

Area & Volume Reader's Theatre

7th Grade Math and Drama

CORE SUBJECT AREA

Math

ART FORM + ELEMENTS

Drama, Reader's Theatre

DURATION

Lesson will take 2-3 class periods.

MSCCR STANDARDS

CCSS.MATH.CONTENT.7.G.B.6

MSCCR CREATIVE ARTS STANDARDS

TH: Pr6.1.7

TH: Re8.1.7 (a. b. + c.)

VOCABULARY

Area, Cubed, Edges, Equation, Exponent, Perimeter, Surface (Area), Squared, Faces, Nets, Volume, Prism, Pyramid and Quadrilateral

OBJECTIVES

TSW identify the difference between area and volume.

TSW identify 3-D figures from nets.

TSW solve volume of 3-D figures.

TSW gather meaning through a shared theatrical piece.

MATERIALS NEEDED

Four copies of the Reader's Theatre

Props (optional)

Colored paper (to print nets and foldable on)

Construction paper to make a volume/area book

Stapler

Glue

Scissors

markers/crayons/colored pencils

RECOMMENDED RESOURCES

[https://districtaccess.mde.k12.ms.us/studentassessment/Public%20Access/Statewide Assessment Programs/MAAPMississippi%20Academic%20Assessment%20Program/Math Guidance/Math-Reference%20Sheets/2016-2017%20Administration/Grade%207%20Reference%20Sheet.pdf](https://districtaccess.mde.k12.ms.us/studentassessment/Public%20Access/Statewide%20Assessment%20Programs/MAAPMississippi%20Academic%20Assessment%20Program/Math%20Guidance/Math-Reference%20Sheets/2016-2017%20Administration/Grade%207%20Reference%20Sheet.pdf) '7th grade Formula/Reference Sheet'

<https://mathgeekmama.com/wp-content/uploads/2015/03/Geometric-Nets-PrintablePack.pdf> 'Nets for 3-D figures'

LESSON SEQUENCE

As TS enter the room, have 2-3 paper nets placed on each student group table. (May wish to laminate these, in order for them to last longer.) Have TS spend 3-4 minutes folding 2 dimensional shapes to create 3-dimensional figures.

TTW call on specific random students from each group and ask if they can identify any qualities about the paper on their desks. She should be looking for specific geometric shapes, and how many, within the net, and also the three-dimensional shape it could create.

TT should ask group members if they agree or disagree, and why or why not. As a class, conclude the correct name of the three-dimensional shape, and conclude that a net is a three-dimensional sliced open and laid out.

Today, we will be learning about the differences in/and solving for area and volume of two- and three-dimensional shapes. We are going to create a 'Area and Volume' book, so everything you complete for the next couple days will be placed on a page of this book for your final grade. First let's look at some nets to determine the areas (faces) of three-dimensional shapes. TT should distribute the '3-D Nets' handout. TS should

be able to select the correct net to match the 3-D shape. Allow students 3-5 minutes to complete handout. While students are working TT should be facilitating the classroom by checking student work and guiding any misconceptions. When time is up TT should go over the handout, by selecting students to give the correct answer. Now that we have a good concept in the difference between two- and three- dimensional shapes, let's look at what we are asked to solve for these shapes.

Enter your Reader's Theatre characters.

Have TS act out the Reader's Theatre "Area, Volume, and Perimeter Oh My!". Once TS have finished the play, have whole-group discussion to arrive at the formulas for area and volume of a square. ($A=L \times W$, $V=L \times W \times H$) TT should ask students what they observe about the two formulas. TS should respond that area is formulated from a two-dimensional shape (i.e. you only multiply two dimensions, length and width), and volume is formulated from a three-dimensional shape (i.e. when you multiply three dimensions). Next we are going to look at some visual examples of volume and solve using formulas. TTW distribute the parts for the 'Volume Note-Taking' foldable, formula sheet and two sheets of construction paper. (If you already made up the 'books', just distribute those) Have students fold the two sheets of construction paper 'hamburger style', place one sheet inside the other and staple on the fold line. TSW paste '3-D Nets' handout, all parts for the "Volume Note-Taking" foldable and a formula sheet on sheets inside their book. Allow students to individualize the front cover and place their name. TTW walk students step by step through the 'Volume Note-Taking' foldable. She will fold and glue one piece at a time, and give students a set time frame on solving for volume of the cubes. Assessment- TTW use TS's book as a formative assessment.

EXTENDED LEARNING ACTIVITIES

TT could have students measure lengths, widths, and heights of nets and solve for volume and surface area of the 3-D figures.

SOURCES

Pulled sources from 'Teachers Pay Teachers'

'3-D Nets' Handout and Foldables were found on various web-based cites.

TIPS + FREQUENTLY ASKED QUESTIONS

Prior to this lesson TT should select 4 students to act out the Reader's Theatre "Area, Volume, and Perimeter Oh My!". I would not allow students to take the play home, because it would ruin it for the class; however, I would allow them to glance & the lines and attitude of their character.

TT may wish to already have 'Area and Volume' books made up, by folding two sheets of construction paper 'hamburger style'. Place one sheet inside the other and staple together at the crease. This will save you some instructional time.

Cutting out parts of the 'Volume Note-Taking' foldable is time consuming on the teacher's part, but will save a bunch of instructional time. This is a great project for your 'Teacher Helper'.

TT should have an 'Area and Volume' book already done to use as an example of what she expects.