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Grade and Content area: 8th Grade Visual Art

Duration: 6 class periods at 40 minutes each

Title of Lesson: Math Nets Collaborative Sculpture

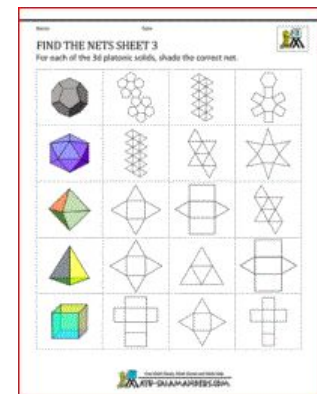
Lesson Description: Through this interdisciplinary lesson, students will not only receive instruction and preparation for their upcoming PSSA examination, but they will have the opportunity do so in a creative and collaborative manner. Students will learn about geometric math nets through direct instruction and through the assembly of three-dimensional objects from a two-dimensional plane. Students will have the

opportunity to respond to 3 of many prompts provided that address what the students find inspiring, and what they hope their futures will look like. Finally all of the nets will be assembled into 4 large, hanging sculptures that will then be displayed together in a cluster. This will allow for a lesson on collaboration, showing the students how individual and separate parts can come together to create an interesting whole.

What? : Create illustrations on and assemble 3 math nets that will be included in a large collaborative hanging sculpture based on the concept of inspiration.

Why? : To prepare for the PSSA in a creative and fun way as well as reflect on future goals and current inspirations.

How? : Through direct instruction on math nets, through the response to provided prompts, and through the creation and reflection on the final product.



Essential Questions:

What strategies can you use to identify a net in both its two-dimensional and three-dimensional forms? Analyze characteristics and properties of two- and three-dimensional geometric shapes and demonstrate understanding of geometric relationships.

Why is everyone's participation important in collaborative projects?

Why are goals and inspirations important?

Project Objectives:

Handouts and Other Instructional Materials:

- Introduction to the lesson through GRAPES
- Teacher samples of assembled and disassembled math nets
- Teacher samples of various decorated math nets
- PowerPoint presenting the various nets
- Slide giving strategies for identifying nets
- Worksheet of quiz assessing student knowledge
- Daily warm-ups to assess knowledge

- Templates for students to outline for the construction of their nets.
- Slide and sheet for various prompts to inspire illustrations.
- Slide on collaboration
- Grading rubric
- Slide and sheet for end of project reflection.

Vocabulary:

Net

Three-dimensional

Two-Dimensional

Cube

Pyramid

Cone

Cylinder

Prism

Inspiration

Collaboration

Art Materials:

Colored construction paper

White paper- various sizes

Pastels

Crayons

Markers

Scissors

Elmer's Glue or glue sticks

Hot glue

Other materials to add interest to the nets

*Maybe watercolor paper and paint- I would have to test this

4 different colors of yarn, one color for each section of 8th grade

Sequence:

Day One: Students will be introduced the lesson through the daily what, why, and ho and through a GRAPES handout. Students will be made aware that this project will be a fun way to articulate their goals and learn about a math concept. Students will be presented with key vocabulary and concepts for the math nets. Students will be presented with strategies for identifying and solving math net problems. Students will be presented with a teacher made sketch of the final collaborative sculpture to help them visualize the final product. Students will be shown a teacher sample.

Day Two: Review nets through a warm up and then review warm up and the concepts of nets and 2D vs 3D. Students will be presented with the concepts of collaboration and inspiration. Students will be asked to answer 3 of the variety of prompts provided, including: What do you hope for the future? What are your goals for the future? What inspires you? What motivates you try to do well in school? These prompts will inspire the illustrations for their nets. These answers will be recorded in their DW.

Day Three: Begin with a warm up and review of the nets and then a short demonstration of how to trace and assemble a net. Students will be presented with different materials that they will be able to use to decorate their nets and visuals will be provided as examples. Students may begin to trace their nets illustrate and decorate their nets after answering their 3 questions and showing them to the teacher. They will create 3 illustrated nets.

Day Four: Daily warm up on math nets. Students will finish decorating their nets and begin to assemble them.

Day Five: Students will finish assembling their nets and begin glue their strings to their nets using hot glue. Students will tie their 3 strings together at the top. Students will be given a label to identify their group of nets. Students who finish will be given a worksheet on nets that will be graded.

Day Six: Students will be given a rubric and final reflection activity to complete in their dw. The activity will end in a critique to evaluate what was successful about the collaboration and what was not.

Evidence of Student Learning:

- Three completed nets, neatly constructed and decorated thoughtfully.
- Assessment of student learning through a quiz/worksheet and daily warm ups on nets
- Responses to prompts recorded in DW in complete sentences
- Rubric
- End of project reflection recorded in DW

PA State Standards

Visual Arts Standards:

9.1.5 E: Know and demonstrate how arts can communicate experiences, stories or emotions through the production of works in the arts.

9.1.5 J: Apply traditional and contemporary technologies for producing, performing and exhibiting works in the arts or the works of others.

9.4.5 D: Explain the choices made regarding media, technique, form, subject matter, and themes that communicate the artist's philosophy within a work in the arts and humanities.

Geometry Standards:

M8.C.1 Analyze characteristics and properties of two- and three- dimensional geometric shapes and demonstrate understanding of geometric relationships.

M8.C.1.1 Identify, use, and/or describe properties of angles, triangles, quadrilaterals, circles, pyramids, cubes, prisms, spheres, cones and/or cylinders.

M8.C.1.1.1 Match the three-dimensional figure with its net (cube, cylinder, cone, prism, pyramid). Any measurements used should be consistent in the stem and answer choices.