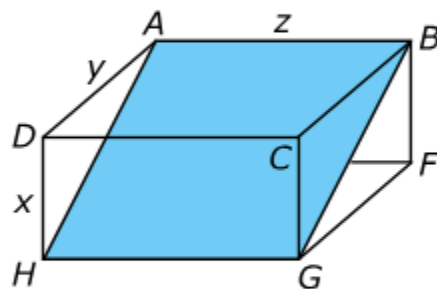


Math Practice Test Constructed Response Rubric Grade 10

An engineer works for a box manufacturer. She is creating boxes in the shape of rectangular prisms with height x inches, length y inches, and width z inches. Each box needs a cardboard insert that fits diagonally from side \overline{AB} to side \overline{HG} , as shown below. For each box, the cardboard insert must be a square.



Write an equation relating x , y , and z such that the cardboard insert must be a square. Explain why the relationship between x , y , and z in the equation requires the shape to be a square.

Write your answer in the space provided.

Rubric	
Score	Description
2	<p>ONE point:</p> <p>Equation: $x^2 + y^2 = z^2$; any equivalent equation is correct</p> <p>ONE point:</p> <p>Explanation: (Possible correct response includes but is not limited to the following example; correct responses can be represented in words, mathematical equations/expressions, and/or drawings/sketches.)</p> <p>For the cardboard insert to be a square, the width of z needs to equal the length of diagonal AH. The sides DH and DA meet at right angles creating a right triangle with the diagonal AH. If any two values are known for x, y, and z, the third side can be determined using the Pythagorean Theorem, and will guarantee the cardboard insert is a square.</p>
1	<p>Equation: $x^2 + y^2 = z^2$; any equivalent equation is correct</p> <p>OR</p> <p>Explanation: (Possible correct response includes but is not limited to the following example; correct responses can be represented in words, mathematical equations/expressions, and/or drawings/sketches.)</p> <p>For the cardboard insert to be a square, the width of z needs to equal the length of diagonal AH. The sides DH and DA meet at right angles creating a right triangle with the diagonal AH. If any two values are known for x, y, and z, the third side can be determined using the Pythagorean Theorem, and will guarantee the cardboard insert is a square.</p>
0	The response is incorrect or irrelevant.