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## Activity 4.1a Puzzle Cube Combinations

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### Introduction

Have you ever looked at a series of letters and been asked to come up with as many words as possible out of the list of letters? Have you ever looked at a series of numbers and been asked to figure out what code, sequence, or combination would result from the number series? Designers try to exhaust all possible combinations or solutions to an existing problem until the most intuitive solution comes along. Brainstorming several times throughout a project is very common when designing new products.

### Equipment

- Pencil
- Isometric Grid Paper
- Engineering notebook
- Six wooden cube blocks

### Procedure

In this activity you will be given six  $\frac{3}{4}$  in. wooden cubes. You will brainstorm as many part combinations as possible using only three of those cubes. You will sketch your part combinations on the isometric grid paper provided. Make sure that you date and sign each combination that you document. You will perform the same process using just four cubes, then with five cubes, and finally with six cubes. It is important that you identify as many combinations as possible for each set of cubes. The goal is to come up with more combinations than your classmates.

Your sketches will be used to help you determine what parts you would want for your cube and how they would fit together.

You will present your findings to the teacher for review.

### Conclusion

1. Why is it so important for a designer to think of multiple solutions to a design problem?

2. What steps did you take to determine the exact number of possible combinations for each set of cubes?
3. Why is it important to sketch your ideas on paper and sign and date the document?