Jan. Gr. 7: Ratios and Proportions

Content Area: **Math**
Course(s):
Time Period: **January**
Length: **4-5 Weeks**
Status: **Published**

Unit Overview

Chapter 5:

- Ratios and ratio tables
- Rates and unit rates
- Identifying proportional relationships
- Writing and solving proportions
- Graphs of proportional relationships
- Scale drawings

Enduring Understandings

Students will be able to:

5.1

- write and interpret ratios involving rational numbers
- use various operations to create tables of equivalent ratios
- use ratio tables to solve ratio problems

5.2

- find unit rates for rates involving fractions
- use unit rates to solve rate problems

5.3

- detmine whether ratios form a proportion
- explain how to determine whether quantities are proportional
- distinguish between proportional and nonproportional situations

5.4

- solve proporitons using various methods
- find a missing value that makes two ratios equivalent
- use proportions to represent and solve real-life problems

5.5

- determine whether quantities are proportional using a graph
- find the unit rate fo a proportional relationship using a graph
- create equations to represent proportional relationships

5.6

- find an actual distance in a scale drawing
- explain the meaning of scale and scale factor
- use a scale drawing to find the actual lengths and areas of real-life objects

Essential Questions

Can I write and interpret ratios?

- Can I describe ratio relationships and proportional relationships?
- Can I represent equivalent ratios?
- Can I model ratio relationships and proportional relationships to solve real-life problems?

Instructional Strategies & Learning Activities

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    - Guided Practice
    - Problem of the Day
    - walk around activity on rates and ratios
- Guided Practice
- Do Now
- Extra Practice & Puzzle Time (Resources)
- Scavenger Hunts
- Coloring Activities
- Task Cards (Around the World)
- Maze Activities
- Quizizz Online Assignments
- Kahoot! Online Games

Integration of Career Readiness, Life Literacies and Key Skills

	An individual's strengths, lifestyle goals, choices, and interests affect employment and income.
9.2.8.CAP.1	Identify offerings such as high school and county career and technical school courses, apprenticeships, military programs, and dual enrollment courses that support career or occupational areas of interest.
9.2.8.CAP.2	Develop a plan that includes information about career areas of interest.
9.2.8.CAP.3	Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.
9.2.8.CAP.4	Explain how an individual's online behavior (e.g., social networking, photo exchanges, video postings) may impact opportunities for employment or advancement.
9.4.8.CT	Critical Thinking and Problem-solving
	Multiple solutions often exist to solve a problem.
9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).
	An essential aspect of problem solving is being able to self-reflect on why possible solutions for solving problems were or were not successful.
9.2.8.CAP.10	Evaluate how careers have evolved regionally, nationally, and globally.
9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
9.4.8.DC.5	Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.
	Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income.
9.2.8.CAP.15	Present how the demand for certain skills, the job market, and credentials can determine an individual's earning power.
9.2.8.CAP.16	Research different ways workers/employees improve their earning power through education and the acquisition of new knowledge and skills.
9.2.8.CAP.19	Relate academic achievement, as represented by high school diplomas, college degrees, and industry credentials, to employability and to potential level.
9.4.8.GCA	Global and Cultural Awareness
	Awareness of and appreciation for cultural differences is critical to avoid barriers to productive and positive interaction.
9.4.8.GCA.1	Model how to navigate cultural differences with sensitivity and respect (e.g., 1.5.8.C1a).
9.4.8.GCA.2	Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal.
9.4.8.IML.1	Critically curate multiple resources to assess the credibility of sources when searching for information.
	Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated.
9.4.8.IML.3	Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).
9.4.8.IML.4	Ask insightful questions to organize different types of data and create meaningful visualizations.
9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

	Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.
9.4.8.TL.2	Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
9.4.8.TL.3	Select appropriate tools to organize and present information digitally.

Technology and Design Integration

	Troubleshooting a problem is more effective when knowledge of the specific device along with a systematic process is used to identify the source of a problem.
8.1.8.CS.4	Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.
	Advancements in computing technology can change individuals' behaviors. Society is faced with trade-offs due to the increasing globalization and automation that computing brings.
8.1.8.IC.1	Compare the trade-offs associated with computing technologies that affect individual's everyday activities and career options.
DA	Data & Analysis
	People use digital devices and tools to automate the collection, use, and transformation of data. The manner in which data is collected and transformed is influenced by the type of digital device(s) available and the intended use of the data.
8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.
	Computer models can be used to simulate events, examine theories and inferences, or make predictions.
8.1.8.DA.5	Test, analyze, and refine computational models.
8.2.8.ITH.1	Explain how the development and use of technology influences economic, political, social, and cultural issues.
8.2.8.ITH.2	Compare how technologies have influenced society over time.

Interdisciplinary Connections

LA.RI.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
LA.RI.6.10	By the end of the year read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.W.6.1	Write arguments to support claims with clear reasons and relevant evidence.

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.

- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.

- **Definitions of Differentiation Components**:

    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

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    - Challenges will be presented to students as the need arises.

      Struggling students will get additional personalized instruction, and modifications as needed.

Modifications & Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

Challenges will be presented to students as the need arises.

Struggling students will get additional personalized instruction, and modifications as needed.

IEP and 504 accommodations will be utilized.

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

Additional Benchmarks used in this unit:

End of semester testing

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

- Kahoot! Games
- Quizizz Games
- Homework
- Q & A
- Scavenger Hunts
- Coloring Activities
- Task Cards
- Partner Activities

Summative Assessments

Summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

- Chapter Tests
- Quizzes

Instructional Materials

1. Big Ideas Math: Modeling Real Life 6th Grade Book
2. Quizizz
3. Kahoot
4. Scavenger Hunts
5. Task Cards
6. Coloring Activities

Standards

0x	MA.7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
0x	MA.7.RP	Ratios and Proportional Relationships
0x	MA.7.RP.A	Analyze proportional relationships and use them to solve real-world and mathematical problems.
0x	MA.7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
0x	MA.7.RP.A.2	Recognize and represent proportional relationships between quantities.
0x	MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
0x	MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
0x	MA.7.RP.A.2c	Represent proportional relationships by equations.
0x	MA.7.RP.A.2d	Explain what a point (□, □) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, □) where □ is the unit rate.

0x	MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.