Unit 2b-Generate Equivalent Expressions

Content Area: **Math**
Course(s): **Math 7 PRE-ALGEBRA**
Time Period: **Marking Period 2**
Length: **Weeks 4-7 Envision Mathematics Topic 5**
Status: **Published**

Essential Questions

- How can properties of operations help to generate equivalent expressions that can be used in solving problems?

Big Ideas

- Use algebraic expressions to represent problems with unknown values.
- Apply properties of operations to rewrite expressions and show that equivalent expressions can be used to show relationships between quantities.
- Algebraic expressions can be expanded and factored using the distributive property.
- Expressions are added and subtracted by combining like terms.

CRLLKS- 21st Century

9.1.8.CR.1: Compare and contrast the role of philanthropy, volunteer service, and charities in community development and the quality of life in a variety of cultures.

9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance.

9.1.8.CR.4: Examine the implications of legal and ethical behaviors when making financial decisions.

Connection:

Create word problems based upon career choices. Teachers can use percentage problems to represent the percentage of adults in different career fields.

Cross-Curricular Integration

Integration Area: Language Arts

LA.W.AW.7.1 Write arguments on discipline-specific content (e.g. social studies, science, technical subjects, English/Language Arts to support claims with clear reasons and relevant evidence

LA.W.AW.7.1.A Introduce claim(s), about a topic or issue,acknowledge alternate or opposing claims, and organize the reasons and evidence logically

LA.W.AW.7.1.B Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using accurate, credible sources and demonstrating an understanding of the topic or text.

LA.W.AW.7.1.C Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence.

LA.W.AW.7.1.D Establish and maintain a formal style/academic style, approach, and form.

LA.W.AW.7.1.E Provide a concluding statement or section that follows from and supports the argument presented.

LA.W.WP.7.4 With some guidance and support from peers and adults, develop and strengthen writing as needed by planning,; flexibly making editing and revision revision choices and sustaining effort to complete complex writing tasks; and focusing on how well purpose and audience have been addressed.

LA.W.WR.7.5 Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.

LA.W.SE.7.6 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. Students may determine the credibility of multiple digital and print data sources that can be used as supporting evidence in constructing a model for describing the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

LA.W.RW.7.7 Write routinely over extended time frames (time for research, reflection, metacognition/self-correction, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

Activity:

Financial Stock Market (Percent of change) Students will gain background knowledge related to stocks and the stock market. Students then select and research a publicly traded company that they are interested in and locate the following: Company Name, function, owners, management, and location. Students will use online tools to monitor, track and graph the stock's performance. Students will summarize the stock performance

using words, graphs and percents. Would you recommend this stock to investors? Based on the collected data, students will write an argument that recommends or discourages purchases of their stock. Justify your recommendation with evidence from your analysis.

CSDT Technology Integration

8.1.8.AP.1: Design and illustrate algorithms that solve complex problems using flowcharts and/or pseudocode.

8.1.8.AP.2: Create clearly named variables that represent different data types and perform operations on their values.

8.1.8.AP.3: Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

8.1.8.AP.4: Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs

Activity:

The students are given a cup of multicolored unit cubes. Then, the students create a table of data that states a fraction of each color in comparison to the total. The students take the fractions and convert them into percentages. Based on their percentages they draw a circle graph. Afterwards, the students create a digital circle graph of the data using the website Geogebra. The students are able to print their graphs and compare and contrast them.

Enduring Understandings

Expressions and Equations

7.EE.1 [M] Apply properties of operations as strategies to add, subtract, factor and expand linear expressions with rational coefficients.

7.EE.2 [M] Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that “increase by 5%” is the same as “multiply by 1.05.”

7.EE.3 [M] Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a

new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

Mathematical Practices Focus

1. Make sense of problems and persevere in solving them. Lesson 2,3,4,5,6,7, page 229

2. Reason abstractly and quantitatively. Lesson 1,2,3,5,6,8, page 229

3. Construct viable arguments and critique the reasoning of others. Lesson 2,3,5, page 229

4. Model with mathematics. Lesson 1,4,6,7, page 229

5. Use appropriate tools strategically. Page 229

6. Attend to precision. Lesson 1,6

7. Look for and make use of structure. Lesson 1,3,4,6,7,8, page 229

8. Look for and express regularity in repeated reasoning. Lesson 5, page 229