ipdae INSTITUTE FOR THE PROFESSIONAL DEVELOPMENT OF ADULT EDUCATORS

Module: Mathematical Reasoning

Lesson Title: The Consumer Price Index: Calculating Change

Objectives and Standards

Students will:

- Compute percentage of increase and decrease using information from a table.
- Determine whether inflation or deflation has occurred between decades

Mathematical Reasoning 2014 GED® Assessment Targets	Mathematical Practices 2014 GED® Assessment Targets
Compute with and solve problems using rational numbers. (Q.2.a, Q.2.b) Solve two-step, arithmetic, real-world problems that involve ratios, proportions, and percents. (Q.3.c, Q.3.d) Represent, display, and interpret categorical data in bar graphs, circle graphs, dot plots, histograms, box plots, tables, and scatter plots. (Q.6)	Make sense of problems and persevere in solving them. (MP1) Use appropriate tools strategically. (MP5) Attend to precision. (MP6) Look for and make use of structure. (MP7)

Materials

- Computers and internet access
- Calculators
- *Consumer Price Index (Percentages of Change)* Activity Sheet

Instructional Plan

Overview

In this lesson, students calculate changes in the price level of consumer goods and services using information from the Consumer Price Index (CPI). Students will calculate percentage of increase or decrease using a mathematical formula and information from provided tables.

Process

Begin the lesson by asking students if they have ever heard of the Consumer Price Index (CPI). Share with students that the CPI measures changes in the price level of consumer goods and services purchased by households. The CPI inflation calculator uses the average Consumer Price Index for a given calendar year. This data represents changes in prices of all goods and services purchased for consumption by urban households. This index value has been calculated every year since 1913. For example, in 1913 something that cost $1.00 would cost $23.53 in 2013. That's a huge increase.

Share with students that today they will be comparing the comparative costs of goods in different decades by using data obtained from the inflation calculator from the Bureau of Labor and Statistics. The calculator is located at: http://data.bls.gov/cgi-bin/cpicalc.pl

Show students how the calculator works by putting in $100 for 1920 and determining how much that $100 would be worth in 2013 ($1,164.79).

Have students select a partner with whom to complete the activity. Provide each team with a copy of the *Consumer Price Index (Percentages of Change)* Activity Sheet and calculators.

Show students how something that cost $10 in 1920 would cost $109.03 in 2010. Discuss that they will be calculating the percentage of increase or decrease (inflation or deflation) for each decade period.

Model for students how to complete the first example:

$10.00 - $8.35/$10.00 X 100 = 16.5% decrease

Have students complete the chart. Debrief the activity by discussing their answers, as well as discussing what was occurring historically during the different decades.

Sample Debriefing Questions

- Which decades had the largest percent increase? How much?
- Did the CPI ever have a percent decrease? If so, which year(s)? What events could have contributed to this decrease?
- How could you use the CPI calculator? Why is this type of information important?

Assessments/Extensions

1. Have students identify something that they have recently purchased. Using the CPI calculator, have students determine the cost of the item 100 years ago, 50 years ago, 25 years ago, and 10 years ago. Have students determine the percentage of increase for each time frame. Students will need to determine how to use the calculator when using a current year as opposed to a past time frame.
2. Provide students with a more complex beginning amount on which to determine percent, such as: $139.46. This provides students with additional practice in calculating percentages of increase and decrease.
3. Have students brainstorm different ways in which they use percent of increase and decrease in their daily lives. Discuss the importance of understanding the basic economic concepts of inflation and deflation and how each impacts one's buying and purchasing power. From interest rates to the value of money to the cost of goods and services, inflation and deflation are important concepts to understand. Students may wish to research more about these two terms and how these economic concepts affect them in their lives.

Consumer Price Index (Percentages of Change)

Directions: Fill out the chart below to determine the percent of inflation for each decade. Use the data in the Buying Power Equivalent Chart to determine the percentage of change.

Remember, percent change = difference/original x 100.

Percent Change Between the Years	
Decade	**Percent of Change (increase/decrease)**
1920-1930	
1930-1940	
1940-1950	
1950-1960	
1960-1970	
1970-1980	
1980-1990	
1990-2000	
2000-2010	
1920-2010	

Buying Power Equivalents (Based on CPI)

1920	**$10.00**
1930	**$8.35**
1940	**$7.00**
1950	**$12.05**
1960	**$14.80**
1970	**$19.40**
1980	**$41.20**
1990	**$65.35**
2000	**$86.10**
2010	**$109.03**