Ratios and Proportions

Differentiated Unit
Michelle Martinez
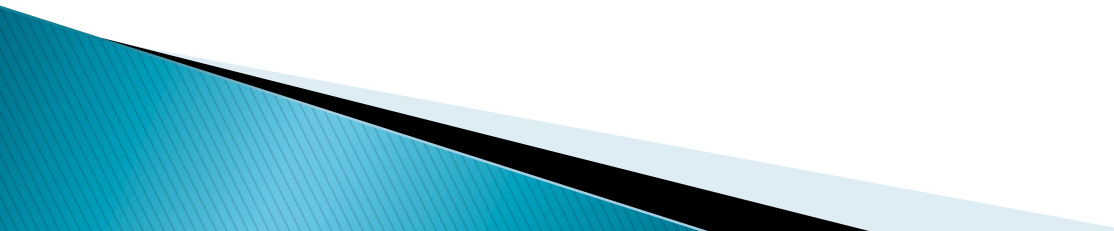
About the Authors: Theresa Monaco

- Theresa Monaco is Professor of Curriculum and Instruction and Director for Center for Gifted and Talented Education at the University of Houston. She has authored:
- Monaco, T. (Ed.) 2ndEdition (2002) Biographical Directory of Leaders in Gifted Education. Royal Fireworks Press, Unionville, N.Y.
- Monaco, T, Brandi Allen, Azhar Zafar (2011) http://www.nyu.edu/classes/keefer/waoe/monacostory.pdf, Hyperlinked for public viewing . World Association for Online Education: The WWW Journal of Online Education. Updated by Publisher.
- Teachers Identify and Support At-Risk Gifted Students. Volume 8 Issue 3 –Jun 3, 2010 –11:27:53 AM. By Theresa Monaco, Danna Eichenold, Victoria Casper, Claudia V. Gonzales, Susan Jackson, Maria Earle, Eva Marie Bisaillon

About the Authors: Michelle Martinez

- Michelle was always fascinated by mathematics and science and asked more questions than any parent or adult cared to answer. That was before one could easily access whatever information they desired through the internet. She is excited about the opportunity to student teach this semester and looking forward to obtaining a permanent teaching position in the spring.

Objectives

The students will be able to:
- Define ratios and proportions
- Write and simplify ratios
- Solve problems using proportions

TEKS

(6.3)Patterns, relationships, and algebraic thinking. The student solves problems involving proportional relationships. The student is expected to:

(A) use ratios to describe proportional situations;

(B) represent ratios and percents with concrete models, fractions, and decimals; and

(C) use ratios to make predictions in proportional situations.

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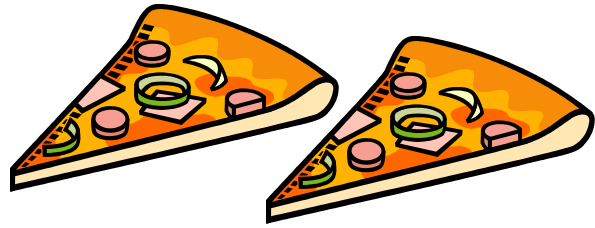http://ritter.tea.state.tx.us/teks/111toc.htm

Concept Statement

Ratios are commonly used by people involving measurement, conversions, rates, time, and money. It is important for students to develop proportional reasoning skills so that they can make smart decisions.

Pre-assessments to learn students prior knowledge

Students should be able to understand fractions as well as compare fractions and perform operations on them. In the engagement activity at the beginning of the unit, I will assess students prior knowledge of these concepts by introducing the topic using examples in life that they have experience with.
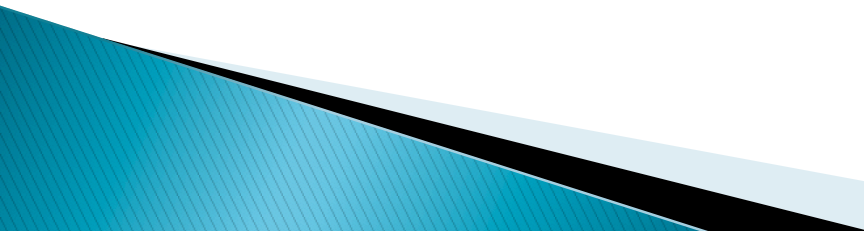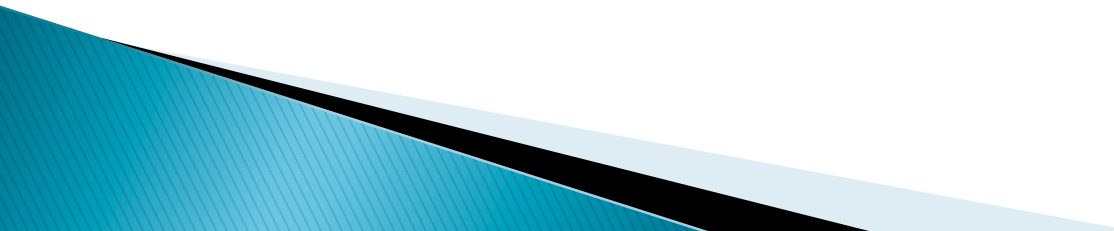
Introduction

