

**Grading:** In our Distance Learning term, your STEAM “class” will happen largely in Edmodo. If you run into any problems with the technology, please let me know and we’ll arrange for an alternative project.

**TASK:** Tower of Hanoi - The Tower of Hanoi (also called the Tower of Brahma or Lucas' Tower[1] and sometimes pluralized as Towers) is a mathematical game or puzzle. It consists of three rods and a number of disks of different sizes, which can slide onto any rod. The puzzle starts with the disks in a neat stack in ascending order of size on one rod, the smallest at the top, thus making a conical shape.

The objective of the puzzle is to move the entire stack to another rod, obeying the following simple rules:

- Only one disk can be moved at a time.
- Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack or on an empty rod.
- No larger disk may be placed on top of a smaller disk.
- With 3 disks, the puzzle can be solved in 7 moves. The minimal number of moves required to solve a Tower of Hanoi puzzle is  $2n - 1$ , where  $n$  is the number of disks.

Directions	Check-ins and support	Submission of work									
<p><b>Monday:</b> Log in to your Edmodo account and do the poll. Go to the Origami folder and choose one new origami project to learn. Post a picture of your attempts (you may need to cut paper to the correct size).</p> <p><b>Tuesday-Thursday:</b></p> <p>Log in to Edmodo and Play the Tower of Hanoi game (intro below). What is the minimum number of moves to “win” if you start with 1 disk? Two? Three? Four? Email the chart below to me when you complete it. You are welcome to work with a partner or two if you want to - ☺ you will need to figure out the best way to do so.</p> <table border="1"> <tr> <td colspan="3">Summarize the problem in your own words.</td></tr> <tr> <td>What solutions did you find?</td><td>Show some of the “work” you did to get to your solutions.</td><td>How could you use the pattern(s) that you found to predict the smallest number of moves if you had 20 disks? How about 50? 100?</td></tr> <tr> <td>What patterns did you find?</td><td></td><td></td></tr> </table> <p><b>Friday:</b></p> <p>Play two games of chess - either live or on Edmodo. Use one piece in a way you haven't tried before and post about what you did and how it worked (or didn't).</p>	Summarize the problem in your own words.			What solutions did you find?	Show some of the “work” you did to get to your solutions.	How could you use the pattern(s) that you found to predict the smallest number of moves if you had 20 disks? How about 50? 100?	What patterns did you find?			<p><b>E-mail office hours:</b> every school day, 8AM-3:30PM, after hours emails may be available if needed.</p> <p><b>Video office hours:</b>  <b>Monday – Thursday:</b>            9:00 AM – 10:30 AM and            4:45 PM – 5:15 PM  <b>Friday:</b> 9-10:30 and 12-12:30 “Lunch with your Teachers”</p>	<p>If work cannot be submitted via Edmodo for any reason, please contact me (<a href="mailto:fmartin@tusd.net">fmartin@tusd.net</a>) and let me know so that we can arrange for an alternative assignment/project.</p>
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