Unit 07: Percents

Content Area: **Mathematics**
Course(s): **Mathematics**
Time Period: **Week 19**
Length: **3 Weeks**
Status: **Published**

Unit Overview

This unit will begin with students exploring the meaning of percents. Students will learn how to convert between percents, decimals, and fractions. From there, students will be introduced to the percent proportion. This will allow students to calculate the percent of a number, or find the percent of one number to another. From there, students will "real world" problems involving percents. Next, students will be introduced to the percent of change proportion. Students will be able to build upon their knowledge of the percent proportion and apply it to finding the percent of change. Then students will explore percent applications to find the sale price of an item, or how much an item will cost after tax. Lastly, students will have a brief introduction of simple and compound interest. Students will learn how to find the interest gained then find the balance of their account.

Standards

MA.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
MA.6.RP.A.3c	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
MA.6.EE.B.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

Essential Questions

- How will our previous knowledge regarding converting between fractions and decimals help us with percents?
- In what ways in our everyday lives do we encounter percents?
- Why is it imperative to have a strong foundation in proportions when dealing with percents?

Application of Knowledge and Skills...

Students will know that...

- Compound interest is interest on your principle along with any previously earned interest.
- Discount and percent off refer to discounts. (When students find the change they should know to subtract from the original cost.)
- Percents are really a ratio whose denominator is one hundred.
- Simple interest is interest based on your principle amount.
- Tax, tip, and percent increase all refer to markups. (When students find the change they should know to add to the original cost.)
- There are two proportions we use when dealing with percents: is/of = percent/100 and part/whole = percent/100 (used with word problems).
- To convert from a decimal to a percent you move the decimal point two places to the right.
- To convert from a percent to a decimal you move the decimal point two places to the left.
- When finding the percent by which something changed, you use the percent of change proportion, which is: change/original = percent/100.
- When solving all proportions it is beneficial to simplify the ratios first.
- When using the percent equation, the percent must always be converted to a decimal.

Students will be skilled at...

Students will be able to:

- Apply their knowledge of the percent proportion to solving percent application problems.
- Calculate the percent increase or decrease from the original total to the new total.
- Calculate the simple or compound interest for a given situation and calculate to find the balance of the account.
- Calculate the tax, tip, or discount for a given situation and calculate the new price.
- Convert between fractions, decimals, and percents.
- Organize information from a given problem and set up a percent proportion.
- Solve proportions utilizing either the arrow method or cross products method.

Assessments

Digits Readiness Assessments:

The readiness assessment screens students on their understanding of the prerequisite content of a unit. Students are then assigned invidualized intervention lessons to address specific needs.

- Do Now Exercises Diagnostic: Suggested Instructional/Assessment Strategies The purpose of these do now exercises is to review and remediate when necessary the concepts learned during class.
- My Wish List Formative: Other written assessments This assessment will link the concept of percent applications to the students' lives.
- Percent Poster Summative: Other visual assessments This percent poster will have students utilize percent applications and apply them to a real-world siuation (a store is going out of business).

- Percent Unit Quiz Formative: Written Test This unit quiz will include skills and knowlege from the first half of the unit including: converting among percent, decimal, and fraction, utilizing the percent proportion, and solving real-world percent word problems.
- Percents Unit Test Summative: Written Test This unit test will include all skills/concepts from the unit.
- Shopping Activity Formative: Self Assessment The purpose of this shopping activity is for students to work with their peers to determine which store is offering the best deal on each item. Students will be heterogeneously grouped and assigned a particular store.
- Smart Pal Reviews Formative: Other written assessments These Smart pal reviews provide a whole-class assessment. Data will be used for determining remediation or challenge required.

Activities

- **Shopping Activity:** this activity comes from the activity generator. Students will be divided into groups of four. Students will be presented with various items and the discounts for those items at four different stores. Students find the price of the item at each of the four stores. The students will be assigned stores by ability level. Points will be awarded for the students to correctly identify which store has the best deal.
- **Smart Pal Reviews:** these Smart pal reviews provide a whole-class assessment with leveled questions for various abilities.
- **Percent Foul Shots:** in this teacher-generated activity, students take turns shooting a given number of foul shots. Students will then compare how many shots they made to the total number of shots. Students will present this information as a fraction, a decimal, and a percent. Students will construct a proportion to predict how many shots they would make if they shot 75 times.
- Students who master the percent proportion may utilize the percent equation.
- Provide calculators to assist students with larger calculations.
- Provide completed study guides as needed.
- **Digits cd grade 7**

Launch Activity

Restaurant Math r3: In this activity students will look at examples about eating at a restaurant to review order of operations and to find percent of a number.

Summer Olympics r6: In this activity students will solve problems related to the summer Olympics to review long division, operations with decimals, and solve percent problems.

Activities to Differentiate Instruction

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- **Digits Supported Materials:**
    - Math XL Printables
    - Leveled Homework G and K
    - Help Me Solve This: This function scaffolds math problems by asking prompting question at each individual step.
    - View An Example: This function provides a fully worked out step-by-step solution of a similar problem.
    - Readiness Assessment: After a student completes the readiness assessment intervention lessons are individually assigned to address prerequisite skills .
    - Tools: On line manipulatives

Integrated/Cross-Disciplinary Instruction

- **Economics:** relate the concept of percents to shopping discounts. Have students go on imaginary shopping trips to find out which store has the best deal, or how much money can be saved by shopping at a particular store.
- **Business:** have students create an "eye-catching" display to make people want to shop at their store. Also have students write a paragraph as to why people should want to shop at their store, and what types of deals and discounts their store offers.

Resources

Kuta software

Digits teacher materials and support: www.pearsonrealize.com

SMART Exchange

Digits student access and support: www.MyMathUniverse.com

-373Punchline/Pizzazz worksheets (self correcting)

Smartboard Lessons

Kuta generated worksheets dealing with percents and percent applications

My Shopping List activity directions

Teacher generated directions for the percent poster project.

Activity generator for the group shopping activity

21st Century Skills

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.
CRP.K-12.CRP11.1	Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
CRP.K-12.CRP12.1	Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.