



Module 4

WHO ARE THE NORTHERN ARAPAHO PEOPLE?

Lesson Plan # 4 (STEM)

LESSON PLAN DEVELOPED BY: Alberta Oldman

COMMON CORE STANDARDS ADDRESSED IN LESSON:

(See Standard Definition at end of lesson)

Mathematics:

CCSS.MATH.CONTENT.8.G.C.9 - Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

English Language Arts

CCSS.ELA- LITERACY.RH.6-8.4 – Craft and Structure

WYOMING STATE STANDARDS ADDRESSED IN LESSON:

Math – 8th grade level

Geometry 8.G

9. Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Find the Area and Volume of a cone using the mathematical equations:

$$A = \pi r^2 \quad V = \frac{1}{3}\pi r^2 h$$

DURATION (estimated 45 minute class periods)

Day 1: Native American Heritage Month Introduction, Video- “Who are the Northern Arapaho People?” = 8:24, Video Questions, Class Discussion focused on Heritage.

Day 2: Review lesson from day 1 (check for understanding). Shelters Lesson Packet

Day 3: Northern Arapaho Tribal Consultants to set up Buffalo Hide Tipi or Project: Make a miniature tipi.

LEARNING OBJECTIVES:

Students will demonstrate an understanding about the importance of heritage and preservation of traditions and values of the Northern Arapaho Tribe that reside on the Wind River Reservation located in Wyoming through viewing a video, completing a hands-on project, score a 70% or higher on the shelter packet, and using mathematical measurements accurately.

MATERIALS REQUIRED:

Day 1:

“Native American Heritage Month,” The Library of Congress.

<http://www.nativeamericanheritagemonth.gov/about/> (Teacher may want to read beforehand and select the information/content they would like to share with students. Contains the history of Heritage month)



“Presidential Proclamation - National Native American Heritage Month, 2016,” The White House. <https://www.whitehouse.gov/the-press-office/2016/10/31/presidential-proclamation-national-native-american-heritage-month-2016>

If Video #4 – “Who Are the Northern Arapaho People?” has not been shown, teacher should show Video #4.

Video #4 – “Who are the Northern Arapaho People?” question and answer worksheet

Day 2:

Shelters Packet (attached), lined paper, pencil, math books/resources that contain formulas for finding area and volume.

(Optional) Video – “How to set up a tipi,” White Buffalo Lodges.

<https://www.youtube.com/watch?v=2VxDRJ4HEf4>

Day 3:

Paper, pencil, clear tape, colored pencils, markers, Elmer’s glue, ruler, poster board, variety of colors of construction paper or bulletin board paper, and tipi pattern (attached in packet).

KEY VOCABULARY:

Heritage –

Treaty –

Reservation –

Values –

Traditions –

Ceremony –

Humility –

Mathematical Vocabulary:

Cone

Axis

Right cone

Oblique cone

Altitude

Area

Volume

Slant height

Height



DESCRIPTOR:

Students will be introduced to one of the two tribes who reside on the Wind River Reservation in Wyoming, the Northern Arapaho. They will also be introduced to the Presidential Proclamation for National Native American Heritage month that is recognized in the month on November. They will then view a video that is directly tied to the Northern Arapaho Tribe. Finally, the students will complete a shelters packet that focuses on the tipi, home for the Northern Arapaho people before modernized housing came about and participate in a hands-on project in making a miniature tipi model. Teacher may also inform the students that this video is one of six that is available in learning more about the two tribes on the reservation.

LESSON INTRODUCTION:

Teacher: Ask, *Who knows the definition for 'heritage'?* Definition - Something that is handed down from the past, as a tradition. Allow students to respond as whole group discussion. Once discussion has been completed write the definition on whiteboard or use the technology device in the classroom.

Teacher: Tell the students, *we will now list some traditions from our own families to share with others and when we are done we will compare and contrast our class list as whole group.* Write down responses as students share their traditions. Analyze the similarities and differences of the list created.