As the students enter the classroom, they will be seated in pairs. Each pair will get three cards which will have a picture on it of people and pizza slices. Their task is to order the cards from who will get the least amount of pizza per person to who will get the greatest amount of pizza per person. While they are ordering the cards, they should be discussing their reasons.
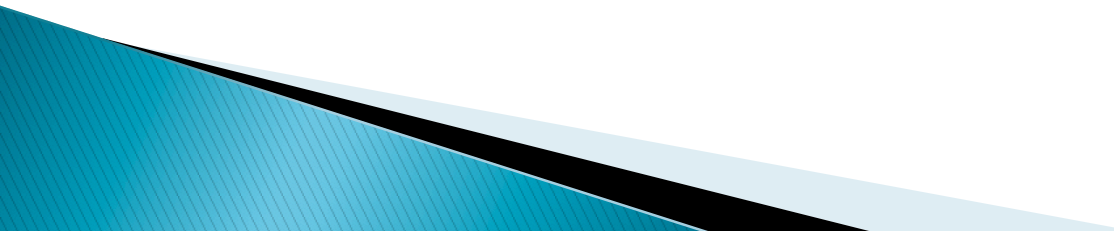
Tasks

- Define ratios and proportions
- Simplify and compare ratios
- Give examples and non-examples or proportional relationships
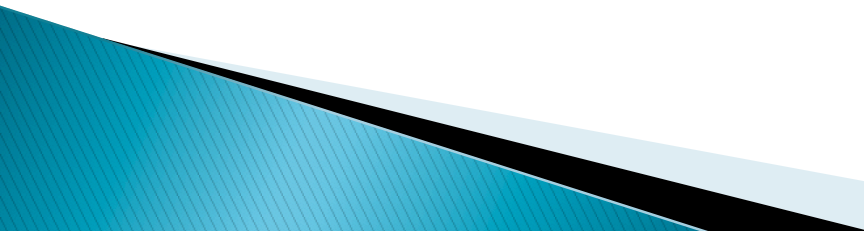- Solve problems using proportions

Process

- Provide opportunities for students to develop concept of ratio and proportion through examples they can understand
- Give students opportunity to come up with their own ratios and proportions
- Create meaningful problems at various levels for students to be involved with.
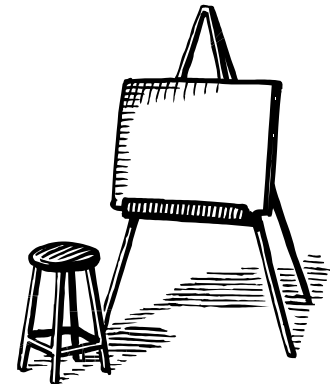- Ask scaffolding questions so that students can form their own knowledge on the topic

Product

- Students will select problems from various topics that use ratios and proportions. Examples of topics would be cooking and measurement, planning a trip and calculating costs, art projects that involve scale models
- Students will have opportunities to present their final products using different forms of representation but all will include certain requirements

Differentiation by Readiness

- The pre-assessments will help me get a sense of what the students already know and how quickly they work.
- Tiered activities will be implemented by having similar problems but will vary in the level of difficulty
- Students who are ready for advanced applications or an abstract generalization will be exposed to it as they are ready.
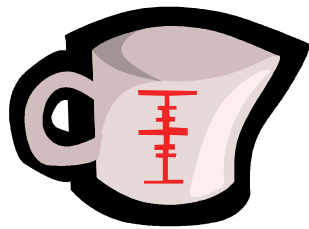
Differentiation by Interest

- Multiple topics of interest will be mentioned in the class such as cooking, traveling, sharing, shopping, and art, film and photograpy.
- Reading materials will be available as an extra resource about how ratios and proportions can be used in these different areas.

Differentiation by Learning Profile

▸ An outline of notes will be presented to students by the teacher after the introduction. Students will have organized information about the topic.

▸ Also in addition to the notes, manipulatives will be utilized in some of the activities that the students will do to grasp the concepts

Closing Remarks

- For students to understand ratios and proportions, they need to see how they are used in everyday life. Giving them the opportunity to work these problems is worthwhile for them and they will remember it much longer than if they were to just practice problems from a textbook.