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| **NC.4.MD.3**  **Enlarging the Yard** | |
| **Domain** | Measurement and Data |
| **Cluster** | Solve problems involving area and perimeter. |
| **Standard(s)** | **NC.4.MD.3** Solve problems with area and perimeter.   * Find areas of rectilinear figures with known side lengths * Solve problems involving a fixed area and varying perimeters and a fixed perimeter with varying areas * Apply the area and perimeter formulas for rectangles in real world and mathematical problems |
| **Materials** | activity sheet, graph paper (optional), pencil |
| **Task** | **Enlarging the Yard**  Currently, you have a rectangular yard that has perimeter of 72 meters. The current area is between 300 and 350 meters.  Part 1:  What are the dimensions of your current fenced-in space? Explain your reasoning.  *Solution: The 2 dimensions must add up to 36. The two dimensions must have a product between 300 and 350. Possible answers: 18x18, 19x17, 20x16, 21x15, 22x14.*  Part 2:  In order to have more space to play, your parents decide that they want to extend both dimensions by 5 meters. What are the new dimensions of your yard? What is the new perimeter? What is the new area? Explain your reasoning.  *Solution: The dimensions chosen by the student from Part 1 have been increased by 5. The new perimeter and the area are correct.*  *23x23 (perimeter = 92m, area=529 sq. m)*  *24x22 (perimeter = 92m, area=528 sq. m)*  *25x21 (perimeter=92m, area=525 sq. m)*  *26x20 (perimeter=92m, area=520 sq. m)*  *27x19 (perimeter=92m, area=513 sq. m)* |

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| **Rubric** | | |
| **Level I**  **Not Yet** | **Level II**  **Progressing** | **Level III**  **Meets Expectation** |
| Student is unable to use strategies to find correct answers to any aspect of the task or explain their reasoning. | Student is inconsistent in solving all parts of the task **and/or** explaining their reasoning clearly and accurately. | Student is able to correctly solve all parts of the task and explain his/her reasoning clearly and accurately. |

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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 |

**Enlarging the Yard**

Currently, you have a rectangular yard that has perimeter of 72 meters. The current area is between 300 and 350 meters.

**Part 1:**

What are the dimensions of your current fenced-in space?

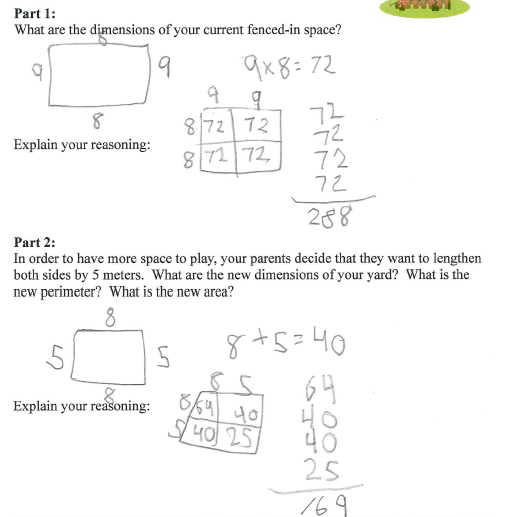
Explain your reasoning:

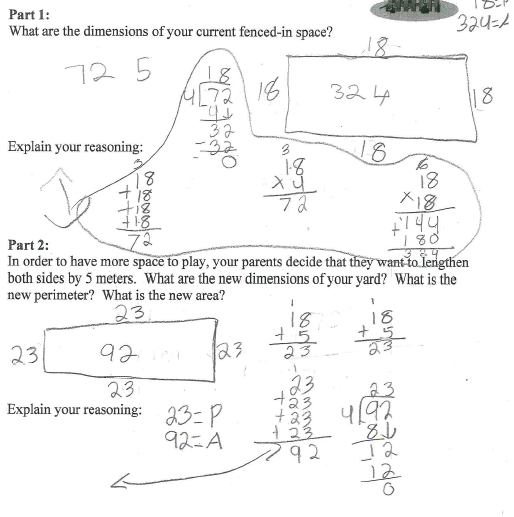
**Part 2:**

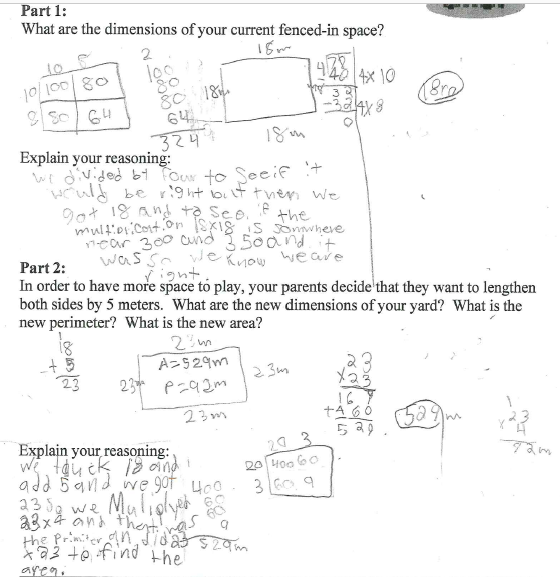
In order to have more space to play, your parents decide that they want to extend both dimensions by 5 meters. What are the new dimensions of your yard? What is the new perimeter? What is the new area?

Explain your reasoning:

**Scoring Examples**

**Not Yet:** The student is unable to use strategies to find correct answers to any aspect of the task or explain his/her reasoning.

**Progressing:** In Part 2, the student mixed up area and perimeter and didn’t completely explain his/her reasoning.

**Meets Expectation:** This work is correct and clear and easy to understand. Student thinking is well explained and easy to follow.