Teacher: Say, *Now that we have background information on the vocabulary word 'heritage', we are now going to extend our lesson and learn about the one of the tribes living on the Wind River Reservation here in Wyoming. Can anyone name the two tribes on the Wind River Reservation? Share responses as whole group. (Northern Arapaho & Eastern Shoshone) Say, Although there are two tribes who live on the Reservation, we will focus on the Northern Arapaho in this lesson.*

Teacher: Say, *We will now be watching video #4 – "Who are the Northern Arapaho People?" This is the fourth video in a series of six that are about the Wind River Reservation and both tribes but in this short video, we will learn about the Northern Arapaho Tribe and the importance of preserving their way of life. We will also be provided with information about their history, culture, and heritage (Preserving the ways). When we get to the end of this lesson, we will be completing a packet about their first homes- the tipi, the history of it, and making a miniature model of it.*

Teacher: Say, *Just a reminder, at the end of this unit, you should be able to define 'heritage' and explain why history is important to ALL the people living in the State of Wyoming.*

STEP BY STEP PROCEDURE:

Day 1- Introduction

Introduce the lesson using the dialogue above. After the introduction, teacher will need to have previously read the Native American Heritage Month document and selected the key points that they would like the students to know. Next, the teacher will:

1. Hand out the 'Video #4 – Who are the Northern Arapaho People?' Question and Answer Worksheet and read aloud the directions. Read each question to students.



2. Play video #4 (stress that students watch and listen to the video)
3. Allow time for students to write the answers to any of the questions on the worksheet (independent work).
4. Replay video #4 and have students fill in the answers that they could not complete in step 3 (independently).
5. Gather worksheets to check for understanding of content.
6. As whole group, discuss the questions and answers for the worksheet.
7. Closure: Review key points about the video and National American Heritage Month. Inform the students what the remainder of the lesson will include: A shelter packet that provides information about the tipi and that they will be constructing a miniature model of one on the last day. Assessment will be based on 70% accuracy on the shelter packet, tipi model, and use of appropriate mathematical equations for volume and area.

Day 2: Shelter Packet (begin integrating math standards)

(Review Day 1 activity very briefly)

1. Ask students what shape the tipi resembles? Cone
2. Have students define the terms on a sheet of lined paper: cone, axis, right cone, oblique cone, altitude, height, slant height, area, and volume.
3. Ask students if it is possible to find the area and volume of a tipi? If so, what formula would be used? $A = \pi r^2$ $V = \frac{1}{3}\pi r^2 h$
4. Hand out shelter packet to students. Read as whole group. Complete pages as lesson suggests.
5. Inform the students that they will either be participating in setting up a tipi or making a miniature model of one.

(Depending on how long it takes to get through packet, Day 2 may proceed into Day 3)

Day 3: Northern Arapaho Tribal Consultants to set up a Tipi or Project: Make a miniature tipi.

Northern Arapaho Tribal Consultants to set up a TIPI

1. Contact the Northern Arapaho Tribe or any area schools to discuss the possibility of having a group of consultants and students coming to the school site to set up a tipi.
2. If consultants can come to the school and set up the tipi, have students find the area and volume for the tipi. (Teacher may want to inform consultants of the mathematical standard being addressed in this lesson. Measurements may be needed before and during as the set up process is taking place)



OR

Hands-on Project: Make a miniature tipi. (Teacher may want to make a variety of different sizes of the tipi pattern. This way all students will have to use different measurements for their size of the tipi model)

1. Hand out the pattern for the miniature tipi (attached).
2. Have students cut out pattern.
3. On poster board, have students assemble the tipi using glue or tape.
4. Before students attach tipi to the poster board, in groups of 3-4, have students find the volume and area of their model using rulers and the formulas from Day 2.
5. Attach the tipi to the small poster board when step 4 is complete. If time allows, have each student go beyond the lesson and create a tribal camp like the Northern Arapaho Tribe did many, many years ago.

EXTENSION ACTIVITY:

If time allows, have students practice finding area and volume of the different size tipi's by using a classmate's model that was created.

