Lindenwold Public Schools

Unit 2
Rates/Unit Rates/Percents/Proportions
45 Instructional School Days

Targeted Standards

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 and Transfer Goals:

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.

Enduring Understandings:

- Proportional relationships are made up of equivalent ratios.
- In proportions, unknowns can be determined by applying cross products to set up and solve an equation.
- A proportion may be solved to convert between units of measurement.
- A percent is a ratio out of one hundred.
- Proportional relationships express how quantities change in relationship to each other.

Essential Questions:

- 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/Objectives		Instructional Actions	
Content *What students will know*	**Skills** *What students will be able to do*	**Activities/Strategies** *How we teach content and skills*	**Evidence (Assessments)** *How we know students have learned*
- Ratios - Rates and Unit Pricing - Proportions - Solving Proportions - Writing Percents as Fractions and Decimals	-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	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)	**Formative** Teacher observation and questioning Seat and or group work Fist to five/ Thumbs up, thumbs down Homework Student participation at board

● Writing Decimals and Fractions as Percents ● The Three Types of Percent Problems ● Applications of Percent Problems	-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	Students given access to Google Classroom Students given access to Screencastify Edpuzzle Khan Academy	**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	-Adding, Subtracting, Multiplying and Dividing Real Numbers -Adding, Subtracting, Multiplying and Dividing Fractions -Adding, Subtracting, Multiplying and Dividing mixed numbers	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)

-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 decimals
	
	-Rounding, estimation and order of whole numbers
	
	-Exponential Notation and the order of operations
		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

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.

Career and Technical Education

9.2.12.CAP.2: Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.

9.2.12.CAP.3: Investigate how continuing education contributes to one's career and personal growth

Key resources:

IXL

Khan Academy

[Illustrative Math](#)
[Savvas Envision AGA series](#)

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.