

The 1-10 Card Investigation

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Grade Range	Content Area	Materials
Grade 3 and up	<ul style="list-style-type: none">• Number• Problem Solving• Strategy	<ul style="list-style-type: none">• Playing cards A-10 OR• Individual pieces of paper labeled 1-10

Activity

Problem: Arrange a set of ten cards, numbered A to 10, facedown so that the following occurs:

1. When you turn the top card over, it should be an A. Place it faceup on the table.
2. Move the next card to the bottom of the deck, keeping it face down.
3. When you turn over the third card, it should be a 2. Place it faceup on the table.
4. Move the next card to the bottom of the deck, keeping it face down.
5. Continue this way, turning over a card, placing it faceup on the table, and moving the next card to the bottom of the deck.
6. When you're done, all of the cards on the table should be faceup in order from A-10.

Retrieved from: <https://marilynburnsmath.com/>

See this video for a visual explanation:

<https://www.youtube.com/watch?v=037H94j5Znc>

As participants work through the problem, some questions to ask are:

- How did you get started?
- What have you noticed so far?
- What have you tried so far?
- Can you share any strategies you have tried?
- How are you keeping track of what you've tried?

Extensions, Modifications & Additional Resources

Modifications:

- Try the problem with 4 cards only (numbered 1-4 or A-4)
- Try the problem with 5 cards only (numbered 1-5 or A-5)

Extensions:

- Can you repeated the pattern with a full deck of cards (A-K)
- What happens when you move 2 cards to the bottom of the deck each time? How does that change your pattern?

The Solution:



Additional Questions:

- What strategy did you use to find the pattern? Did your strategy change?
- Did you feel stuck at any point? What did you do?