REVIEW:

(Highlight terms and ideas you want to review with the students at the end of the lesson)
See all highlighted areas

EVALUATION:

Students will be assessed by correctly answering the Shelter Packet questions with 70% accuracy.

Using the hands-on project, Students will demonstrate an understanding of Area and Volume based on accurate measurements and mathematical formulas used to determine their final response to meet the 8th Grade Math standard-Geometry 8.G

Observation/Participation of class discussion to show awareness about the Northern Arapaho Tribe.



**Video #4 – Who are the Northern Arapaho People?
Question and Answer Worksheet**

Name _____

Date _____

Directions:

1. Watch and listen to the video for the first time. Then answer as many questions as you can, using complete sentences. (Restate the question in your answer)
2. Watch the video for a second time and complete the worksheet. For the key vocabulary, write down the definition of each word.
3. In whole group, discuss the answers to each question to gain an understanding of what the purpose of the video was intended for.

KEY VOCABULARY:

Heritage-

Treaty-

Reservation-

Values-

Traditions-

Ceremony-

Humility-

1. In what year did the Northern Arapaho Tribe start calling the Wind River Indian Reservation their home? _____
2. How do the Northern Arapaho maintain the traditions?
_____, _____, and _____
3. Families are still traditional, what do they do? _____ and _____.
4. Who are three of the chiefs that are mentioned in the video? _____, _____, and _____
5. Families, extended families, and other tribes throughout the country share one thing in common, what it is? _____



6. True or False When people tease each other, a lesson is embedded within.
7. If respect is present amongst one another, can it be meant that you are friends for life?
YES or NO
8. Humility is a big value amongst the Arapaho. When things are done for others, it is not to be recognized for the praise but because it's a part of their _____.
9. What three values do the Northern Arapaho have?
_____, _____, _____
10. When were the Northern Arapaho supposed to get a reservation of their own? And why did they not get one from the government?
11. What time frame does the Northern Arapaho Tribe go from a Chief leader to the current form of government of a Business Council? _____
12. How big is the Wind River Reservation? _____
13. Who teaches the traditions to the youth? _____
14. When did the Northern Arapaho Tribal members start going to school and begin vocational programs? _____
15. True or False Students on the Wind River Reservation attend the same kind of schools like other students in the State of Wyoming.
16. Short Answer: What did you find the most interesting?



SHELTERS

LESSON: Shelters of the Plains specifically the Northern Arapaho

GRADE LEVEL: 8TH

SUBJECTS: Social Studies, Foreign Language/Culture

MATERIALS:

“Shelter” handout, Title IV-A Curriculum Development Project

(Optional) Video – “How to set up a tipi,” White Buffalo Lodges.

<https://www.youtube.com/watch?v=2VxDRJ4HEf4>

Venn diagram (attached)

DESCRIPTION:

Students will learn about the shelter used by the Northern Arapaho People.

OBJECTIVES:

Students will be able to describe the composition of the structure that the Northern Arapaho’s lived in.

Students will be able to identify the parts of a tipi.

Students will work construct a model of a tipi. (Individually, pairs, or small groups of 3-4)

VOCABULARY:

Tipi –

Buffalo Hide “Canvas” –

Slender Pine “Poles” –

Tipi Door –

Smoke Flaps “Ears” –

Straight Sticks “Red Willow Pins” –

Red Willow Pins/Stakes –

Rope -

**PROCEDURE:**

Anticipatory Set: Begin lesson by asking students to describe houses they live in today. Students should talk about characteristics such as room in their homes, sizes/shapes of their houses, and furniture/appliances/content found within the home. Record students' responses on the Venn diagram. Talk about how tipis were constructed and record those responses on the Venn diagram. Discuss the similarities and differences between the student's present homes and a tipi.

LESSON FOCUS:

Read the "Shelter," which was produced by Title IV-A Curriculum Development Project.

(Optional) Video – "How to set up a tipi," White Buffalo Lodges.

