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| **Name:** | |  | | | **Introduction to Engineering Design** | | | | |  | **Unit 4: Modeling Skills** | | | | | | | |
|  | | |  | | | |  |  |  | | | |  | |  | | |  |
| **Activity** | | | **Date Due** | **Comments** | | | | | | | | **Signature** | | **Available Points** | | | **Points Earned** | **Total Points** |
| 4.1a | Puzzle Cube Combinations | |  |  | | | | | | | |  | | 10 | | |  |  |
| 4.1b | Graphical Modeling | |  |  | | | | | | | |  | | 10 | | |  |  |
| 4.1c | Mathematical Modeling | |  |  | | | | | | | |  | | 10 | | |  |  |
| 4.1d | Software Modeling Introduction | |  |  | | | | | | | |  | | 10 | | |  |  |
| 4.1g | Model Creation | |  |  | | | | | | | |  | | 10 | | |  |  |
| 4.1f | Key Terms Activity | |  |  | | | | | | | |  | | 10 | | |  |  |
| **Rubrics** | | | | | | | | | | | | | | | | | | |
| 4.1 | Statistical Analysis w/ Excel | |  |  | | | | | | | |  | |  | | |  |  |
| 4.2 | Isometric Sketches | |  |  | | | | | | | |  | |  | | |  |  |
| 4.3 | Multiview Drawings | |  |  | | | | | | | |  | |  | | |  |  |
| 4.4 | Puzzle Cube CAD Modeling | |  |  | | | | | | | |  | |  | | |  |  |
| 4.5 | Puzzle Construction & Statistics | |  |  | | | | | | | |  | |  | | |  |  |
| **Project Portfolio** | | |  |  | | | | | | | |  | | 100 | | |  |  |
|  |  | | **Grade:** | | |  | |  | **Total Available Points:** | | | |  | | | **Total Points:** | |  |

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| **Unit 4: Modeling Skills** | | | **Portfolio Requirements** | **Name:** |  |
| Create a project portfolio to include a Design Process Description. Summarize your work during each step of the design process. Include documentation (written work, sketches, CAD drawings, images, etc.) to support your discussion. Your documentation must include the following information located in the appropriate Design Process step: | | | | | |
|  | □ | Title page | | | |
|  | □ | Brief autobiography and your picture | | | |
|  | □ | Puzzle Design Challenge Brief | | | |
|  | □ | Brainstorming Possible Part Combinations (Activity 4.1a Puzzle Part Combinations) | | | |
|  | □ | Isometric sketches of two possible complete Puzzle Cube designs | | | |
|  | □ | Justification of your chosen Puzzle Cube design solution | | | |
|  | □ | Multi-view sketch, fully dimensioned of each of the five puzzle parts in your chosen design (Activity 4.1b Graphical Modeling) | | | |
|  | □ | CAD drawing(s) displaying a fully dimensioned multi-view of each puzzle part and two different isometric views of the assembled puzzle. | | | |
|  | □ | Drawing review comments from a classmate. | | | |
|  | □ | Image(s) of your building process and puzzle prototype. | | | |
|  | □ | Physical model of your puzzle. | | | |
|  | □ | Statistics related to the solution time of your puzzle as required above. | | | |
|  | □ | A written summary of your puzzle test results and a discussion of the validity of your design. Does your design meet the design criteria? Does your design “provide an appropriate degree of challenge to a person who is three years of age or older” (as stated in the design statement)? | | | |
|  | □ | A discussion of possible changes to your puzzle cube that would improve the design. | | | |

The lessons and activities in this unit are structured to help you complete all these pieces at the correct step in the Design Process. As the different parts of the unit are completely tied to your assessment outcome, all power points will be available on the schools S: drive for your personal reference when needed.

The portfolio must be organized in a **3-ring binder** and completed by ***Tuesday, December 3, 2013***. Late portfolios will not be excepted.