Standard #: MAFS.6.RP.1.2

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Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*

General Information

Subject Area: Mathematics

Grade: 6

Domain-Subdomain: Ratios & Proportional Relationships

Cluster: Level 2: Basic Application of Skills & Concepts

Cluster: Understand ratio concepts and use ratio reasoning to solve problems. (Major Cluster) -
Clusters should not be sorted from Major to Supporting and then taught in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Date Adopted or Revised: 02/14

Content Complexity Rating: Level 2: Basic Application of Skills & Concepts - More Information

Date of Last Rating: 02/14

Status: State Board Approved

Assessed: Yes

Test Item Specifications

N/A

Assessment Limits :
Items using the comparison of a ratio will use whole numbers. Rates can be expressed as fractions, with ":" or with words. Items may involve mixed units within each system (e.g. convert hours/min to seconds). Context itself does not determine the order. Name the amount of either quantity in terms of the other as long as one of the values is one unit.

Calculator :
No

Context :
Required

Sample Test Items (2)

Test Item #: Sample Item 1
Question: Which statement describes a unit rate?

Difficulty: N/A
Type: MC: Multiple Choice

Test Item #: Sample Item 2
Question: Dominic is buying candy by the pound for a party. For every 10 pounds of candy he buys, he pays $12.
What is the cost, per pound, for the candy?

Difficulty: N/A
Type: EE: Equation Editor

Related Courses

Course Number	Course Title
1205010:	M/J Grade 6 Mathematics (Specifically in versions: 2014 - 2015, 2015 and beyond (current))

1205020:	M/J Accelerated Mathematics Grade 6 (Specifically in versions: 2014 - 2015, 2015 - 2020 (current), 2020 and beyond)
1204000:	M/J Intensive Mathematics (MC) (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
7812015:	Access M/J Grade 6 Mathematics (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 and beyond (current))
7912110:	Fundamental Explorations in Mathematics 1 (Specifically in versions: 2013 - 2015, 2015 - 2017 (course terminated))

Related Resources

Assessments

Name	Description
Sample 4 - Sixth Grade Math State Interim Assessment:	This is a State Interim Assessment for sixth grade.
Sample 3 - Sixth Grade Math State Interim Assessment:	This is a State Interim Assessment for sixth grade.
Sample 2 - Sixth Grade Math State Interim Assessment:	This is a State Interim Assessment for sixth grade.
Sample 1 - Sixth Grade Math State Interim Assessment:	This is a State Interim Assessment for sixth grade.

Formative Assessments

Name	Description
Writing Unit Rates:	Students are given verbal descriptions of rates and asked to write them as unit rates.
Identifying Unit Rates:	Students are asked to decide if given statements express unit rates.
Explaining Rates:	Students are asked to explain the meaning of given rates and identify any that are unit rates.
Book Rates:	Students write and explain the meaning of a ratio and corresponding unit rate in the context of a word problem.

Lesson Plans

Name	Description
Build Me a Beach House:	This is a multi-day activity that reinforces science, math, and technology skills by taking the students through the design process. Students will be tasked with designing and building a structure that could withstand high winds and water as would be found close to the seashore.
Rate Your Local Produce Market:	The students will rank the local produce markets by using qualitative and quantitative data. The students will have to calculate unit rates and compare and order them.
Recognizing Proportional Relationships to Develop Sense of Scale:	This 90-minute lesson (15-minute pre-lesson, 60-minute lesson and 15-minute follow up lesson or homework) asks students to analyze proportional relationships to solve real world and mathematical problems. The examples use recipes, paint, and buildings. Students begin by working individually, then in pairs or threes, and then as a whole class. Student will need calculators, large sheets of paper to make a poster and the lesson materials.
Catapult a Rate:	This lesson uses student created data to find the unit rate of distance per time. Students catapult three different coins, measure time and distance to find the rate of flight for each coin.
"Analyzing Wordless Stories" An Introduction to Solving Unit Rates:	In this lesson, students will apply their understanding of ratios and prior knowledge of division to determine the unit rate for a given ratio. After some initial instruction on unit rates, students will determine unit rates from diagrams with teacher guidance, and they will determine unit rates from narrative descriptions independently.
The Best Domestic Car:	In this MEA students will use problem-solving strategies to determine which car to recommend to Americans living in India.
Savvy Shopper:	This a culminating activity for unit rates that has students apply knowledge to purchasing groceries. Specifically how knowledge of unit rates can help save money over time.
What Does a Ratio Look Like?:	The class will use a PowerPoint presentation to take a stroll down the beach for some ice cream. The students must investigate how to write the number of ice cream cones in relation to the cost of ice cream.
Best Day Care Center in the Neighborhood:	This MEA requires students to formulate a comparison-based solution to a problem involving choosing the best day care center in the neighborhood for the residents of Dream Living Housing Community. Students are provided the context of the problem, a request letter from a client asking them to provide a recommendation, and data relevant to the situation. Students utilize the data to create a defensible model solution to present to the client.
Orange Juice Conversion:	In this MEA, the students will be able to convert measurements within systems and between systems. They will be able to use problem solving skills to create a process for ranking orange juices for a Bed and Breakfast.
Is It Fair?:	In this lesson students will use their understanding of ratios and unit rate to solve problems where they must decide whether various situations are fair.
Pancakes over a Campfire!:	In this activity, students will learn how to set up ratios and calculate unit rates using a recipe.

