CORE Assessment Module
Module Overview

Content Area	Mathematics
Title	Miguel's Milkshakes
Grade Level	Grade 7
Problem Type	Performance Task
Standards for Mathematical Practice	**Mathematical Practice 1 (MP1):** Make sense of problems and persevere in solving them. Mathematically proficient students: • Explain to themselves the meaning of a problem and look for entry points to its solution. • Analyze givens, constraints, relationships, and goals. • Make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution. • Consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solutions. • Monitor and evaluate their progress and change course if necessary. • Transform algebraic expressions or change the viewing window on their graphing calculator to get information. • Explain correspondences between equations, verbal descriptions, tables, and graphs. • Draw diagrams of important features and relationships, graph data, and search for regularity or trends. • Use concrete objects or pictures to help conceptualize and solve a problem. • Check their answers to problems using a different method. • Ask themselves, "Does this make sense?" Understand the approaches of others to solving complex problems and identify correspondences between approaches.
Common Core State Standards	**7.RP.1** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. **7.RP.2** Recognize and represent proportional relationships between quantities. • **7.NS.3** Solve real-world and mathematical problems involving the four operations with rational numbers.
SBAC Assessment Claims	**Claim 1**: **Problem Solving**—Students can frame and solve a range of complex problems in pure and applied mathematics. **Claim 3** **Communicating Reasoning**—Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Task Overview	Students will calculate unit rates to determine the better deal and least expensive purchase. Students will use proportional relationships to solve a real-world problem and to analyze another person's attempt to solve a real-world problem
Module Components	1) Scoring Guide 2) Task

Miguel's Milkshakes
Scoring Guide

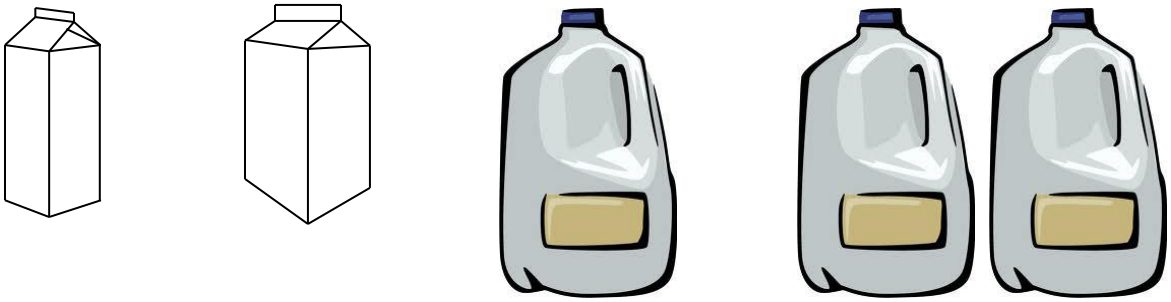
Description Credit for specific aspects of performance should be given as follows:	**Points**	**Total Points**
1. Student response should include: • identify that the 2 gallons of milk for \$5.98 is the better buy. • a valid method proving that 2 gallons of milk for \$5.98 is the better buy. For example, comparing price per gallon: ¼ gallon of milk \$7.20 (\$1.80 x 4) ½ gallon of milk \$4.20 (\$2.10 x 2) 1 gallon of milk \$4.25 (\$4.25 x 1) 2 gallons of milk \$2.99 (\$5.98 / 2)	 1 1	2
2. Student gives correct answer: The least amount of money Miguel will spend for 3 gallons of milk is \$10.18 Students should justify their response by stating that the quantities with the lowest unit rates will produce the least expensive purchase. OR Students may compare various combinations to prove their combination is the least expensive. For example: 2 gallons for \$5.98 + 1 gallon for \$4.25 = **3 gallons for \$10.23** 2 gallons for \$5.98 + 4 (¼ gallon for \$1.80) = **3 gallons for \$13.18** 2 gallons for \$5.98 + 2 (½ gallon for \$2.10) = **3 gallons for \$10.18** 2 gallons for \$5.98 + ½ gallon for \$2.10 + 2 (¼ gallon for \$1.80) = **3 gallons for \$11.68**)	1 1	2
3. Student gives correct answer: $1\frac{7}{8}$ gallons of milk Student should use two different methods that yield the same result. Sample responses: $\frac{\text{gallons}}{\text{milkshakes}} \rightarrow \frac{\frac{3}{4}}{12} = \frac{x}{30} \rightarrow x = 1\frac{7}{8}$ gallons OR Gallons of milk per milkshake $\rightarrow \frac{3}{4} \div 12 = \frac{1}{16}$ Gallons of milk for 30 milkshakes $\rightarrow \frac{1}{16} \bullet 30 = 1\frac{7}{8}$ gallon	1 1	2
4. Student response should: • point out Sandra's mistake: She incorrectly multiplied 15 by ¼ • explain and show how to determine the unit rate: ¼ divided by 15 • determine that Sandra will need 1½ c of sugar (correct answer) • explain and show how to determine the correct answer	 1 1 1 1	4
TOTAL POINTS: (possible points = 10 points)		

Student Name _____

Miguel's Milkshakes

Miguel plans to make milkshakes for a party. The grocery store only sells four sizes of milk at the following prices:

¼ gallon $1.80	½ gallon $2.10	1 gallon $4.25	2 gallons $5.98



1. Describe the better buy if you plan to buy lots of milk. Support your answer with tables, graphs, equations, diagrams, and/or verbal descriptions.

2. Suppose Miguel needed 3 gallons of milk. If he wants to spend the least amount of money, using any combination of the four sizes above, how much will he spend? Prove that your method guarantees Miguel will spend the least amount of money.

Student Name _____

3. Miguel needs $\frac{3}{4}$ gallons of milk to make 12 milkshakes. How much milk does he need to make 30 milkshakes? Use at least two different methods to support your answer. Is this a proportional relationship?

4. Miguel asked Sandra to make 90 cookies for his party. Sandra needs $\frac{1}{4}$ cup of sugar to make 15 cookies. She incorrectly calculated the amount of sugar she will need.

Sandra's Work:

Amount of sugar for 1 cookie: $15 \bullet \frac{1}{4}\text{C} = \frac{15}{4} = 3.75\ \text{C}$

Amount of sugar for 90 cookies: $3.75\ \text{C} \bullet 90 = 337.5\ \text{C}$

Write a brief note to Sandra describing her mistake and explain to her how to correctly determine the amount of sugar she will need.