National Underground Railroad FREEDOM CENTER

PRE-VISIT LESSON PLAN – NORTH STAR TOUR (GRADES 3 & 4)

OVERVIEW: This lesson plan is intended as an introduction to the North Star tour for grades 3 & 4. It will introduce your students to the role enslavement played in the United States during the time before the Civil War, as well as how the Underground Railroad helped freedom seekers north. This lesson plan will also help orient your class to the layout of the National Underground Railroad Freedom Center (NURFC), specifically the galleries and exhibits which you will see during your time here. Students will learn how freedom seekers used the night sky to find their way to freedom, communicated with one another through songs, and how the Cincinnati region was central to both the trade in enslaved persons as well as resistance to enslavement. They will also do hands-on activities that incorporate Social Studies and STEM learning standards. The times given are just recommendations if you want to keep all three within one or two class periods. If you like, each can probably be spread out over a full session, depending on how deeply you want to go into certain topics.

OBJECTIVES: Students will:

- Describe how and why water freezes, as well as what the process of freezing entails.
- Identify the Big Dipper and the North Star.
- Describe how **freedom seekers** and **conductors** on the Underground Railroad used technology such as **skiffs** and other types of boats.
- Understand how enslaved African Americans took advantage of the geography around them to get to freedom.

VOCABULARY:

- **Asterism:** a prominent pattern or group of stars which has a popular name but is smaller than a constellation or forms a part of one.
- **Astronomy:** the branch of science dealing with objects in the sky, space, and the physical universe as a whole.
- **Climate:** the weather conditions in an area in general or over a long period.
- **Colloquial:** in language, the type of speech used in ordinary or familiar conversation rather than formal or literary.
- **Conductor:** on the Underground Railroad, a person who would guide freedom seekers from safe house to safe house or hiding place to hiding place.
- **Constellation:** a group of stars forming a pattern which is named after its form or a figure from mythology.
- **Free State:** a state which, prior to the Civil War, had outlawed enslavement.
- **Freedom Seeker:** a person who fled African American enslavement in the US South in order to make their way north to freedom, typically in Canada. Also known as an escaped slave or a fugitive slave, "freedom seeker" is the preferred term at the National Underground Railroad Freedom Center.
- **Molecule:** a group of atoms bonded together.
- **Plantation:** a large farm which typically produces a single cash crop, run by resident and often enslaved labor.
- **Skiff:** a flat-bottomed boat typically used in rivers and streams, rowed by one person.
- **Slave State:** a state which, prior to the Civil War, permitted or encouraged enslavement.

» **Surface Area:** the total area of the surface of a three-dimensional object.

» **Water Displacement:** when an object is placed in water, pushing the liquid out of the way and taking its place. If the weight of the object is less than its displaced quantity, the object will float.

DRINKING GOURD ACTIVITY (30-35 MINS)

This activity satisfies Ohio's 2017 Learning Standards for Science for Grades 3-5, including:

» *Stars appear in patterns called constellations, which can be used for navigation (ESS, p. 136).*

STRUCTURE: Have each student separate into groups of three to five people. Pass around materials for this activity.

MATERIALS: Black construction paper, star stickers, chalk, markers, lined paper, scissors, glue, map of NURFC's second floor. If necessary, you can use any color construction paper and markers if you don't want chalk in your classroom.

INTRO: Inform students about the song "Follow the Drinking Gourd." This song was a coded message communicated among freedom seekers. It informed them that "When the sun comes back and the first quail calls, follow the Drinking Gourd." This likely means that during winter time - when the sun starts rising in the sky - and the river was frozen over, you could use the "Drinking Gourd" to navigate to north. The "Drinking Gourd" was a regional expression, particularly among African Americans, in the US South for the Big Dipper. The two outer stars of the dipper point towards the North Star, a constant in the night sky. Humans have been using the North Star to navigate for centuries.

ACTIVITY: Explain that stars form patterns called **constellations** and **asterisms** in the night sky. They can be used for navigation, as the Big Dipper and North Star were. The Big Dipper is only one; there are many in the night sky. In this activity, students will research constellations and recreate them using the materials listed above. If it is not possible for your students to access the Internet in the classroom, or if resources in the school library or limited, you can provide constellations for them to recreate in advance, or they can do so in advance of this lesson plan. Stardate.org is a good resource for this.

You can prepare for this activity in advance by cutting out squares of lined paper and gluing them to the bottom half of the construction paper, or make these steps one and two for students. From there:

» Ask your students to research and then choose a constellation either from the Internet or from a preset list.

» They will then recreate that constellation by pressing the star stickers onto the construction paper.

» Using either chalk or markers, they can connect the stars in order to emphasize the patterns they form.

» They can then write a brief description of the constellation on the lined paper including where in the night sky it is visible, the time of year, what it is called, and – if you're feeling ambitious – background information about the constellation (eg the Big Dipper is part of a larger constellation called Ursa Major).

» Students can either post them on a wall of the classroom, or do short presentations in front of the class. If time permits, they can do both.

After the conclusion of this activity, inform students that they will learn more about the "Drinking Gourd" at the National Underground Railroad Freedom Center. Pass around maps of NURFC. Ask them all to locate the Pavilion of Perseverance. From there, ask them to locate and circle the Escape Gallery. After that, ask them to locate the Pavilion of Courage and then the Harriet Tubman Theater. Inform them that these spaces are where they will learn about individuals associated with the Underground Railroad including abolitionists, station masters, **conductors**, and **freedom seekers**.

