COMMUNITY LEARNING CENTER LESSON PLAN

Level *(preGED or GED):* GED

Content Area *(RLA, Math, Science, Social Studies):* Math

General Topic: Arithmetic

Specific Lesson Title: Percents

Estimated Time: 180 minutes

Anchor(s) & Level(s)	CCR Standards CCRS Level D: Ratios and Proportional Relationships • Calculate percents including part, whole, percent, and percent change. • Understand ratio concepts and use ratio reasoning to solve problems. • Analyze proportional relationships and use them to solve real-world problems. GED Assessment Targets Q.3.d: Solve two-step, arithmetic, real world problems involving percents. Examples include but are not limited to: simple interest, tax, markups and markdowns, gratuities and commissions, percent increase and decrease.	*Practice(s)*	MP 3

SWBAT:

- Understand percent as a ratio out of 100
- Define percent and link definition to understanding of fractions and decimals
- Fluently convert between fractions, decimals, and percents
- Solve percent problems for part, whole (base), and percent (rate)
- Solve two-step, real-world problems involving percents
- Calculate simple interest
- Calculate percent increase and decrease

Kaplan New GED Test Strategies, Practice, and Review

Steck-Vaughn GED: Test Preparation Student Workbook Mathematical Reasoning

TI-30xs MultiView calculators

Web resources:

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic Ratios, Rates, and Percentages video series from Khan Academy

http://eworkshop.on.ca/edu/pdf/Mod27_template_for_10x10_grid.pdf 10 by 10 grid printable for visualizing percent

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic/cc-6th-percentages/e/converting-between-fractions-and-percents online practice in converting between fractions and percents

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic/cc-6th-percent-decimal-conversions/e/converting_percents_to_decimals

http://www.math-aids.com/Percent/Convert_Between_PDF.html: Worksheet generator on fraction, decimal, percent conversion

Teacher/Developer: [Type text] Date: [Type text]

More practice converting between percent, fraction, decimal:
http://www.mathgoodies.com/worksheets/pdf/unit4_wks3.pdf (key:
http://www.mathgoodies.com/worksheets/pdf/unit4_wks3_key.pdf)

Who has/I have game with fractions, decimals, and percents
https://www.bigideasmath.com/uploads/games/i_have_who_has.pdf

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic/cc-6th-percent-word-problems/e/percentage_word_problems_1 (online practice on percent application problems)

http://www.mathgoodies.com/worksheets/pdf/unit10_wks1.pdf (key:
http://www.mathgoodies.com/worksheets/pdf/unit10_wks1_key.pdf) printable on basic percent applications

http://www.mathgoodies.com/worksheets/pdf/unit10_wks2.pdf (key:
http://www.mathgoodies.com/worksheets/pdf/unit10_wks2_key.pdf)Mixed percent application problems

http://www.mathgoodies.com/worksheets/pdf/unit10_wks3.pdf (key:
http://www.mathgoodies.com/worksheets/pdf/unit10_wks3_key.pdf) More mixed percent application problems

CLASSROOM ACTIVITIES OR PROCEDURES ***(What specific steps will you follow to execute the lesson? What will you say and do? What will the learners do?)***

Pre-lesson activities (30 minutes)

1) Review homework and answer questions. Discuss problems from exit ticket that students had trouble with.

Lesson (2 hours plus 10 minute break)

2) Meaning of Percent

Define percent as a ratio or fraction "out of 100" – show "meaning of percent" video from https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic or use print resource like this 10 by 10 grid to demonstrate http://eworkshop.on.ca/edu/pdf/Mod27_template_for_10x10_grid.pdf

Use the visual to help students understand that to find the percent, you are looking for an equal ratio or fraction with a denominator of 100. Show several examples. Introduce vocabulary "base, part, rate" or "whole, part percent" to describe.

3) Writing percent in equivalent forms

To calculate with percent, we often change it to decimal form or fraction form in lowest terms. Demonstrate converting between forms. Provide time for guided practice. Suggested resources:

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic/cc-6th-percentages/e/converting-between-fractions-and-percents

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic/cc-6th-percent-decimal-conversions/e/converting_percents_to_decimals

Worksheet generator for percent/decimal/fraction conversions: http://www.math-aids.com/Percent/Convert_Between_PDF.html

More practice converting between percent, fraction, decimal:
http://www.mathgoodies.com/worksheets/pdf/unit4_wks3.pdf (key:
http://www.mathgoodies.com/worksheets/pdf/unit4_wks3_key.pdf)

Who has/I have game with fractions, decimals, and percents
https://www.bigideasmath.com/uploads/games/i_have_who_has.pdf

4) Basic Problem-solving with percents

Introduce either part:whole (base) = %(rate):100 or Part = whole (base) x %in decimal form (rate), or introduce both and allow students to choose the method they prefer.

Model one-step percent word problems that require solving for either part, whole, or %.

Model two-step word problems (i.e. total bill with tax, final price after discount).

Provide time for guided practice. Suggested resources:

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic/cc-6th-percent-word-problems/e/percentage_word_problems_1 (online practice)

http://www.mathgoodies.com/worksheets/pdf/unit10_wks1.pdf (key:
http://www.mathgoodies.com/worksheets/pdf/unit10_wks1_key.pdf)

Kaplan pg. 269, 271

5) Special percent applications

Model percent change and simple interest problems

Provide time for guided practice. Suggested resources:

Kaplan pg. 275 (simple interest)

Kaplan pg. 277 (percent change)

http://cdn.kutasoftware.com/Worksheets/Alg1/Percent%20Change.pdf (percent change practice)

6) Putting it all together

Have students do independent or team-based practice on a variety of percent problems. Invite students to volunteer to demonstrate at board, talking through their solutions.

Suggested resources:

Steck-Vaughn pg. 26-29

http://www.mathgoodies.com/worksheets/pdf/unit10_wks2.pdf (key: http://www.mathgoodies.com/worksheets/pdf/unit10_wks2_key.pdf)

http://www.mathgoodies.com/worksheets/pdf/unit10_wks3.pdf (key: http://www.mathgoodies.com/worksheets/pdf/unit10_wks3_key.pdf)
Kaplan pg. 278-281 (unit review, includes ratio, proportion, and percent)

Closure (20 minutes)

- Play a quick game of "Who Has/I Have" if time allows, or if not played earlier.
- Assign homework
- Provide and collect an "exit ticket" with one or two word problems reviewing today's work that students must turn in before leaving.

ASSESSMENT ACTIVITIES ***(How will you know that the learners have met the objectives for this lesson?)***

- Circulate during guided practice and note areas of understanding and difficulty
- Collect and check exit ticket, go over any that were particularly difficult for most students during pre-lesson at nest session.

HOMEWORK

- Assign any of the mixed practice assignments from item 6 that were not completed in class.
- Assign additional practice on basics, i.e. fraction/decimal/percent conversion, if needed.