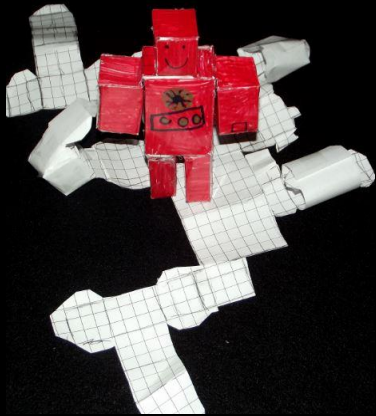


# Unique 3D Box Design & Construction

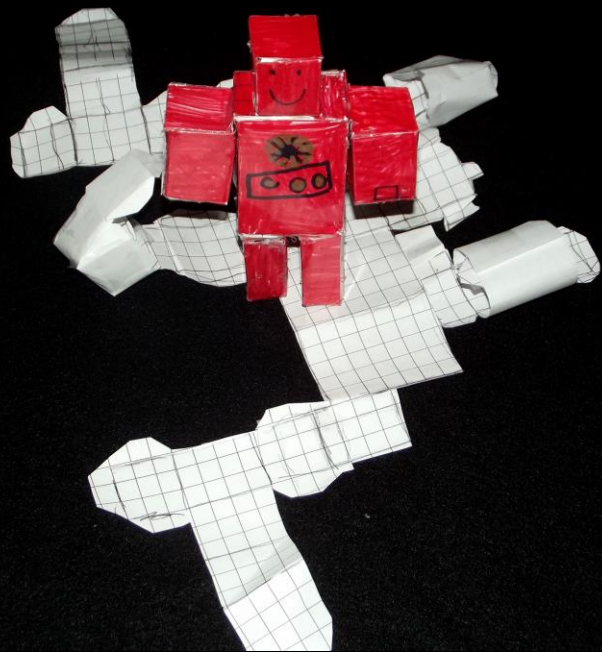


**Peter Wilson**

**Fourth Grade Teacher  
University Lake School  
Hartland, WI**



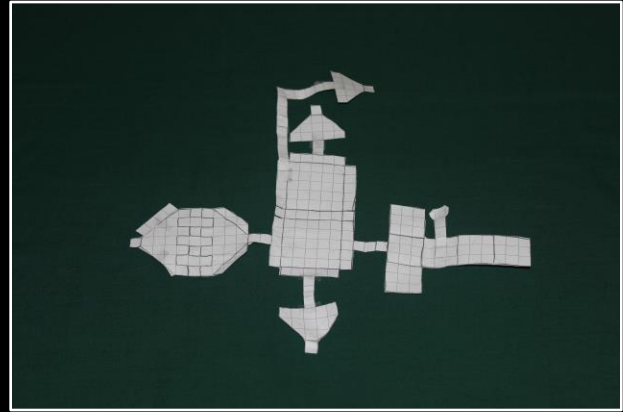
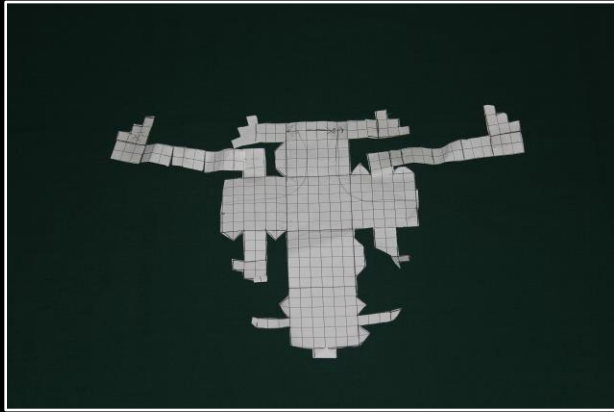
A story to begin....



# Consumer Boxes and Snotches....



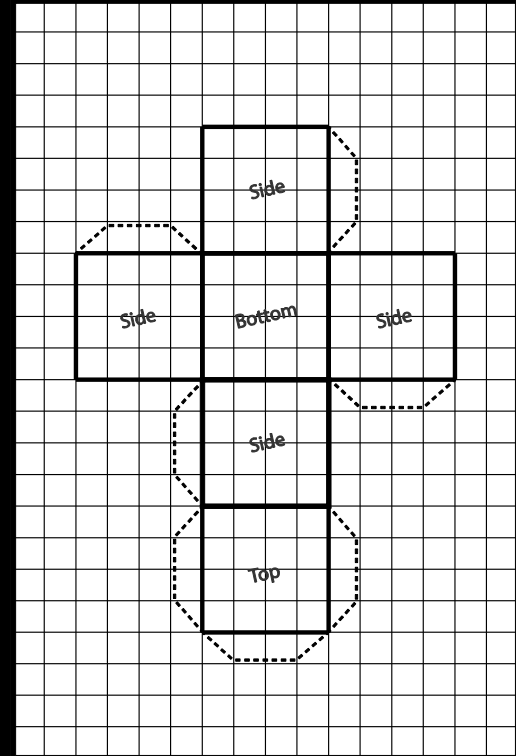
The key: all creations made from one small or large piece of paper, and each design more complicated than the last.

