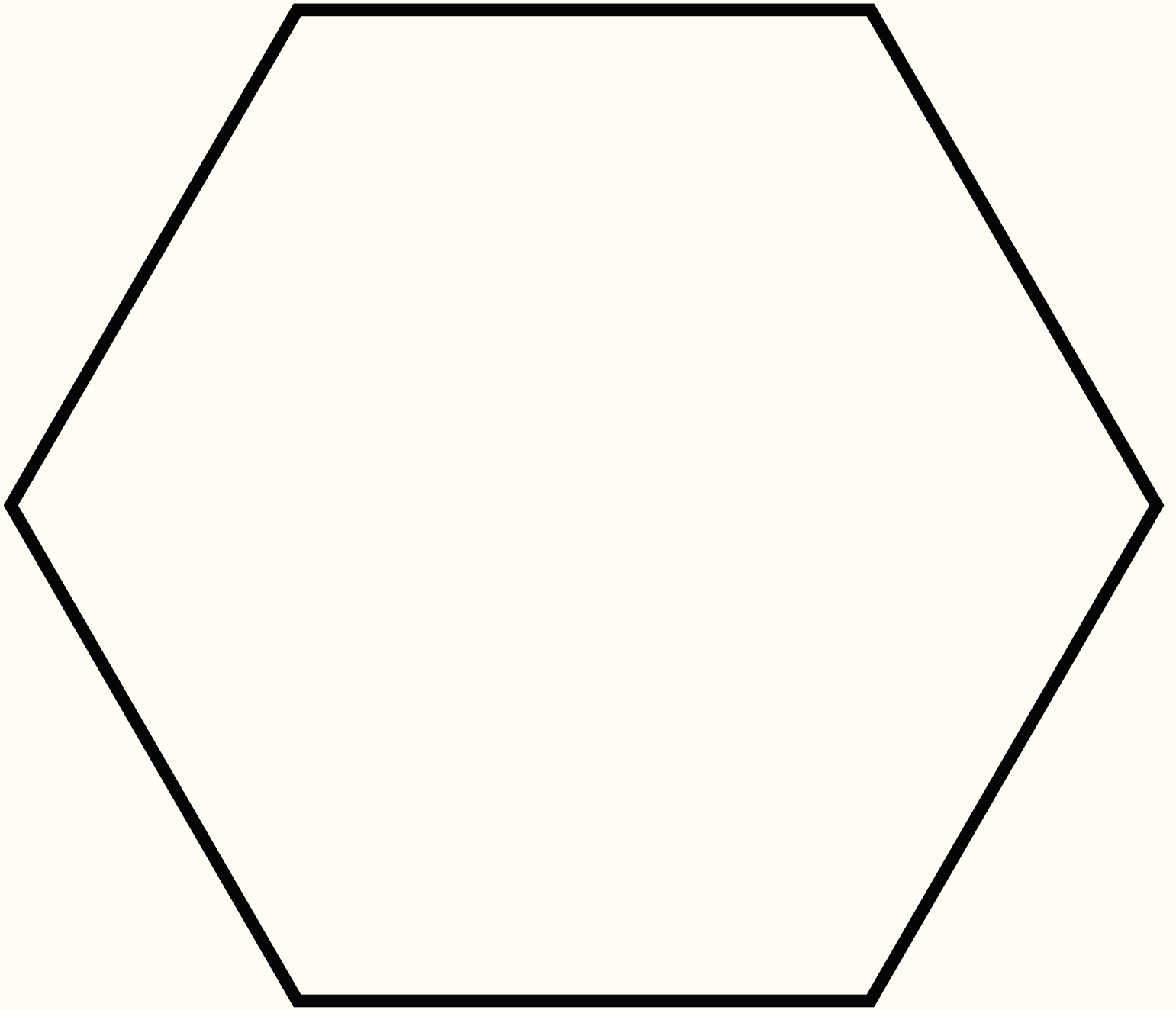
ACTIVITY 3: MAKE YOUR OWN SNOWFLAKES

TYPE 1-6 SIDED

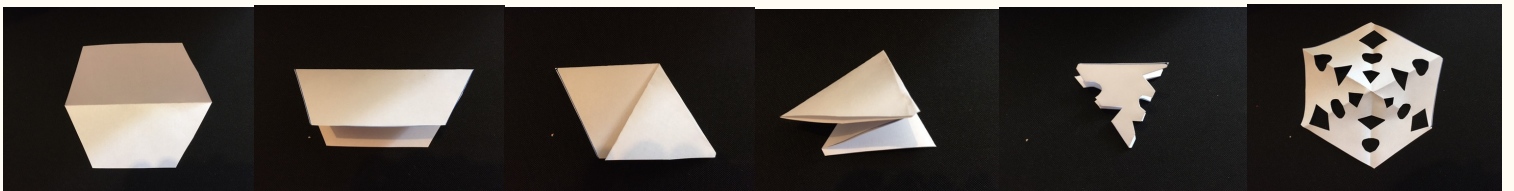
- CUT OUT TEMPLATE PROVIDED.
- FOLD SHAPE IN HALF. WITH THE FOLD AWAY FROM YOU, TAKE THE RIGHT SIDE FOLDED EDGE AND FOLD IT DOWN TO THE LEFT SIDE POINT CLOSEST TO YOU. TURN OVER AND REPEAT STEP. TURN BACK TO RIGHT SIDE.
- CUT BASIC SHAPES OUT ALONG BOTH FOLDED SIDES OF THE PAPER.
- OPEN UP SNOWFLAKE.
- CUT IN TOWARD THE CENTER FROM EACH POINT, BUT ONLY HALF WAY.
- CURL ENDS TOGETHER AND GLUE.
- DECORATE SNOWFLAKE.

