Scaling the Pyramids of Giza

Summary

Students will have an opportunity to use rate reasoning and computational fluency to solve scaling problems related to the ancient pyramids of Egypt.

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Life Skills

Thinking & Reasoning, Communication

Materials

Copy of the task Lined paper Graph paper Chart paper Calculators Pencils Rulers Manipulatives including blocks

Background for Teachers

Please see the following website to ensure adequate mathematical background: http://schools.utah.gov/CURR/mathelem/Core/Ratios-Proportional/Standard3dG6.aspx Ensure students have an adequate contextual background by providing them with the history, location, construction, and purpose of the pyramids of Giza.

Student Prior Knowledge

Students will need to have a working understanding of ratios. They must be able to accurately divide multi-digit numbers.

Intended Learning Outcomes

Standard 6.RP.3d Students will be able to use ratio and rate reasoning to solve real-world and mathematical problems. Specifically, students will be able to use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities to create scale models of the pyramids.

Strategies for Diverse Learners

The following guiding questions could be used to support struggling students.

What is the purpose of scaling? How do the three pyramids compare to each other? Which of the pyramids is the smallest? The tallest? What information do you need to solve these problems? How can a ratio help you solve this problem? Some student may need you to model how to start building their solution. Advanced students can be challenged to create a net of one or more of the scale models and correctly place them on a scale model of their location.

Extensions

Students can build a scale model of the pyramids.

Bibliography

Smith, Margaret Schwan, Victoria Bill, and Elizabeth K. Hughes. "Thinking Through a Lesson Protocol: Successfully Implementing High-Level Tasks." Mathematics Teaching in the Middle School 14. (October, 2008): 132-138

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