

# Task Specific Rubric: John's Field

Level	Understanding	Strategies, Reasoning & Procedures	Communication
<b>Novice</b>	<ul style="list-style-type: none"> <li>✓ There are no solutions or the solutions have no relationship to the task.</li> <li>✓ The student does not understand enough about the geometric concepts of perimeter and area to arrive at a solution to the task.</li> <li>✓ The student may understand that the problem requires them to find the perimeter of the field, but does not make the connection between the length &amp; width of the field and the perimeter.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student cannot start the task or s/he has started the task using manipulatives or representations but cannot complete the task.</li> <li>✓ <b>Sample Strategies:</b> The student does not understand the task and resorts to adding all of the money \$1584 + \$4.80 + \$3.98 = \$1,592.78 to calculate the cost of fixing the field.</li> <li>✓ The student may calculate the perimeter of the field by dividing (<math>\\$1,584 \div \\$4.80 = 330\text{m}</math>), but cannot use this information to determine the length and width of the field.</li> </ul>	<ul style="list-style-type: none"> <li>✓ There is little or no communication, the student did not label the work and his/her thinking is difficult to follow.</li> <li>✓ The student uses little or no math terms/symbols in his/her explanation of calculating the cost of fixing the field.</li> <li>✓ The student does not represent the dimensions of the field in a diagram, table, and/or chart.</li> </ul>
<b>Apprentice</b>	<ul style="list-style-type: none"> <li>✓ The student understands that the task is a multiple step problem, but cannot track all of the aspects of the task to achieve an accurate solution.</li> <li>✓ The student demonstrates some understanding of the geometric concepts of perimeter and area, but does not connect the two concepts.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student uses an appropriate strategy to determine the cost of fixing the field, but does not know enough mathematics to arrive at an accurate solution.</li> <li>✓ <b>Sample Strategies:</b> The student calculates the perimeter of the field (330m), uses a guess and check method to determine the length (130m) &amp; width (35m) of the field, but cannot use the information to progress the task to a solution.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student attempts to communicate his/her findings by organizing and labeling their work, but does not attempt to summarize their work by stating the total cost of fixing the field.</li> <li>✓ The student uses some math terms/symbols in his/her explanation of calculating the cost of fixing the field.</li> <li>✓ The student represents the field dimensions in a diagram, table, and/or chart.</li> </ul>

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<b>Practitioner</b>	<ul style="list-style-type: none"> <li>✓ To accurately solve this task, the student must understand that this is a multi-step problem, and that the information gathered at each step progresses the problem to a final solution.</li> <li>✓ The student must understand the connection of the perimeter to the length and width of the field, and apply this information to make the connection of the perimeter of the field to the area of the field.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student uses an accurate and appropriate strategy to determine the total cost John invested in the field.</li> <li>✓ <b>Sample Strategies:</b> This is a multi-step problem and the student must use the information from each step of the problem to arrive at an accurate solution.</li> <li>✓ The student must: <ul style="list-style-type: none"> <li>◆ Find the perimeter (330m) of the field.</li> <li>◆ Use the perimeter to calculate the length (130m) &amp; width (35m) of the field (algebraic equation or guess &amp; check).</li> <li>◆ Calculate the area (4550 sq. m) of the field.</li> <li>◆ Determine the cost (\$39.80) and the number of bags (10) of seed.</li> <li>◆ Calculate the total money investment (\$1,623.80) of fixing the field.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ The student represents his/her work in a clear organized manner, and uses appropriate math terms/symbols in his her explanation of calculating the cost of the field.</li> <li>✓ The student represents the dimensions of the field (length &amp; width), and explains the connection these dimensions have in calculating the perimeter and area.</li> <li>✓ The student includes a summary of all of the steps s/he took to solve the problem.</li> </ul>
<b>Expert</b>	<ul style="list-style-type: none"> <li>✓ To accurately solve this task, the student must understand that this is a multi-step problem, and that the information gathered at each step progresses the problem to a final solution.</li> <li>✓ The student must have a solid understanding of the geometric concepts of area and perimeter, and how these formulas are interconnected.</li> <li>✓ The expert will understand that the most efficient approach to solving this task is through algebra.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student uses an accurate and appropriate strategy to determine the total cost John invested in the field.</li> <li>✓ The student will use the information from each step of the task and progress the problem to arrive at an accurate solution (see the multiple steps in practitioner section).</li> <li>✓ <b>Sample Strategies:</b> An expert will approach this problem through the use of algebraic concepts. For example: The student will identify the formula for determining the length and width of the field, substitute this equation within the perimeter equation, and accurately solve for w (width).  <math>w = \text{width}; l = 4w - 10</math>  <math>p = 2l + 2w</math>  <math>p = 2(4w - 10) + 2w</math> </li> </ul>	<ul style="list-style-type: none"> <li>✓ The student represents his/her work in a clear organized manner, and uses appropriate math terms/symbols in his her explanation of calculating the cost of the field.</li> <li>✓ The student represents the dimensions of the field (length &amp; width), and explains the connection these dimensions have in calculating the perimeter and area.</li> <li>✓ The student includes a summary of all of the steps s/he took to solve the problem.</li> <li>✓ The student extends his/her summary by explaining the connection s/he made to length/width and calculating area and perimeter of rectangles.</li> </ul>