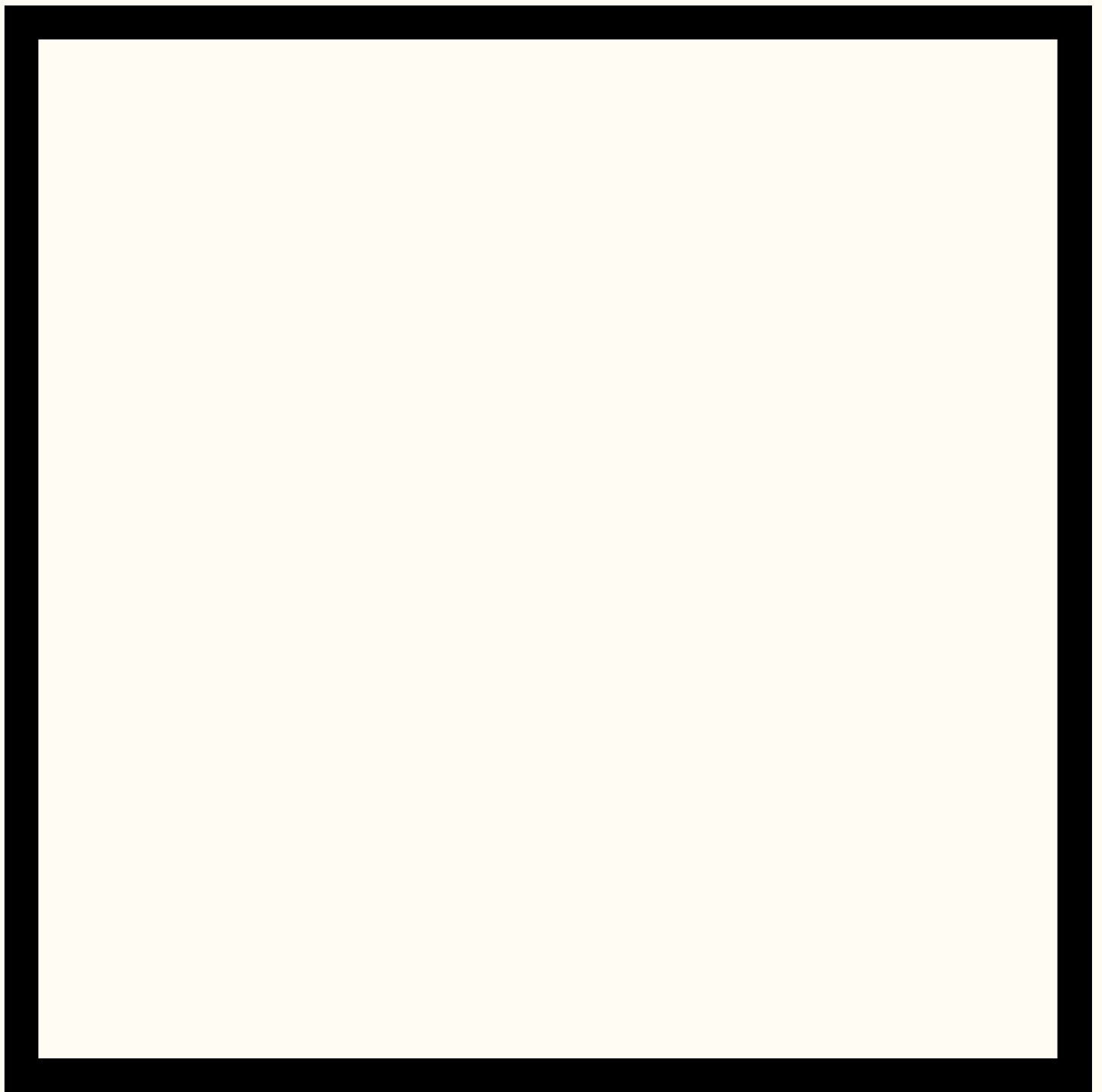
TYPE 2-4 SIDED

- FOLD PAPER IN HALF, AND THEN IN HALF AGAIN.
- TAKE ONE CORNER AND FOLD IT TO THE OPPOSITE CORNER FORMING A TRIANGLE.
- CUT SHAPES OUT ALONG THE FOLDED SIDE OF THE PAPER.
- OPEN UP AND DECORATE.



Snowflake Template





4-sided Snowflake Template

