Bridging for Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Standard of Learning (SOL) 6.12b Determine the unit rate of a proportional relationship and use it to find a missing value in a ratio table



Student Strengths	Bridging Concepts	Standard of Learning
Students can multiply and divide fluently.	Students can recognize relationships that are proportional and determine equivalent ratios.	Students can determine the unit rate of a proportional relationship and use it to find a missing value in a ratio table.

Understanding the Learning Trajectory

Big Ideas:

- Proportional relationships can be expressed using verbal descriptions, tables, and graphs (VDOE, Curriculum Framework).
- Unit rates are used to determine additional proportional relationships. (Arizona, Ratios and Proportional Reasoning, p.5)
- Any ratio can be converted into a unit rate, which describes how many units of the first quantity of a ratio correspond to one unit of the second quantity (VDOE, Curriculum Framework).
- Ratio tables are used to represent proportional relationships that include pairs of values that represent equivalent rates and ratios (VDOE, Curriculum Framework).

Formative Assessment:

- Just in Time Mathematics Quick Check 6.12b Word
- Just in Time Mathematics Quick Check 6.12b PDF
- Just in Time Mathematics Quick Check 6.12b Desmos

Important Assessment Look Fors:

- The student can determine a unit rate when given a proportional relationship.
- The student can use proportional relationships in real world contexts.

Copyright ©2021 by the Commonwealth of Virginia, Department of Education, P.O. Box 2120, Richmond, Virginia 23218-2120. All rights reserved. Except as permitted by law, this material may not be reproduced or used in any form or by any means, electronic or mechanical, including photocopying or recording, or by any information storage or retrieval system, without written permission from the copyright owner. Commonwealth of Virginia public school educators may reproduce any portion of these items for non-commercial educational purposes without requesting permission. All others should direct their written requests to the Virginia Department of Education at the above address or by e-mail to vdoe.mathematics@doe.virginia.gov.

- The student can use unit rates to compare two different ratios.
- The student can use multiplication/division to determine additional proportional relationships.

Purposeful Questions:

- What strategy did you use to determine the unit rate?
- How can you use the unit rate to determine additional proportional relationships in this scenario?
- How can you use the unit rate to determine a better deal?
- Are these numbers proportional? How do you know?
- What is the relationship between these two numbers?

Bridging Activity to Support Standard	Instructional Tips
Routine Would You Rather, MathStrength Convince Me That, MathStrength	A variety of "would you rather" scenarios that focus on unit rate. Students should make an initial judgement and then be given time to determine which option is the better deal (or decide if there is a better deal). The Convince Me That routine can be used to determine the best deal when finding a unit rate.
Rich Tasks Illustrative Mathematics - Ticket Booth	Students need to determine if the cost of tickets increases at a proportional rate and if not, what is the best deal for buying tickets.
Games/Tech Mixing Lemonade - NRICH Desmos 6.12b Click Battle Desmos 6.12b Sugar Sugar Desmos 6.12acd Marcellus the Giant	This is a challenging activity where students need a solid understanding of how to find unit rate in order to determine which lemonade mix is stronger. In this proportional reasoning activity, students will explore unit rate in the Click Battle arena. Students will use unit rates in various ways to compare the sugary-ness of five cereals. They order the cereals from least to most sugary and read graphs to determine useful information—especially unit rate. This activity will help your students understand the definition of a proportional relationship. They'll create a giant and then make sure all of his features are proportional. They'll see the representation of his proportions on a graph and manipulate the graph to see the giant change dynamically. Learners will also determine relationships in tables to determine missing values in the tables.

Other Resources:

- 3 Act Task - The Clapper. In this 3 Act Task, students need to use the information in Act 1 to determine how many times "the clapper" can clap in 1 minute.
- VDOE Mathematics Instructional Plans (MIPS)
  - 6.12ab – Ratio Tables and Unit Rates (Word) / PDF
- VDOE Algebra Readiness Formative Assessments
  - 6.12b (Word) / PDF
- VDOE Algebra Readiness Remediation Plans
  - Ratio Tables and Unit Rates (Word) / PDF
- VDOE Word Wall Cards: Grade 6 (Word) / PDF
  - Ratio Table
  - Proportional Relationship
  - Unit Rate: Definition

    - Unit Rate: Examples
    - Connecting Representations
- Desmos Activities
    - Marcellus the Giant
    - Click Battle: Students need to use information to determine the unit rate for each bot to determine who will win the battle.
    - Sugar Sugar
    - Better Deal: Students need to determine unit rate to decide which option is a better deal to purchase.

Learning Trajectory Resources

Charles, R. (2005), Big ideas and understandings as the foundation for elementary and middle school mathematics. *Journal of Mathematics Education Leadership*, *7*(3), NCSM.

Common Core Standards Writing Team. (2019). Progressions for the Common Core State Standards for Mathematics. Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Van De Walle, J., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally.* (10th edition) New York: Pearson (2019:9780134802084)

VDOE Curriculum Framework for All Grades - Standard of Learning Curriculum Framework (SOL)