Unit 2: Rates/Unit Rates/ Percents/ Proportions

Content Area: **Math**
Course(s):
Time Period: **MP2**
Length: **45**
Status: **Published**

NJSLS

HS.A-CED.A.1 Create equations that describe numbers or relationships 1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

HS.A-CED.A.2 Create equations that describe numbers or relationships 2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales

HS.A-REI.A.1 Understand solving equations as a process of reasoning and explain the reasoning 1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Rationale, Transfer Goals, and Enduring Understandings

This unit develops the students' understanding on how to use a ratio and proportion in a myriad of real world situations. The students will understand how to apply a ratio and proportion to compare and transfer information when dealing with loans, taxes, cost effectiveness and budgeting. The unit continues to strengthen those skills by using percents to help them navigate situations that involve projecting money situations.

Essential Questions

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    - What is a ratio?

- What is a unit rate? What is the constant of proportionality?
- How are unit rates used in the real world?
- How can we compute unit rates for ratios and rates specified by rational numbers?
- How do you determine a proportional relationship? What about nonproportional relationships?
- How can proportional relationships be used to solve applications including determining similarity?
- How can solving percentages be applied to real world situations?

Content

- Ratios
- Rates and Unit Pricing
- Proportions
- Solving Proportions
- Writing Percents as Fractions and Decimals
- Writing Decimals and Fractions as Percents
- The Three Types of Percent ProblemsApplications of Percent Problems

Skills

-Write the ratio of two quantities in simplest form

-Write a rate as a unit rate

-Interpret and compare unit rates

-Use unit prices to compare the cost of two items

-Write a proportion

-Determine whether two fractions are proportional

-Determine whether two rates are proportional

-Solve a proportion for an unknown value

-Solve and application involving a proportion

-Write a percent as a fraction or mixed number

-Write a decimal, fraction or a mixed number as a percent

-Identify the rate, base, and amount in a percent problem

-Solve the three types of percent problems

-Solve applications of percents

-Solve applications that involve percent increase and decrease

-Solve percent applications involving interest

Activities/Strategies

Math practice individually, whole group, and small group.

Peer group leadership

Student presentations of concepts and demonstration of skills

Partners or group work (groups formed heterogeneously according to ability)

Students given access to Google Classroom

Students given access to Screencastify

Edpuzzle

Khan Academy

Evidence (Assessments)

Formative

Teacher observation and questioning

Seat and or group work

Fist to five/ Thumbs up, thumbs down

Homework

Student participation at board

Summative

Edpuzzle pro quizzes

Notebook Quiz

Homework Checks

Regular Quizzes and tests

Unit 2 Benchmark Assessment

Spiraling for Mastery

Content or Skill for this Unit	Spiral Focus from Previous Unit	Instructional Activity
-Ratios and Proportions -Percents -Percent increase and decrease -Percents with respect to loans -Geometry -Perpendicular and Parallel lines -Triangles and their properties -Circles and Composite Figures -Triangles -Square roots and the Pythagorean Theorem	• -Adding, Subtracting, Multiplying and Dividing Real Numbers -Adding, Subtracting, Multiplying and Dividing Fractions -Adding, Subtracting, Multiplying and Dividing mixed numbers • -Adding, Subtracting, Multiplying and DIviding decimals -Rounding, estimation and order of whole numbers -Exponential Notation and the order of operations	Students given handouts of powerpoint notes Students provided with google slide presentations Students given access to online help from multiple locations Partners or group work (groups formed heterogeneously according to ability) IXL https://www.ixl.com/inspiration/get-started Open Source activities below from Illustrative Math • Climbing the steps of El Castillo • Dueling Candidates • Sale! • Temperature Change • Cooking with the whole cup • Track Practice • Buying Bananas,

		Assessment Variation • Buying Coffee • Gym Membership Plans • Proportionality • Finding a 10% Increase • Gotham City Taxis

Career Awareness, Exploration, Preparation, and Training

9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
9.4.12.IML.1	Compare search browsers and recognize features that allow for filtering of information.

21st Century Skills

CRP2. Apply appropriate academic and technical skills.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

Interdisciplinary Connections

NJSLS ELA

NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

NJSLA Science

HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency,

wavelength,

and speed of waves traveling in various media.

HS-PS3-1. Create a computational model to calculate the change in the energy of one component in a system when the

change in energy of the other component(s) and energy flows in and out of the system are known.