|  |
| --- |
| **Synopsis of high-quality task:**  Students will demonstrate their ability to solve a multi-step word problem by using the four operations and prior knowledge of money and decimals. Students will calculate a total cost by rounding the value of each item and adding for a total cost. Then, the amount should be divided among the four friends to determine about how much each of the students will have to pay.  **Anticipated student time spent on task:** 30-45 Minutes  **Student task structure(s):** Individual work/partner work/group work |
| **Prior Knowledge:** Students should have prior knowledge of decimal notation, the four operations, and money.  **3.OA.D.8** Solve two-step word problems using the four operations for problems posed with whole numbers and having whole number answers. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies, including rounding. |
| [**Math Content Standards and Practices:**](http://www.doe.mass.edu/frameworks/math/2017-06.pdf)  **4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.  **4.OA.A.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.  **SMP1** Make sense of problems and persevere in solving them.  **SMP2** Reason abstractly and quantitatively.  **SMP3** Construct viable arguments and critique the reasoning of others.  **SMP4** Model with mathematics.  **SMP6** Attend to precision. |
| **Connections to the real-world:**  Elementary students like to make crafts, especially slime. This is an engaging, real-world problem that involves calculating a total cost for the project materials, and then dividing it to find the cost for each person. |
| **Mastery Goals:** Students will be able to use knowledge of money, estimation, and the four operations to solve a multi-step real world problem.  **Learning Objective:**   * Students will be able to use estimation, knowledge of money, and the four operations to calculate a multi-step word real-world problem.   **Language Objective:**   * Students will read ingredients in a slime recipe and will estimate the cost. * Students will respond in writing to questions related to the cost of making slime |
| **Teacher instructions**  **Instructional Tips/Strategies/Suggestions:**  Make sure students are estimating the cost of each item by rounding.  Glue: 19.99 → 20 20 x 1 = 20  Shaving Cream: 2.19 → 2 2 x 2 = 4  Activator: 7.09 → 7 7 x 3 = 21  Food coloring: 4.29 → 4 4 x 1= 4   1. Total Cost: 20 + 4 + 21 + 4 = $49 2. $49/4=12 R1 ---> $12.25 (actual) 3. It is cheaper to make the slime, since buying it would cost 60/4 = $15 per friend. |
| **Instructional Materials/Resources/Tools:**   * Task Handout * Large grid paper to help students organize their math computations |
| **Accessibility and Supports:**  For students with less readiness, provide a table with 2 extra columns: “nearest dollar estimate”; “total estimated cost” and provide one completed row as an example.  **Potential sentence starters:**   1. “A reasonable estimate for the total cost is…” 2. “Each friend will owe about…” 3. “It would be more cost effective to…”   **Key academic vocabulary:** estimate, multiply (product/ factors), add, divide, reasonable |

**SLIME TIME TASK SHEET**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dylan, Shannon, Liam and Natalie are getting together to make slime. Dylan has volunteered to pick up the ingredients and then the friends will split the cost evenly.

|  |  |
| --- | --- |
| **Shopping List** | **Cost** |
| 1 gallon of glue | $ 19.99 per gallon |
| 2 cans of shaving cream | $ 2.19 each |
| 3 bottles of activator | $ 7.09 each bottle |
| 1 box of food coloring | $ 4.29 per box |

1. Shannon used a tape diagram to determine a reasonable estimate for just the 3 bottles of activator. Show what Shannon may have written on her tape diagram.

$ \_\_\_

$ \_\_\_

$ \_\_\_

$

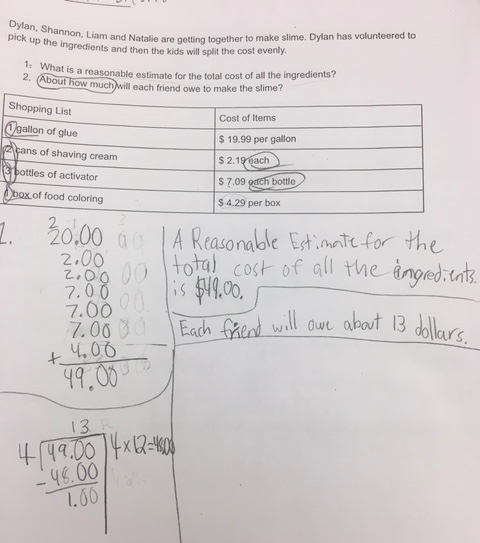
3 Bottles of Activator

1. What is a reasonable estimate for the total cost of **all** the ingredients? Show work or draw a picture to support your answer. Be sure to show the estimated cost of *each* ingredient.

(continued)

1. About how much will **each friend** owe to make the slime? Support your answer with a visual model such as a tape diagram, set model, or number line.
2. Would it be more cost effective to buy a four pack of pre-made slime for $60 or to split the total cost of supplies and make it? Explain your answer.

**Sample Student Work:**

****