Perspectives Video: Expert

Name	Description
Statistical Sampling Results in setting Legal Catch Rate :	Fish Ecologist, Dean Grubbs, discusses how using statistical sampling can help determine legal catch rates for fish that may be endangered.

Perspectives Video: Professional/Enthusiasts

Name	Description
Unit Rates in Swimming:	In this video, David Fermin demonstrates real-time estimates for monitoring swimming performance and physiology.
Unit Rate: Spring Water Bottling:	Nestle Waters discusses the importance of unit rate in the manufacturing process of bottling spring water.
Unit Rate and Florida Cave Formation:	How long does it take to form speleothems in the caves at Florida Caverns State Parks?
Pizza Pi: Area, Circumference & Unit Rate:	How many times larger is the area of a large pizza compared to a small pizza? Which pizza is the better deal? Michael McKinnon of Gaines Street Pies talks about how the area, circumference and price per square inch is different depending on the size of the pizza.
Amping Up Violin Tuning with Math:	Kyle Dunn, a Tallahassee-based luthier and owner of Stringfest, discusses how math is related to music.
Coffee Mathematics: Ratios and Total Dissolvable Solids:	Math - the secret ingredient for an excellent cup of coffee!
Bicycle Mathematics: Selecting Gear Ratios for Performance:	Don't let math derail you. Learn how bicycle gears use ratios to help you ride comfortably on all kinds of terrain.

Problem-Solving Tasks

Name	Description
Running at a Constant Speed, Assessment Variation:	In this assessment, students are asked questions involving distance, rate, and time. Students will use and analyze concepts of ratio, unit rate, proportion, and proportional units.
The Escalator, Assessment Variation:	Students are provided seven choices and are asked to determine the ratios that are correct for the given context.
Mangos for Sale:	Students are asked to determine if two different ratios are both appropriate for the same context.
Price Per Pound and Pounds Per Dollar:	Students are asked to use a given ratio to determine if two different interpretations of the ratio are correct and to determine the maximum quantity that could be purchased within a given context.
Ratio - Make Some Chocolate Crispies:	In this activity students calculate the ratio of chocolate to cereal when making a cake. Students then use that ratio to calculate to amount of chocolate and cereal necessary to make 21 cakes.

Unit/Lesson Sequence

Name	Description
Functions-Day Trips (National Security Agency):	In this 3-lesson unit, Students explore functions as they use their knowledge of patterns and number operations to analyze function tables and graph them. Using tables and graphs, students determine which items are the best deals.

Virtual Manipulative

Name	Description
Planet Size Comparison: Ratio:	Images of two planets selected on two drop-down menus with a display of their respective diameters and the applicable ratio.

Student Resources

Problem-Solving Tasks

Name	Description
Mangos for Sale:	Students are asked to determine if two different ratios are both appropriate for the same context.
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Parent Resources

Problem-Solving Tasks

Name	Description
Mangos for Sale:	Students are asked to determine if two different ratios are both appropriate for the same context.
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Ratio - Make Some Chocolate Crispies:	In this activity students calculate the ratio of chocolate to cereal when making a cake. Students then use that ratio to calculate to amount of chocolate and cereal necessary to make 21 cakes.