<https://www.youtube.com/watch?v=2VxDRJ4HEf4>

Discuss the video. Possible questions: Does it look easy when constructing a tipi? Do you think our class can construct a tipi with this video? Or would it be better to have a consultant from the Tribe to assist us? Would you like to take it down and move it as needed depending on food and season? Refer to how long it took on the video to set up a tipi. Ask students if they think it would take the same amount of time to set up a real one? (Reasoning). If they don't think the same amount of time, ask them to estimate the time on how long it takes (estimation).

ACTIVITY:

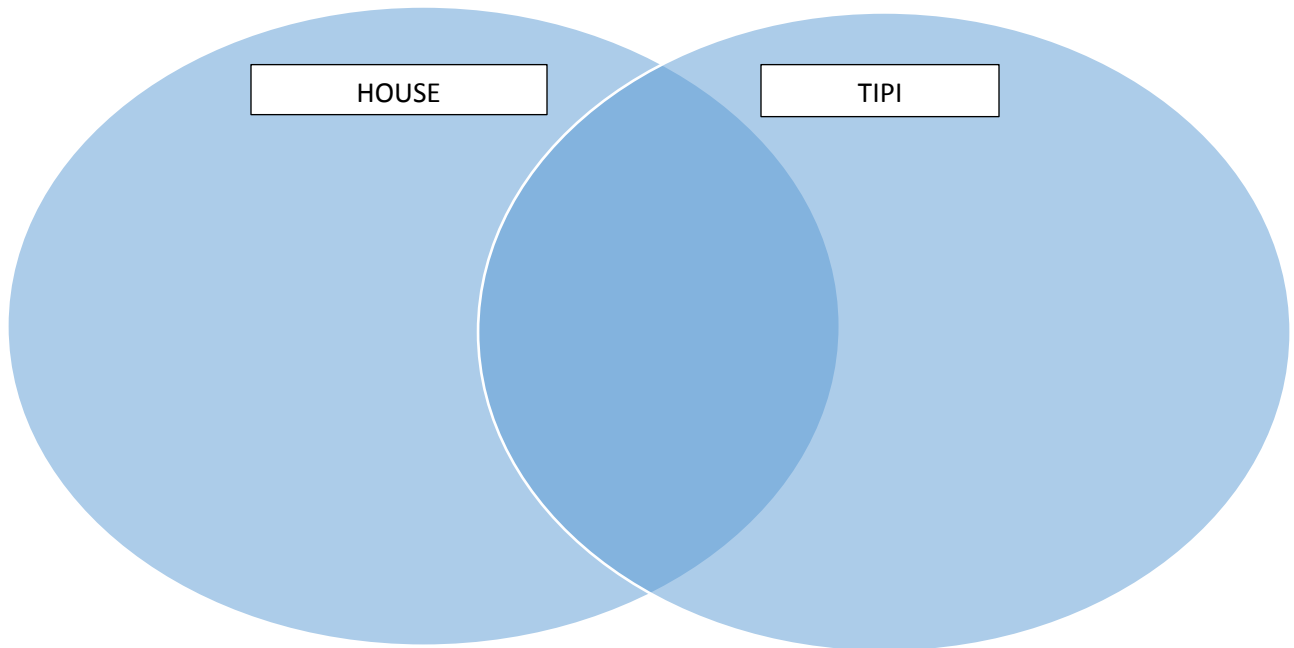
Determine whether students will be working in small groups, pairs, or individually. Tell students that they will be building a tipi. Have materials set up on a table/counter for students to get when activity is ready to begin.

CLOSURE:

After the students have finished their miniature tipi, each group will present their hands-on project to the class. Students will need to answer the questions in their presentation: Was it difficult to construct a tipi? What challenges did you face? What was the easiest part of setting up the tipi? When setting up a tipi, what would be the difference between the miniature model and a real tipi?

VENN DIAGRAM

SHELTERS





Title IV Curriculum Materials

(Adapted and condensed for the 8th Grade)

Haas, Merle, and Alonzo Moss . “Shelter.” Shelter, 1979, Nii'Eihii Koyih'o Cultural Resource Center.

