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| **Mailing Presents- 6.EE.2** | |
| **Domain** | **Expressions and Equations** |
| **Cluster** | **Apply and extend previous understandings of numbers to the system of rational numbers.** |
| **Standard(s)** | **6.EE.2** Write, read, and evaluate expressions in which letters stand for numbers.  **6.EE.2a** Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation “Subtract y from 5” as 5 – y*.  **6.EE.2c** Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas V = s3 and A = 6 s2 to find the volume and surface area of a cube with sides of length s = 1/2*. |
| **Materials** | Activity sheet |
| **Task** | **Mailing Presents**  Mrs. Rodriguez wants to mail gifts to her niece and nephew for their birthday. She has each of their gifts in identical boxes that she fits inside a large box. The dimensions of the identical boxes are related to each other. The height (*h*) is 3 inches less than the length. The width is 4 inches less than twice the height.  Part 1: What are the dimensions for each of the identical boxes in terms of *h*? What is the volume for each of the identical boxes in terms of *h*?  Part 2:  If the height is 5 inches. What is the volume of each box?  Part 3: Using the information from Part 2, the 2 small packages are put inside a larger box for shipping. The larger box is 3 inches taller than the height of the smaller boxes. The larger box is also 2 inches wider or longer than the combined width or length and just 1 inch wider or longer than the other dimension. What are the two possibilities for the dimensions of the larger box in terms of *h*? What are the possibilities for the actual dimensions?  What are the two possibilities for the volumes of the larger box?  Part 4:  Which option is cheaper if Mrs. Rodriguez has to pay $0.05 per cubic inch which box is the best option for the dimensions of her larger box?   Part 5: Write an explanation about how you solved Parts 3 and 4 above. |

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| **Rubric** | | |
| **Level I** | 1. **Level II** | **Level III** |
| Developing Proficiency   * Student uses inappropriate solution strategy and does not get the correct answer. | Not Yet Proficient   * There are one or two errors. | Proficient in Performance   * Accurately solves problem. * Part 1: Height: *h*, Length: *h*+3; Width: 2*h* – 4; Volume: h x (h+3) x (2h-4) * Part 2: 5 x 8 x 6 = 240 cubic inches * Part 3: Option 1 (combined width): Height: (*h*+3), Width: 2 (*h*+3) + 2, Length: (2h-4)+1; Dimensions and volume: 8 by 18 x 7= 1,008 cubic inches.   Option 2 (combined length): Height: (*h* + 3), Width: (h+3) + 1; Length: 2 x (2h-4) + 2; Dimensions and volume: 8 x 9 x 12 inches = 864 cubic inches.   * Part 4: Option 1: $50.40; Option 2: $43.20. * Part 5: The explanation is clear and accurate. |

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| **Standards for Mathematical Practice** |
| **1. Makes sense and perseveres in solving problems.** |
| **2. Reasons abstractly and quantitatively.** |
| 3. Constructs viable arguments and critiques the reasoning of others. |
| **4. Models with mathematics.** |
| 5. Uses appropriate tools strategically. |
| **6. Attends to precision.** |
| 7. Looks for and makes use of structure. |
| 8. Looks for and expresses regularity in repeated reasoning. |

**Mailing Presents**

Mrs. Rodriguez wants to mail gifts to her niece and nephew for their birthday. She has each of their gifts in identical boxes that she fits inside a large box. The dimensions of the identical boxes are related to each other. The height (*h*) is 3 inches less than the length. The width is 4 inches less than twice the height.

Part 1:  
What are the dimensions for each of the identical boxes in terms of *h*? What is the volume for each of the identical boxes in terms of *h*?

Part 2:   
If the height is 5 inches. What is the volume of each box?

Part 3:  
Using the information from Part 2, the 2 small packages are put inside a larger box for shipping. The larger box is 3 inches taller than the height of the smaller boxes. The larger box is also 2 inches wider or longer than the combined width or length and just 1 inch wider or longer than the other dimension. What are the two possibilities for the dimensions of the larger box in terms of *h*? What are the possibilities for the actual dimensions? What are the two possibilities for the volumes of the larger box?

Part 4:   
Which option is cheaper if Mrs. Rodriguez has to pay $0.05 per cubic inch which box is the best option for the dimensions of her larger box?

Part 5:  
Write an explanation about how you solved Parts 3 and 4 above.