FREEZING WATER ACTIVITY (ONE HOUR)

This activity satisfies Ohio's 2017 Learning Standards for Science, Grades 3-5, including:

» *Heating may cause a solid to melt to form a liquid, or cause a liquid to boil or evaporate to form a gas. Cooling may change a gas into a liquid or cause a liquid to freeze and form a solid (PS, p. 99).*

» *Some properties of objects may stay the same even when other properties change. For example, water can change from a liquid to a solid, but the weight of the water remains the same (PS, p. 124).*

STRUCTURE: Separate students into pairs. Each student should pick a role: writer or illustrator. They will change roles throughout this activity. Pass around materials for this activity.

MATERIALS: Ice cube in a clear plastic cup, map of NURFC's second floor.

INTRO: Articulate that liquids, be it water in a cup or in a riverbed, change state from solid to liquid to gas depending on the surrounding temperature. During the time of the Underground Railroad, freedom seekers took advantage of this fact to cross from the **slave state** of Kentucky to the free state of Ohio. However, the fact that the river froze over does not mean there was more or less water in it. The molecules just slow down and arrange into more orderly, dense alignment. This activity will explore how water changes states from solid to liquid.

ACTIVITY:

» Distribute an ice cube in a clear plastic cup to each pair of students.

» Have the illustrator draw a picture of what they see.

» Have the writer write a sentence or a word to describe the properties of the ice cube.

» Guide observations with questions such as these: what is in the cup? Describe the ice. What does it look like? Feel like? What is the ice made of? How is it made? If you pour the ice into a container of a different shape or size, does it change shape? Does it look any different? Why do you think that is? What would happen if we just left the ice on the desk/table? How do you know? Why do you think that is?

» Instruct students to observe the ice over time to see what changes take place. Set a timer for 15 minutes, or note 15-minute intervals on the clock.

» Ask students to repeat their observations every 15 minutes over the course of an hour.

» While this activity is going on you can either complete another activity in this lesson plan, or read over the lyrics to "Wade in the Water." Inform students that this **spiritual** was, like "Follow the Drinking Gourd," an important song which told freedom seekers to cross rivers like the Ohio and Mississippi.

Wade in the water
Wade in the water
Children wade, in the water
G-d's gonna trouble the water
Who's that young girl dressed in red
Wade in the water
Must be the children that Moses led
G-d's gonna trouble the water

» When the ice has completely melted, allow students to draw and write their final observations. You can post each students' pictures of the ice in a line on the wall, so that students can see the changes that occurred.

» Ask students: what happened to the ice? Why? What is in the cup? How is it like the ice? How is it different from the ice? Describe the water. What does it look like? Feel like? Pour the water into a container of a different shape or size. What does it look like now? Does it look the same or different? Has the shape of the water changed? Why do you think that is? Did the ice change is shape when you poured it into a different container? Why or why not? Can you think of other

things that take the shape of the container they're poured into? How can we change the water back to ice? How long would it take?

If time permits and you have access to a freezer, you can repeat this process and have students observe what happens when water freezes into ice. Inform them that they will learn more about how freedom seekers took advantage of the frozen Ohio River at the freedom center in the Pavilion of Cooperation. Distribute maps of NURFC's second floor. Ask them to locate and circle the Pavilion of Cooperation on their maps.

"WILL IT FLOAT?" DEMONSTRATION (20 MINUTES)

This activity satisfies Ohio's 2017 Learning Standards for Science for Grades 3-5, including:

» *Earth pulls down on all objects with a gravitational force. Generally, the greater the force acting on an object, the greater the change in motion (PS p. 149).*

This activity also satisfies Ohio's 2017 Learning Standards for Technology for Grades 3-5, including:

» *Describe the advantages/disadvantages of technology (past, present, future) to understand the relationship between technology, society, and the individual (Strand: Society and Technology, Topic 3, p. 7).*

» *Identify and discuss how the use of technology affects self and others in various ways (Strand: Society and Technology, Topic 3, p. 7).*

This demonstration will introduce students to the concept of buoyancy. They will get a firmer grasp of the mechanics behind an important form of transportation on the Underground Railroad; boats, particularly skiffs.

MATERIALS: Tank full of water, two equally sized pieces of aluminum foil.

INTRO: Many Underground Railroad conductors helped freedom seekers cross rivers such as the Ohio and Mississippi in boats. Boats operate due to buoyancy, which is the ability to float in water. One conductor who aided freedom seekers in this way was John Parker of Ripley, Ohio. "Brothers of the Borderland," a feature film which plays at NURFC, highlights this brave man. Inform the students that this activity will explore buoyancy and, by extension, how use of this form of transportation succeeded in helping freedom seekers make their way north.

DEMONSTRATION:

» Show the students two sheets of aluminum foil that are exactly the same size. Ask them if they think the foil will sink or float if you place it in the water. Give students an opportunity to explain their guesses.

» Place one piece of aluminum foil on top of the water. Ask them if they can think of a way to change the second sheet of foil so that it sinks rather than floats.

» Crumple the second piece of foil into a ball and place it in the water. Ask students why they think the ball of foil sank while the sheet of paper floated. Explain the concept of **water displacement** and discuss.

» If there is time, separate your students into groups. Pass out pieces of aluminum foil and ask them to fold them into flat-bottomed skiffs. Are they stable enough to stay afloat if you place a few pennies onto them?

Inform them that they will learn more about how boats were used on the Underground Railroad at NURFC. Distribute maps of the second floor. Ask them to find the Pavilion of Perseverance again. This time, ask them to circle the theater where "Brothers of the Borderland" plays. Tell them that they will be watching that film at NURFC, learning a little bit more about John Parker in the process.