

**Submission Instructions:** This homework is to be done individually. Question 1 is to be submitted (as in previous instances) as a single PDF file via LEA. Question 2 is to be submitted as a video via LEA.

1. Why does the SPELLING TRICK (from Day 18) work? What's the mathematical principle/pattern behind it? Give a detailed explanation in your own words. Feel free to use diagrams, pictures if they help get your point across.

Somewhere in your explanation, you should address the following questions.

- What other length words would work for each of the phases of spelling?
  - Suppose you had two packets of five cards instead of four with one packet in Ace through Five order, and the other in reverse order. What words would YOU spell at each phase to make the trick still work?
2. I would like you to make some flexagons. There's one diagrammed on the next page. Draw design patterns and colour it. Here's a video with more detailed instructions on how to make it and what to do with it: <https://youtu.be/7H4lDi79YY8>.

Submit a short video (that includes your face) of you playing with your flexagon to show the various faces of your flexagon. Note that how good it looks and how well it works will be factored into your grade.

For bonus points, also make and fold a flexagon of a different design.

# Construction Diagram for a Tetrahexa-Flexagon

(from [https://commons.wikimedia.org/wiki/File:Construction\\_tetrahexaflexagone.svg](https://commons.wikimedia.org/wiki/File:Construction_tetrahexaflexagone.svg))

