

THE GREEDY TRIANGLE AND FRIENDS

Suggested Grade

4

SD Mathematics Strand & Standard (*Primary for Task*)

Geometry

4.G.1.1. Students are able to identify the following plane and solid figures: pentagon, hexagon, octagon, pyramid, rectangular prism, and cone.

Task Summary

Students write narratives about geometric figures.

Time and Context of Task

1 week-during the learning of geometric figures (1 week allows for the writing of the rough draft, editing and rewriting)

Materials Needed

Copy of the book, The Greedy Triangle by Marilyn Burns, geometric shapes

Author and Lead Teacher for this Task

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At the start of the lesson, introduce the children's book *The Greedy Triangle* by Marilyn Burns. Read aloud the story. Discuss how the writer shows where to find polygons around us, and how she uses correct mathematical terms such as quadrilateral, pentagon, and hexagon. Then discuss the moral of the story: always be happy with who you are.

Review the following geometric figures: pentagon, hexagon, octagon, pyramid, rectangular prism, and cone. Show how they are two and three-dimensional. Also introduce the terms faces, edges, and vertices.

Challenge each student to write a narrative using "The Greedy Triangle" as a guide. First students will need to select a geometric figure. In their narratives, students should give life to that figure. They should describe where the "shape character" can be found in the world. They should assign some characteristic to the character (as Marilyn Burns assigned greed to the triangle) and create a story line that includes events that emphasize and develop that characteristic. Perhaps the story might even teach as lesson as *The Greedy Triangle* did.

Students also need to include the other five geometric shapes somewhere in their story.



CONTENT STANDARDS

Primary Standard

Strand Name: Geometry

SD Goal: Students will use the language of geometry to discover, analyze, and communicate geometric concepts, properties, and relationships.

Indicator: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.

Standard: 4.G.1.1. Students are able to identify the following plane and solid figures: pentagon, hexagon, octagon, pyramid, rectangular prism, and cone.

NCTM Process Standard

Communication

- Use the language of mathematics to express mathematical ideas precisely

ASSESSMENT TOOLS

Task Rubric

<i>Standard</i>	<i>Advanced</i>	<i>Proficient</i>	<i>Basic</i>	<i>Below Basic</i>
4.G.1.1. Students are able to identify the following plane and solid figures: pentagon, hexagon, octagon, pyramid, rectangular prism, and cone.	<i>All six figures, plane and solid are sketched and explained in detail correctly.</i>	<i>All six figures, plane and solid are identified and explained.</i>	<i>Some geometric shapes are identified with little explanation given.</i>	<i>Incorrect explanations of geometric figures.</i>
Use the language of mathematics to express mathematical ideas precisely	<i>Explanation was clear and concise.</i>	<i>Explanation was clear.</i>	<i>Inferences had to be made to figure out what you meant in places.</i>	<i>Explanation difficult to follow and understand.</i>

**Fourth Grade Geometry
Performance Descriptors**

Advanced	Fourth grade students performing at the advanced level: <ul style="list-style-type: none"> • sketch two- and three-dimensional figures and identify the lines and angles; • illustrate flip, turn, or slide (reflection, rotation, or translation).
Proficient	Fourth grade students performing at the proficient level: <ul style="list-style-type: none"> • identify and compare two- and three-dimensional figures, lines, and angles; • identify slide (translation).
Basic	Fourth grade students performing at the basic level: <ul style="list-style-type: none"> • recognize basic geometric figures; • demonstrate a slide (translation) using concrete objects.

**Fourth Grade Geometry
ELL Performance Descriptors**

Proficient	Fourth grade ELL students performing at the proficient level: <ul style="list-style-type: none"> • identify and describe two- and three-dimensional figures, lines, and angles; • identify rotation (turn), translation (slide), and reflection (flip); • read, write, and speak the basic language of geometry.
Intermediate	Fourth grade ELL students performing at the intermediate level: <ul style="list-style-type: none"> • identify and describe two- and three-dimensional figures, lines, and angles; • identify rotation (turn), translation (slide), and reflection (flip); • write responses with oral support; • explain in geometric terms the sequence of steps used in solving problems; • give simple oral responses to questions on topics presented in class.
Basic	Fourth grade ELL students performing at the basic level: <ul style="list-style-type: none"> • identify simple two- and three-dimensional figures verbally; • give limited written responses, which may include simple phrases, to directed questions on topics presented in class; • recognize and use basic geometric terms; • respond to yes or no questions and to problems presented pictorially or numerically in class.
Emergent	Fourth grade ELL students performing at the emergent level: <ul style="list-style-type: none"> • identify basic geometric figures non-verbally; • copy and draw basic geometric figures; • imitate pronunciation of geometric shapes and terms; • use non-verbal communication to express mathematical ideas.
Pre-emergent	Fourth grade ELL students performing at the pre-emergent level: <ul style="list-style-type: none"> • observe and model appropriate cultural and learning behaviors from peers and adults; • listen to and observe comprehensible instruction and communicate understanding non-verbally.

