

Finding Area of Similar Figures

Summary

Identify the relationship between the corresponding sides in two similar figures and their areas. Find area of similar figures.

Main Core Tie

Mathematics Grade 7

[Strand: GEOMETRY \(7.G\) Standard 7.G.1](#)

Materials

Pattern Blocks for each team

- [Centimeter Paper](#)
(attached)

Worksheets: [Growing Generations of Similar Figures](#), [Area of Similar Figures](#)

Background for Teachers

Enduring Understanding (Big Ideas):

Indirect measures for similar figures

Essential Questions:

How can we describe the relationship between the corresponding sides of similar figures and their areas?

How can this relationship help us determine the area for similar figures?

Skill Focus:

Use the relationship between corresponding sides of similar figures to find area.

Vocabulary Focus:

Corresponding sides, similar figures

Ways to Gain/Maintain Attention (Primacy):

Manipulatives, cheer/movement, game, writing

Instructional Procedures

Starter:

Find the perimeter of this rectangle.

Find the area for the rectangle

If these rectangles are similar, what is the measure of side EF?

What scale factor was used on the smaller rectangle to get the larger dimensions?

Lesson Segment 1: How can we describe the relationship between the corresponding sides of similar figures and their areas?

Have students review the journal Frayer Models: Defining Similar Figures and Defining Scale Factor. Ask students to read through their definitions, examples and nonexamples. Tell them they will be using what they know about similar figures, corresponding sides and scale factor for today's learning goal.

Give each team of students 16 of each pattern block: orange squares, green triangles, blue rhombi. They will be building growing patterns, or growing generations of similar figures. **Geometry Standard in the 7th Grade Utah Mathematics Core uses the terms "scale drawings" rather than generations. Make clear to students that each generation is a scale drawing of the original figure.** Work with them in completing the Growing Generations of Similar Figures investigation worksheet, discussing the answers to the questions on page 2 of the worksheet through # 2 on the

second page. Ask them to be looking for a pattern that relates the scale factor to the number of area units in each generation.

To help students visualize the figures in the table for # 3 on the second page of Growing Generations of Similar Figures, give each a Centimeter Paper. Students can sketch each of the generations listed in the table for the "5 cm²" shape (as shown in red on the attached key for the Centimeter Paper) as well as the 2nd and 3rd generation listed in the table for the "4 yd²" shape as shown in green. As they sketch the figures, compare the areas, and complete these first six rows of the table on the worksheet, have them focus on the relationship between the scale factor and the original area. They should begin to see that the units of area in the larger figure are always the original area multiplied by the square of the scale factor. Help them make the connection between area being *measured in square units* and the scale factor being squared when finding the area of the larger generation. Students should then be able to complete the last four rows of the table by using the pattern described rather than needing to sketch.

Lesson Segment 2: How can the relationship between areas of similar figures help us find missing areas?

Teach the students the following cheer. Have teams create moves for the cheer or a rap to present to class.

Similar figures? I'm not scared!
I'll find area if I'm dared.
Multiply the *scale factor squared*
By the smaller area-I'm prepared!

Play Lie Detector for completing the worksheet, Area of Similar Figures.

Materials: Give each small group a Smart Pal with blank paper or large team board and marker

Procedure: Divide the class into two teams, A and B. Team members work together to complete one assigned part of the worksheet. Give students a little time to check with team members and to work the part of the worksheet correctly. The team should then decide if they are going to tell a lie or tell the truth. If they choose to tell the truth, a scribe writes the responses to the worksheet correctly on the Smart Pal or Team Board. If they decide to tell a lie, the scribe writes part of their response incorrectly on the Smart Pal or team board. Teacher selects one person from team A to be The Presenter. The Presenter stands in the front of the room shows the team board and explains what was done (either telling the truth, or telling a lie about the problem). The class is given a little time to discuss the response in small groups. The Presenter then chooses one person from Team B to be the Lie Detector and to tell whether they believe the explanation was truth or lie. If The Lie Detector thinks the explanation was a lie, he/she has to explain where the lie occurred and correct it. If the Lie Detector is correct, Team B gets a point. If not, The Presenter tells whether their explanation was the truth or a lie. If it was a lie, The Presenter tells why. The game proceeds with each team taking a turn to be Presenter and Lie Detector.

Journal: Have students take the roll of expert explaining a student who had just come into the class. Students should write a complete explanation for how to answer the following question using words, drawings and math symbols. An evaluation for math writings has been attached. Students should do the writing on the back of the evaluation.

Question: You have a great photo that is 3" by 5". You want to enlarge the area of the picture using a scale factor of 3. What is the area of the larger picture? Will it fit on your 9 x 12 scrapbook page?

Assign text practice as needed.

Assessment Plan

Performance task, observation of student groups, written response

Bibliography

This lesson plan was created by Linda Bolin.

Authors

[Utah LessonPlans](#)