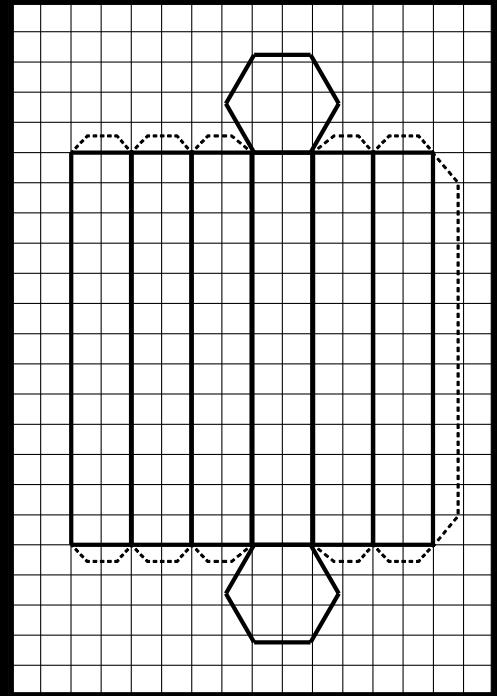
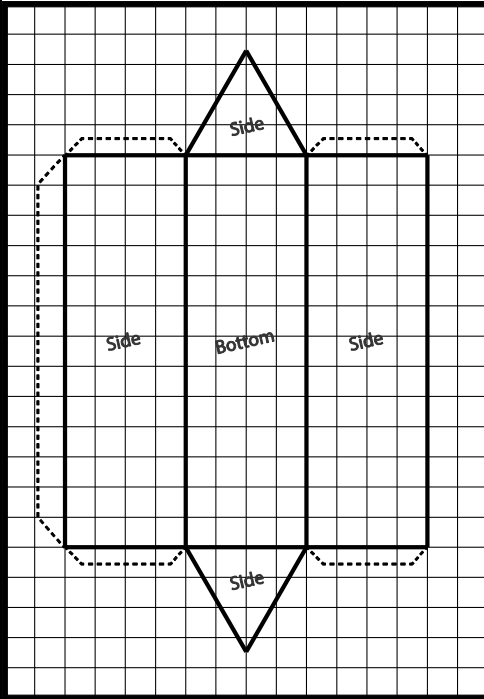
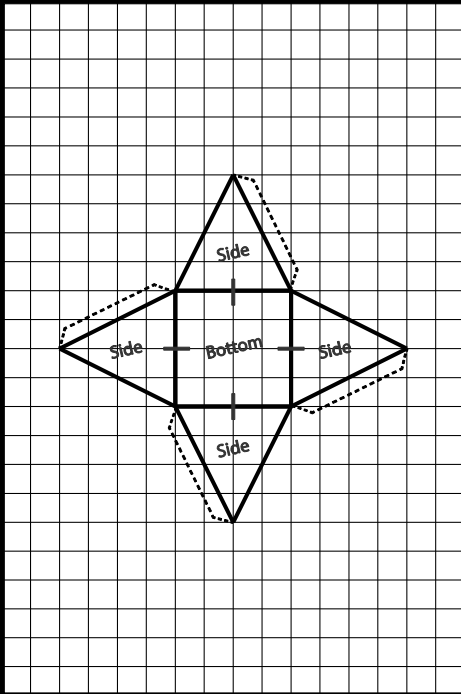


# **Making Boxes**

**(Fourth Grade at  
University Lake  
School)**

**The progression....** once per week, rough drafts first.





**Your turn....** make a cube with tabs.

As you make yours, think of your students' minds, their engagement in the process, problem-solving, the geometry they are using, and their improved visual literacy.



