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| **Topic:** | **4** | **3** | **2** | **1** |
| **Sketching: Penciling** | Lines are neat and accurate. | Lines are fairly neat and accurate. | Lines vary in neatness and accuracy. | Lines are feathered or inaccurate. |
| **Sketching: Scale and Proportion** | All parts are drawn to an appropriate scale and are correct in their relative proportion. | Most sketches include appropriate scale and proportioning. | Some parts are drawn to appropriate scale and proportion. | Parts are sketched without any regard for relative proportion or use of scale. |
| **Sketching: Dimensions/ Annotation** | Sketches are well dimensioned/annotated to show overall size and unique features. | Sketches are mostly well dimensioned and annotated. | Sketches are missing important dimensions or annotations. | No dimensions or annotations have been added. |
| **Sketching: Isometric/ Orthographic** | Project includes isometric drawings and complete orthographic projections. | Isometric drawings are included and at least one orthographic projection. | Only isometric drawings are included with no orthographic projections. | Incomplete or very inaccurate drawings are included. |
| **Design Requirements**  **(see list)** | Project meets all design requirements. | Project meets most design requirements. | Project meets some design requirements. | Project does not meet any of the design requirements. |
| **Creativity/ Uniqueness** | The project is unique and attempts to solve a problem in a creative way. | The project shows some creativity and uniqueness | The project is not very creative or unique in its solution. | Little effort was put into making a creative or unique project. |
| **Application to Real-World Problem** | The proposed solution has an excellent and practical application to a real-world problem. | The connection to a real-world problem is adequate but the solution is impractical. | The connection to a real-world problem is weak. | There is no connection between the student's project and a real-world problem. |

**Design Requirements**

* Use 3D tool Loft or Sweep at least once
* Use 3D tool Fillet or Chamfer at least once
* Use at least three different sketching tools

(Polyline, Spline, Three-Point-Arc, Offset, etc)

* Use Mirror or Pattern to copy a sketch or an object
* Create a rough sketch or model of an alternative design

*Parts of this rubric were adapted from the puzzle cube project within the Introduction to Engineering Design course from the PLTW Engineering program (Project Lead The Way, Inc. 2015).*