



**6th Grade**

# **Nets And Surface Area**

**Sydney Patchell, Nick Ford, Matthew McBride, Sophia**

---

Fall 2023 EMPACTS Project  
Math Structures II  
Dr. Joseph Newhall  
Northwest Arkansas Community College  
Bentonville, AR 72712

# Project Introduction

**We are a group of Pre-service Teachers taking the college course Mathematical Structures II. We conducted an EMPACTS project in which we were asked to teach a lesson to a classroom of students. The project includes developing a lesson plan based on Arkansas standards, teamwork, time management, classroom management, using tech, and reporting our experience.**

Photo of Us!



# The Math Standard

## AR.Math.Content.6.G.A..4

- Apply the following techniques in the context of solving real-world and mathematical problems
  - Represent three dimensional figures using nets made up of triangles and rectangles
  - Use the nets to find surface area of these figures

# Lesson Objective and Activity

## Lesson Objectives:

- Name the 3-D figure that the net will form
- Find the surface area of nets and the 3-D Figure they make

## Learning Goals:

- I can name the 3-D figure that the nets will make.
- I will use nets to find the surface area of 3-D figures.

We had three activities planned for our lesson time.

1. Powerpoint presentation
2. A worksheet
3. An exit slip problem



# Our Project Pieces

- Lesson Plan: [Nets and Surface Area](#)
- 6th Grade Lesson: [Lesson Slide Show](#)
  - Exit ticket is in the lesson slide show
- Lesson Worksheet: [WorkSheet](#)

lesson plan notes

**Standard:** AR.Math.Content.6.G.A.4  
Apply the following techniques in the context of solving real-world and mathematical problems:

- Represent three-dimensional figures using nets made up of rectangles and triangles
- Use the nets to find the surface area of these figures

**Objectives:**

- Name the 3-D figure that the net will form
- Find the surface area of nets and the 3-D figure they make

**Learning goals:**

- I can name the 3-D figure that the nets will make.
- I will use nets to find the surface area of 3-D figures.