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Student Work Samples



As you examine the samples, consider the following questions:

- In light of the standard/s addressed and the assessment tools provided, what evidence does the work provide that students are achieving proficiency in the knowledge and skills addressed by the standard/s for the task?
- Is the task/activity well designed to help students acquire knowledge and demonstrate proficiency? Is the task/activity clearly aligned with the standards? In what ways would you adapt the task/activity to better meet the needs of your students?

Student Work Sample #1

Crazy Octagon

There once was an octagon and because he had so many sides the other shapes made fun of him. He had eight to be exact. All the shapes thought he was totally useless. But he knew the kids loved played with him and he was important on the roads because he made people stop. He also was very proud because he was named after the mighty Octopus with eight legs. One day all the shapes were on a big ship and after the ship got out of the harbor it started to sink. A four sided stupid square tried to plug up the hole but he slipped right through. A corny cone followed him. He didn't even come close, with his no sides and pointy end. Next came a smart alecky pyramid. Ha, like that was going to work! He's shaped like the cone only with a square for the bottom, and both of them didn't make it. Next a really smart rectangular prism tried to plug it up, but he went through too. Now Harry hexagon decided he would try it because the hole had many sides. Opps, guess the hole had more than six! So now crazy octagon decided it was his turn and shoved himself into the eight sided hole and stopped the boat from sinking. The other shapes were rescued and they all became friends.

Looking at Student Work – Instructor notes and rating for work sample #1:

Based on the task rubric and the Content Standard Performance Descriptors, the lead teacher rated this student's work PROFICIENT.

What evidence do you see in the student work that demonstrates that this student has a PROFICIENT skill level?

Student Work Sample #2

The Dumb Diamond

Once there was a dreadful diamond. "I like to be a pretty diamond on a diamond ring because then people say I'm beautiful. Also I like to be a baseball diamond." Said the diamond. One day the diamond was walking when he met his friend, the perfect perimid. "How come your so dumb?" asked the perimid. The diamond said, "Maybe it's because when I'm a baseball diamond people run on me with their cleats. When people walk on me it hurts, but I'm not dumb." "Ya know maybe we just all have differences. Can't you just except our differences?" asked the triangle. "Sure, I guess. I never thought of it that way." Said the perimid. So they lived happily ever after.

The End

Looking at Student Work – Instructor notes and rating for work sample #2:

Based on the task rubric and the Content Standard Performance Descriptors, the lead teacher rated this student's work BASIC.

What evidence do you see in the student work that demonstrates that this student has a BASIC skill level?

Student Work Sample #3

The Stingy Circle

Once upon a time there was a stingy circle. This circle was very careful about how he spent his money. He liked all the shapes that he could turn into. He could turn into a clock that ticked time away, a round ball that children could play with, but his favorite thing he could turn into was a globe. He liked this best because he could see places in the world that he's never seen before.

Looking at Student Work – Instructor notes and rating for work sample #3:

Based on the task rubric and the Content Standard Performance Descriptors, the lead teacher rated this student's work **BELOW BASIC**.

What evidence do you see in the student work that demonstrates that this student has a **BELOW BASIC** skill level?

INSTRUCTIONAL NOTES

Task Extensions

Students who have strong visual skills might transform the narrative into a picture book or comic strip.

Appropriate Technology

Word Processor

Web Resources – Lesson Plans and Student Activities

- Interactive lab investigation format of the forces that affect various structure shapes. Most appropriate for grades 5-8.
<http://www.pbs.org/wgbh/buildingbig/lab/shapes.html>
- Students use nets to investigate two- and three-dimensional shapes.
<http://pbskids.org/cyberchase/parentsteachers/lessonplans/lesson7.html>
- Students explore how making different rectangular shapes with the same perimeter affects the areas of the shapes.
<http://pbskids.org/cyberchase/parentsteachers/lessonplans/lesson8.html>
- Interactive tangram game
<http://pbskids.org/cyberchase/games/area/tangram.html>
- Lesson plan: Students will be able to join pattern block pieces together to cover a region and to identify and describe numerical relationships found among pattern block shapes.
http://www.pbs.org/teachersource/mathline/lessonplans/esmp/perfectfit/perfectfit2_procedure.shtm
- ‘Geolympic’ Lesson Plan
http://pbscyberschool.pbs.org/teach/lesson26_1.html
- Lesson plan for learning line concepts.
http://pbscyberschool.pbs.org/teach/lesson23_1.html

Interdisciplinary Connections

Science-animals/habitats

Literature Connections

- The Greedy Triangle by Marilyn Burns & Gordon Silveria
 - Grandfather Tang’s Story by Ann Tompert
 - Round Trip by Ann Jonas (Illustrator)
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Resources

SD Mathematics Content Standards

<http://www.doe.sd.gov/contentstandards/math/index.asp>

SD Assessment and Testing

<http://www.doe.sd.gov/octa/assessment/index.asp>

The National Assessment of Educational Progress (NAEP)

<http://www.doe.sd.gov/octa/assessment/naep/index.asp>

National Council of Teachers of Mathematics

<http://nctm.org/>

Looking at Student Work

<http://www.lasw.org/index.html>