



6th Grade

Proportions and Ratios

60 minute connection
2 sites per connection



Program Description

Math Mania Proportions and Ratios reviews the mathematical concepts of multiplication, division, ratios, percents, and proportions. Students will compete with other classes to solve math problems. Problems will be presented in a game show format. Problem solving strategies will be discussed and emphasized.

Learning Objectives*

Students will

- Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates
- Use ratios to describe proportional situations
- Represent ratios and percents with concrete models, fractions and decimals
- Use ratios to make predictions in proportional situations
- Use tables and symbols to represent and describe proportional and other relationships such as those involving conversions, arithmetic sequences (with a constant rate of change), perimeter and area

Vocabulary

ratio, proportion, rate, percent

Classroom Preparation

Materials

- Print and bring to the conference the FINAL QUESTION and READY sign, one copy of each per group (pgs 4-5)

Pre-connection Activities

Review the problem solving strategies listed in the “Mathematical Processes” section located on page 2.

Suggested Room Arrangement for Connection

- Organize your students into small groups of 4-5 students for the session.
- Your class will need a team name (1 name for the class).
- Have a designated place for a student to stand on camera for the FINAL QUESTION.
- Make sure all students have materials for problem solving, such as several pieces of paper and pencil. Small dry erase boards are recommended, if available.

Lesson Sequence

(during video conference)

- Greetings and Ground Rules
- Math Mania game show (up to 15 problems possible)
- Debrief
- Goodbyes



Curriculum Extensions

- Have students create their own word problems to use as a review for their classmates.

Related Whirlidurb programs

- Jumping Jack Challenge
- Math Mysteries

Video Conference Tips

- Test with your equipment prior to the video conference, if possible.
- Have your students ready to begin 5 minutes before the scheduled start time of the conference.
- Be prepared to fill in 5 minutes or so, in case of technical issues.
- Be able to mute/unmute the microphone.
- Know who to contact for help.

Mathematical Process Standards

Problems for all grade levels will focus on the following underlying processes. (Based on Math Texas Essential Knowledge and Skills 11-13, Grade 6)

- Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics
- Use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness
- Select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem
- Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models
- Validate his/her conclusions using mathematical properties and relationships



National Standards

Taken from the National Council of Teacher of Mathematics (NCTM) Standards

Number and Operations Standard

In grades 6-8 all students should –

- Work flexibly with fractions, decimals, and percents to solve problems
- Develop meaning for percents greater than 100 and less than 1
- Understand and use ratios and proportions to represent quantitative relationships
- Develop and use strategies to estimate the results of rational-number computations and judge the reasonableness of the results
- Develop, analyze, and explain methods for solving problems involving proportions, such as scaling and finding equivalent ratios

Measurement Standard

In grades 6-8 all students should –

- Solve problems involving scale factors, using ratio and proportion
- Solve simple problems involving rates and derived measurements for such attributes as velocity and density

Texas Essential Knowledge & Skills

Math

- 6.2 C
- 6.3 A, B, & C
- 6.4 A
- 6.11 A, B, & C
- 6.12 A
- 6.13 A

**Learning objectives are based on Texas Essential Knowledge and Skills for 6th grade. Out of state participants should choose a session appropriate for your class based on the objective, regardless of grade level.*



FINAL QUESTION Answer: (Answer must be written down before sharing. One answer per group.)

FINAL QUESTION Wager: (Wager must be written down before sharing. Your wager can be any amount up to your total amount of points. One wager per CLASS.)



READ DAY