**Materials:**

- Pencil
- Brain

**Procedure:**

- Student teachers will walk the students through a

Nets and Surface Area Worksheet

**Nets and Surface Area Practice Problems**  
Complete the following problems with a partner.

1. What **polyhedron** can be assembled from the net?

**Nets and Surface Area**

MISS SYDNEY, MR. FORD, MR. MCBRIDE, AND MISS SOPHIA

$V = Lwh$

$V = \frac{1}{2}bhl$

$V = \pi r^2 h$

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

$a = \frac{V_f - V_t}{+}$

$\sin(\theta) = \frac{\text{opp}}{\text{hyp}}$

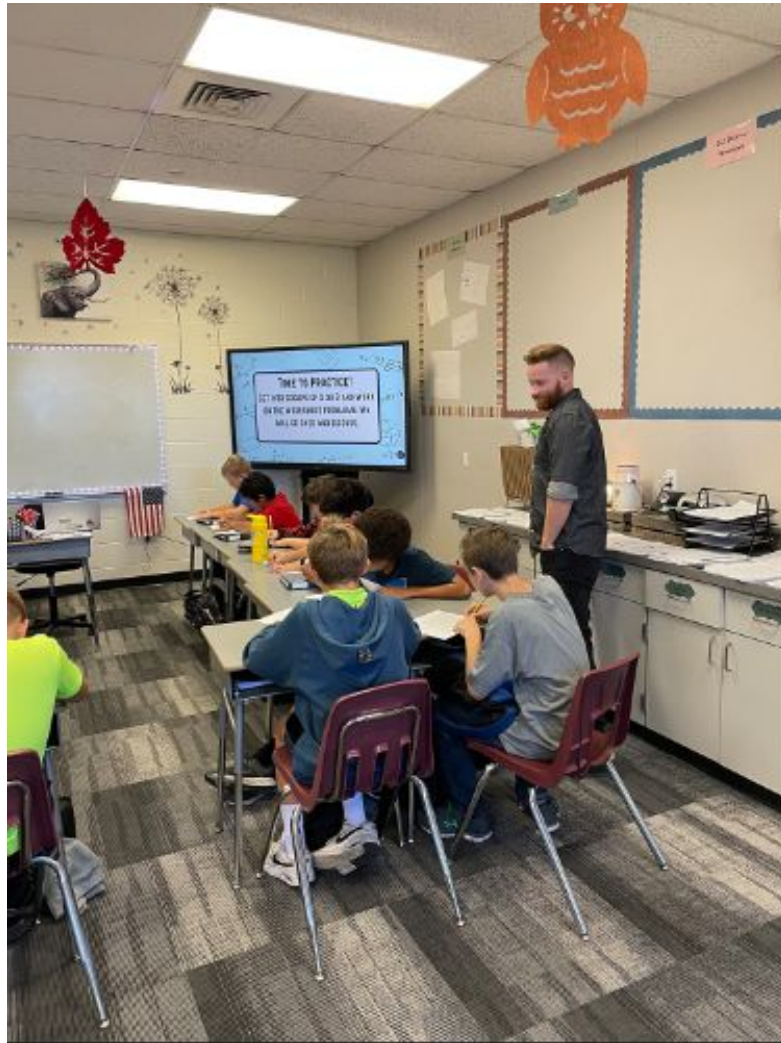
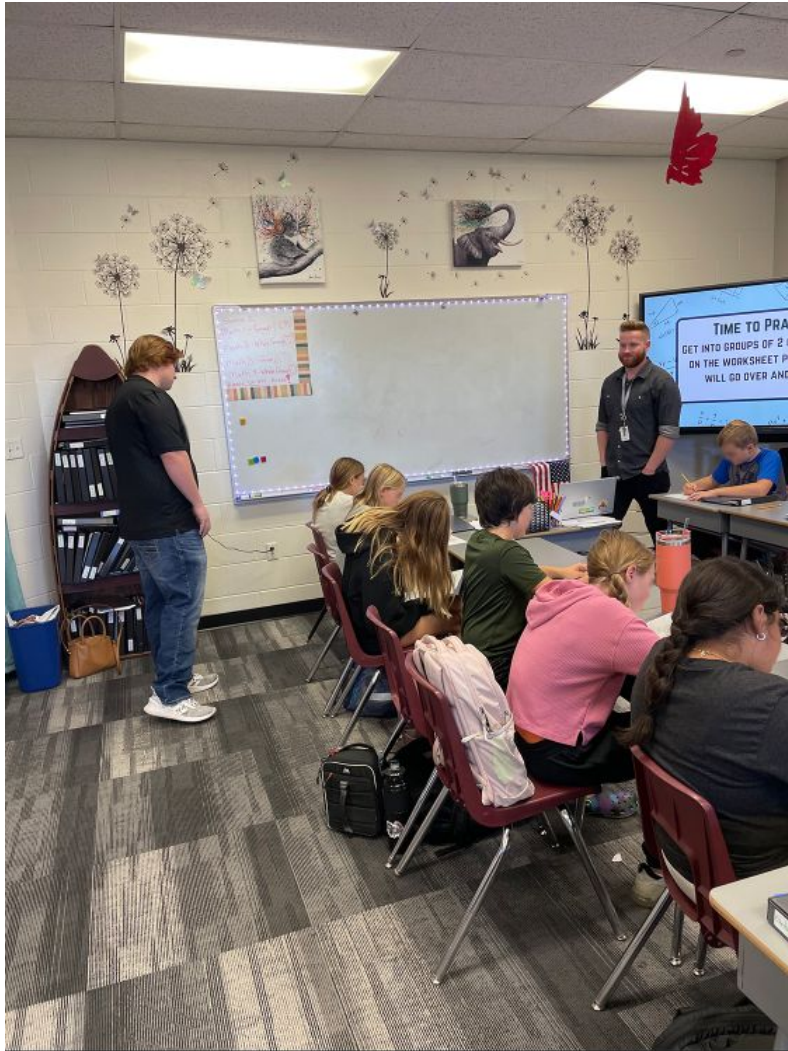
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$= mx + b$

