

Engaging students in combinatorics research

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A permutation p (written in one-line notation, e.g., as 34152) is said to contain the pattern q if p has a subsequence whose digits appear in the same relative order as those of q . Permutations that avoid certain patterns have been well studied over the past 40 years, but many enumeration and characterization questions remain open, especially when we consider patterns in combinatorial objects that generalize permutations. In this talk, we'll consider several pattern avoidance questions that were developed for work with undergraduate and middle school students, including patterns in words, patterns in trees, and some pattern-related optimization questions. Along the way, we'll pay attention to features of research questions that make them particularly suitable, accessible, and interesting for work with students.