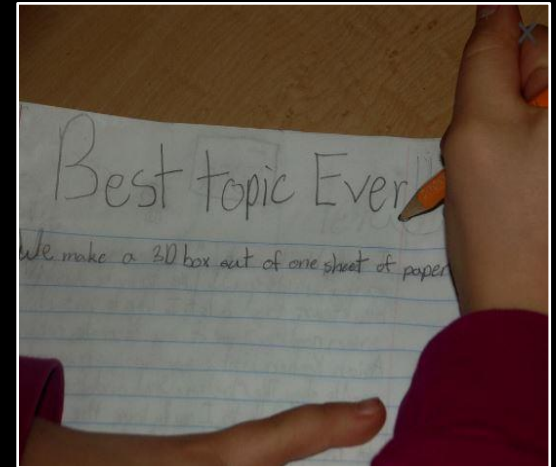
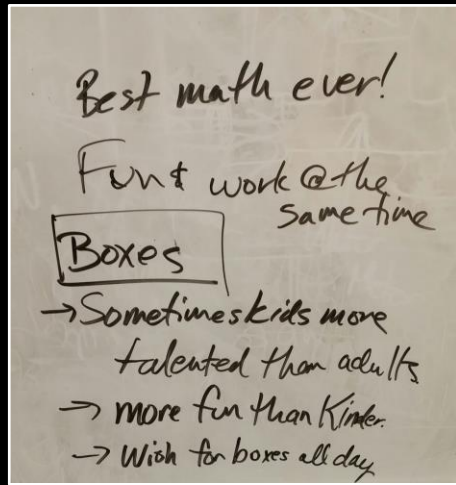
Was the cube easy to make?

Was it easy to visualize where tabs would go?

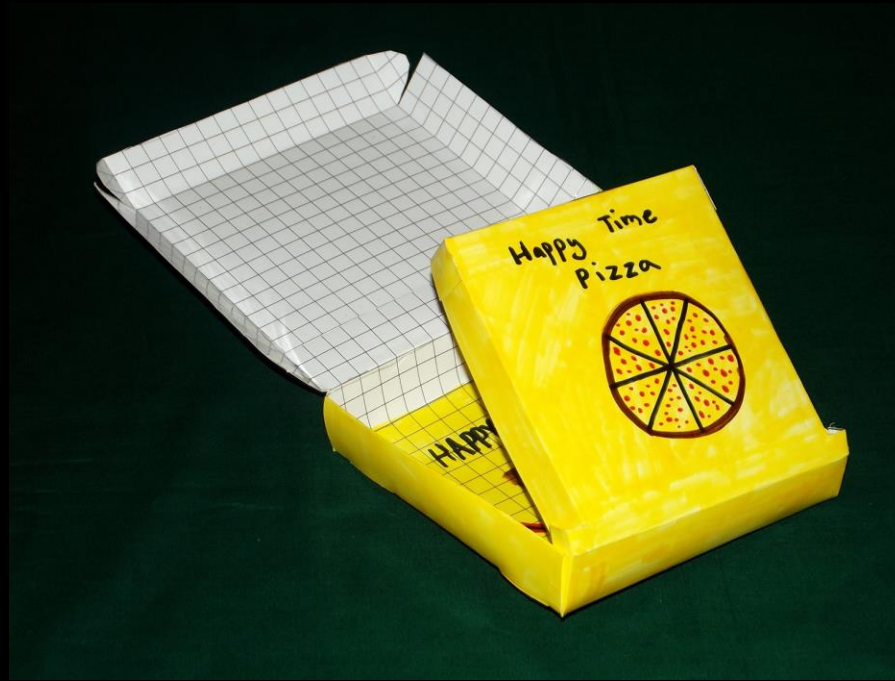
What would you imagine a student might think?

| Grade | Some Standards   |
|-------|--|
| 4     | <p><b>Measurement and Data:</b> Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p> <p><b>Geometry:</b> 1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. 2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. 3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.</p> |
| 5     | <p><b>Measurement and Data:</b> Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. Apply the formulas <math>V = l \times w \times h</math> and <math>V = b \times h</math> for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.</p>   |
| 6     | <p><b>Geometry:</b> Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.</p>   |

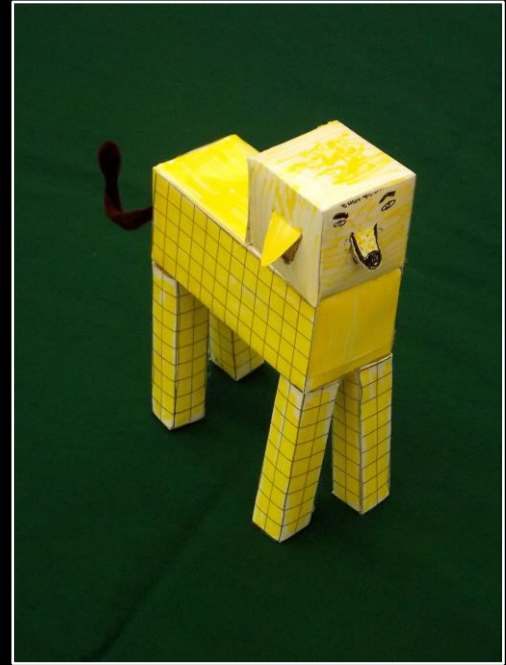
# Student attitude....



With parameters....



# Differentiation....



**Extensions...** Story writing, social studies, video design...



**How can you use this project in your class?**

**What will it take to get your school to use this project?**

**What can you foresee happening once you implement?**

**What obstacles might you face to implement this project?**