$ax^2 + bx + c = 0$

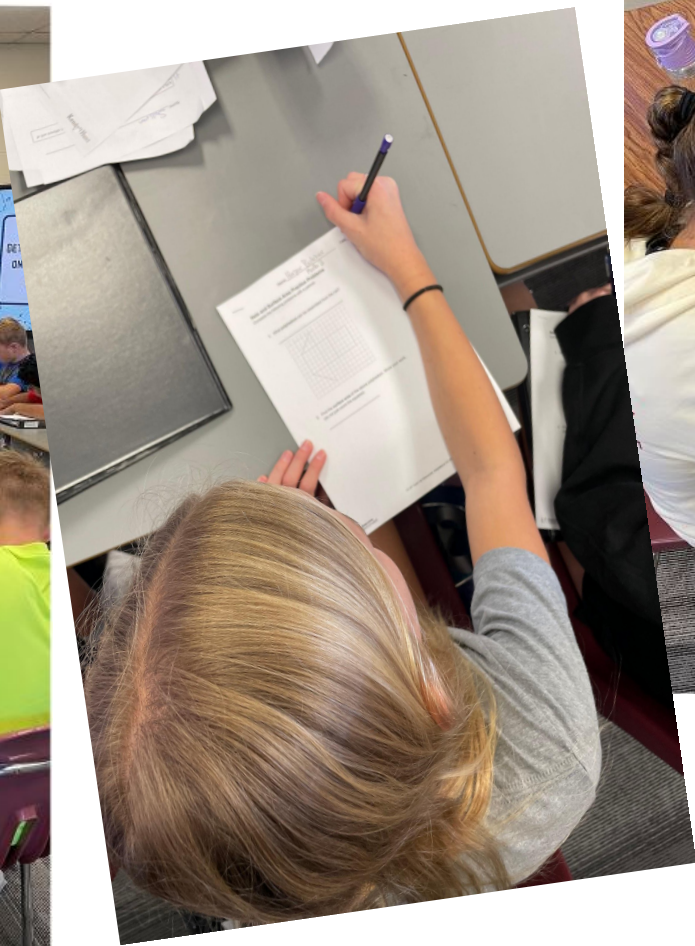
$\frac{x}{a} + \frac{y}{b} = 1$

# Pictures Teaching





# Lesson Pictures





## Collage Curricular Roles

- This project fulfills the requirements for the course of study and the EMPACTS program.
- The desired learning outcome of this project:
  - “Prepare and present core mathematics lessons using some form of technology that can be incorporated into the EMPACTS program and/or submit an independent research project that incorporates technology.”

# Results

math 2

Name: \_\_\_\_\_ Date: 11-7-23

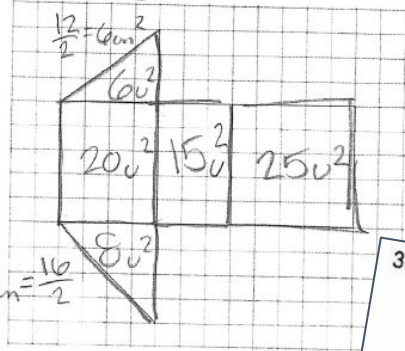
## Nets and Surface Area Practice Problems

Complete the following problems with a partner.

