Partner Counterexample

Standard: Students can create counterexamples to contradict false conjectures.
Students will remain on-task while working with others.
Students will effectively critique the reasoning of others.

Task: At the end of this task you will turn in three sheets of paper. The first will have 4 false conjectures you will create that to some may seem true. The second will have a counterexample you will provide for each of your partner's 4 false conjectures. Along with each counterexample, provide an explanation of why it is an effective counterexample. Be sure you relate your explanation to what a counterexample is. The third will have a critique your partner's counterexamples and explanation. Be sure that your 4 conjectures seem true but are really false. For example:
• Good: All birds fly. Bad: All mammals fly.
The first example is good because, although many birds fly, there are a few counterexamples that can be referenced. The second example is bad because almost all mammals are flightless. A counterexample would not be necessary to see what it is false.
Your critique of your partner's counterexamples should answer the following questions:
• Was your partner accurate?
• Was his or her thought process logical?
• Did he or she do anything that surprised you?
• What would you suggest to your partner so he or she could improve?
As you are working, I will walk around to answer questions and observe whether you are remaining on-task or not.

Your work will be graded using the following rubric:

<table>
<thead>
<tr>
<th></th>
<th>Unsatisfactory 0-1pt.</th>
<th>Fair. 2 pts.</th>
<th>Satisfactory 3 pts.</th>
<th>Excellent 4 pts.</th>
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<tbody>
<tr>
<td>False Conjectures</td>
<td>Less than four total conjectures, less than two seem true, or less than three are false.</td>
<td>Of the four conjectures, only two seem true, or only three are false.</td>
<td>Of four conjectures, only three seem true, but all are false.</td>
<td>Four conjectures seem true but actually false.</td>
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<tr>
<td>Counterexamples and Explanation</td>
<td>One or none of partner's conjectures have valid, well explained counterexamples.</td>
<td>Two of partner's conjectures have valid, well explained counterexamples.</td>
<td>Three of partner's conjectures have valid, well explained counterexamples.</td>
<td>All four of partner's conjectures have valid, well explained counterexamples.</td>
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<tr>
<td>Critique</td>
<td>Critique is missing or only one question is answered effectively</td>
<td>Two questions are answered effectively.</td>
<td>Three questions are answered effectively.</td>
<td>All four questions are answered effectively.</td>
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<tr>
<td>on-task</td>
<td>Student was seen off-task 4+ times.</td>
<td>Student was seen off-task 2 – 3 times.</td>
<td>Student was seen off-task 1 time.</td>
<td>Student was on task entire time.</td>
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Conditional Statements Creation

Standard: Students can transform everyday sentences into conditional statements.
Students can change conditional statements into inverse, converse, and contrapositive.