Shelters

The early homes of the Plains Indians were tipis. It is not known when the Arapahos began constructing tipis, but it could have been after they moved onto the Plains in the early 18th century. The tipi proved to be a very sturdy, yet portable shelter. It was ideally suited to the tribal lifestyle of the time. Before the arrival of the horse, the tipi was made quite small. The women and the domestic dog had the responsibility of transporting the tipi. Since the introduction of the horse in the 17th century, the tipi was made bigger, stronger and in one large piece.

The first tipis were made from tanned buffalo hides, supported by the framework of long, slender pine, cedar, or other wood (known as poles). These poles were trimmed of all the bark and made smooth, then dried before use so they wouldn't be heavy. When a tipi was erected, sixteen to twenty-two poles were used and brought together about three to four feet from the top.

During the time when buffalo were plentiful, tipis were made exclusively from tanned hides. The covering for the pole framework took from fifteen to twenty tanned hides depending on the size and the number of hides available. They were sewed together to make one had small pockets at the tips and were held up by long poles. The tips of the poles fit into the pockets and the poles were leaned against the tipi. The ears could be adjusted to control ventilation of the tipi.

The Arapahos erected their tipis beginning with a tripod base. Three poles were measured against the height of the hide cover and tied together. These three poles were then stood up, and thirteen more poles were leaned into place at even intervals to form a circle. All of these poles were then tied securely into place with a long rope. The remaining length of rope was wrapped around one of the tripod base poles and tied near the ground. This framework supported the hide covering of the tipi. The last pole used in the framework was tied to the top of the hide cover, between the two

smoke flaps, and used to lift the cover into place. Once the cover was up, it was wrapped around the pole framework to enclose the living area. This cover was fastened together down the front with red willow stakes, and the entire cover was staked to the ground with stakes of red willow. The stakes were driven into the ground at the base of each pole, and these stakes held the entire structure firmly in place.

A cover was fashioned from a large piece of hide for the entrance. This cover was fastened to the bottom of the row of stakes that held the tipi closed. Straight sticks (known as pins) were attached to the door cover at the top and bottom to hold it in place. The entrance always faced east.

Tipis always had a liner made to fit the inside “walls”. The liner was also made of buffalo hide, and later on, canvas. This liner was about six feet high and was suspended from the poles, reaching to the ground. The lining of the tipi served many purposes. It helped keep the tipi warm and it prevented rain from dripping off the poles into the living area. It also prevented casting of shadows from the fire and gave the family more privacy. These linings were usually decorated. The male occupant of the tipi would draw or paint his brave deeds on it. This decoration represented a story of some accomplishment or a vision. At other times, the liner was painted with purely decorative designs and symbols that were used among the Northern Arapaho Tribe.

Inside the tipis, one would see a fireplace (heat/stove) that had a tripod base with pouches (cooking pans) used to cook with. Beds made of slender willow rods that were raised about a foot off the ground, placed close to the walls. Parfleches (storage boxes) that was used for food and other articles.

There were no great differences between tribal styles of tipis- the basic was the same throughout the Plains. Tribal differences were shown in the size and height of the tipi, the number of poles used, and perhaps most clearly, by the manner of decorating the tipi. Among the Arapaho quilled pendants and medallions frequently decorated the outside of the tipi.



Directions: Use the following vocabulary terms to identify the parts of a tipi.

(Title)

TIPI

BUFFALO HIDE "CANVAS"

SLENDER PINE "POLES"

TIPI DOOR

SMOKE FLAPS "EARS"

STRAIGHT STICKS "RED WILLOW PINS"

RED WILLOW PINS/STAKES

ROPE



COMMON CORE STANDARDS ADDRESSED IN LESSON:

Mathematics:

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres:

CCSS.MATH.CONTENT.8.G.C.9

- Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Craft and Structure:

English Language Arts

CCSS.ELA- LITERACY.RH.6-8.4

- Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

WYOMING STATE STANDARDS ADDRESSED IN LESSON:

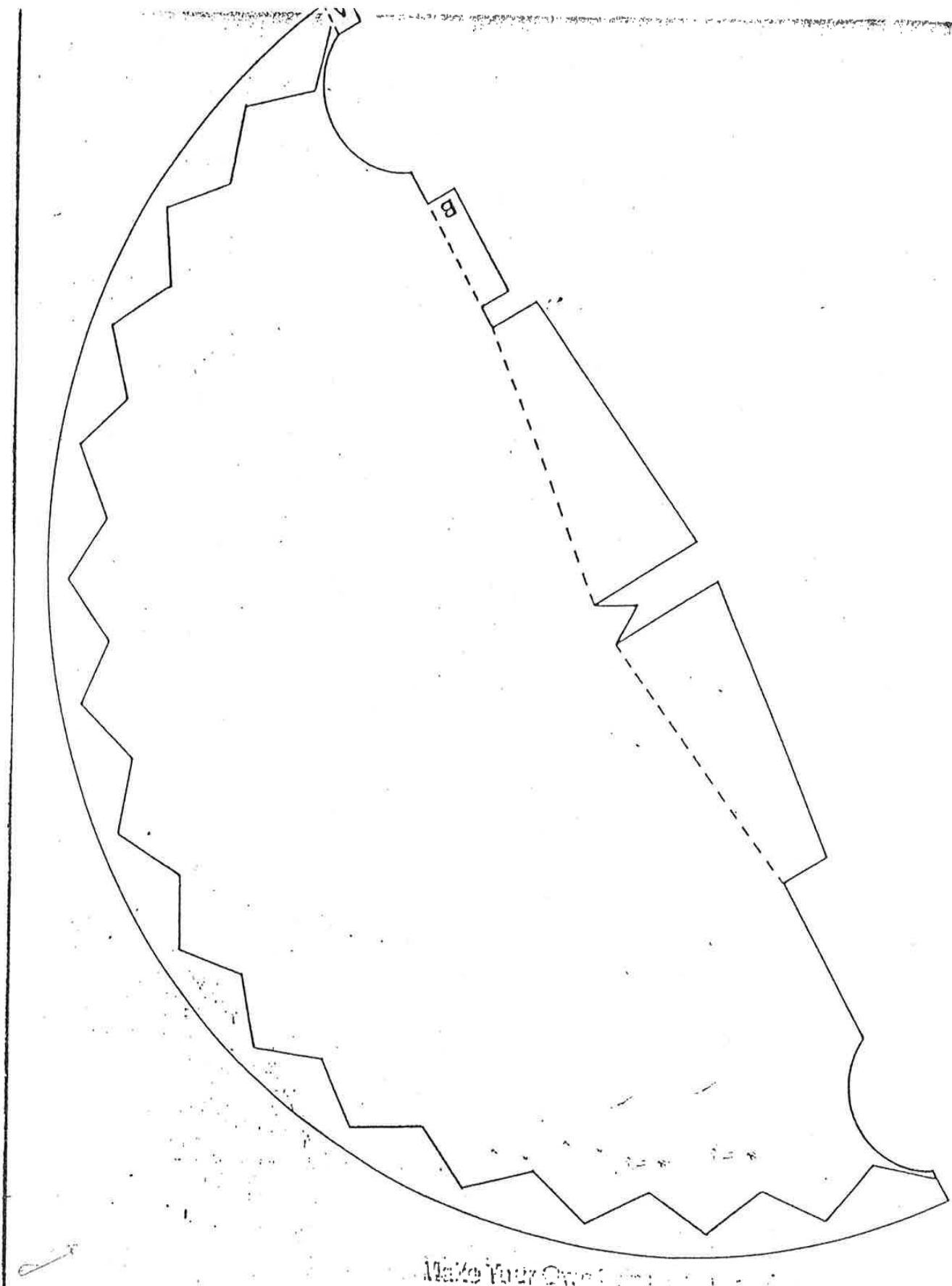
Math – 8th grade level

Geometry 8.G

9. Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Find the Area and Volume of a cone using the mathematical equations:

$$A = \pi r^2 \quad V = \frac{4}{3}\pi r^3$$



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