1. What **polyhedron** can be assembled from the net?

Triangular Prism

$$\begin{array}{r} 6 \\ +8 \\ \hline 20 \\ +3402 \\ \hline 1502 \\ +2502 \\ \hline 4002 \end{array}$$



$$\begin{array}{r} 3402 \\ + 4002 \\ \hline 7402 \end{array}$$

2. Find the **surface area** of the above polyhedron (do not just count the squares)

7402

3. Circle all units that can be used for surface area.

- a. square meters
- b. feet
- c. centimeters
- d. cubic inches
- e. square inches
- f. square feet

Name: \_\_\_\_\_ Date: 11-7-23

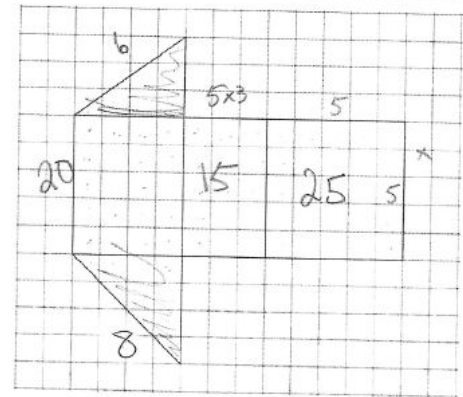
Math 2

## Nets and Surface Area Practice Problems

Complete the following problems with a partner.

1. What **polyhedron** can be assembled from the net?

Triangular prism



$$\begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array} \quad \begin{array}{r} 20 \\ +15 \\ \hline 25 \\ \hline 60 \end{array}$$

74

2. Find the **surface area** of the above (do not just count the squares)

74 units<sup>2</sup>

3. Circle all units that can be used for surface area.

- a. square meters
- b. feet
- c. centimeters
- d. cubic inches
- e. square inches
- f. square feet

Math 1

1. Rectangular Prism

2.

$12\text{mm}^2$   
 $+ 16\text{mm}^2$   
 $\underline{24\text{mm}^2}$   
 $52\text{mm}^2$

Area =  $52\text{mm}^2$

hyp  
adj  
opp  
 $\sin(\theta) = \frac{\text{opp}}{\text{hyp}}$

$V = Lwh$

$V = \pi r^2 h$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$= mx + b$

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

$\frac{x}{a} + \frac{y}{b} = 1$

$ax^2 + bx + c = 0$

$V = \frac{1}{2} bhl$

## EXIT TICKET

COMPLETE THE EXIT TICKET ON A PIECE OF PAPER AND TURN IT IN TO A STUDENT TEACHER.

Each square is equal to 1 mm.

1. Name the Polyhedron that the net will form.

2. What is the Surface Area of the Polyhedron? SHOW YOUR WORK.

Hint: surface area units are always squared units  
ex: in<sup>2</sup> cm<sup>2</sup> ft<sup>2</sup>

(do NOT just count the squares)

1. - Rectangular prism

2. -

$12\text{mm}^2$   
 $+ 16\text{mm}^2$   
 $\underline{24\text{mm}^2}$   
 $40\text{mm}^2$   
 $+ 12\text{mm}^2$   
 $\underline{52\text{mm}^2}$

Answer =  $52\text{mm}^2$



# Personal Experience

---

Matthew McBride- I enjoyed going into a class room. This project has helped me grow and value the ideas from my group mates as they offer different perspectives. I also got to gage the environment of a active classroom. This was a positive experience for me.

Sydney- Working in a middle school has already shown me how rewarding this profession can truly be. We are changing and growing little minds. I enjoyed working with my team to come up with this lesson and pull off a great project. This experience will leave a lasting mark to look back on in my future.

Nick- It was a nice change of pace being able to present this lesson in a 6th grade classroom. My job deals with working with K-4 students, so it was nice to get a glimpse of what it would be like to work in a different setting with older kids. This project has made realize that I should be more open-minded when deciding what grade to teach in the future.

Sophia- This project was quite enjoyable overall. It taught me how to engage in a classroom while trying to support students when they're struggling. I believe students are the happiest when their teacher shows encouragement and support. Due to this project, I am now able to reconsider my teaching habits for my future career.

# Acknowledgements

- Dianne Phillips (our EMPACTS mentor teacher)
  - She was very helpful and she guided us to resources to better our support project.
- Kayla Holland (our 6th grade mentor teacher)
  - She fosters an environment that values communication, providing constructive feedback to support growth and development. She also inspires confidence and a passion for continuous learning in all of her students.



**Thank you for  
listening!**

---

