

Case Studies

The following case studies are from the January 26th, 2024 workshop on sexual orientation and gender identity/expression, co-hosted by the Department of Mathematics and the [Center for Sexual and Gender Diversity \(CSGD\)](#).

Gender Stereotypes in Math Problems

Kate is the TA for an undergraduate calculus class. She holds weekly office hours for students to drop in and ask questions. One day Alex stops in to chat about the bonus word problems they have been given the past two weeks. Alex is nonbinary and expresses concerns over the stereotypes that continue to be displayed in the problems. They point out that this week's word problem was:

"Sarah is preparing fabric for sewing. She needs 64 square feet of fabric, dyed on a rectangle. To minimize cutoffs in the pattern, she wants to dye a rectangle with minimum perimeter. What dimensions should Sarah use?"

while last week's bonus question was on Tom and James playing at Duke basketball games.

- What is the problem happening in this scenario?
- What could you do to remedy this situation?
- What would you do if these problems came from a textbook?

Hall's "Marriage Theorem"

Clarence is teaching combinatorics. His next lesson is on Hall's Marriage Theorem, which is motivated in the textbook as answering the following: *"Suppose 15 men and 15 women are seeking partners, and you know their pairwise compatibility, how can you determine whether or not you can form 15 happy pairs for marriage?"*

- What is the problem happening in this scenario?
- What could you do to remedy this situation?
- Suppose Clarence uses a different motivating example in lecture (e.g. pair gifts and persons, pair companies with workers, etc.) but a student asks him why the theorem is titled with "marriage". How could he respond?

Academic Letters of Recommendation

Dr. Keough gets an email from one of her previous students asking for a letter of recommendation for a math PhD program application. The student previously went by Shania, but in the email asks to be referred to as Leo and using he/they pronouns. Dr. Keough and Leo had co-published a paper when he was her student, but recognized under the name Shania.

- What are some potential issues that come up when writing this letter of recommendation?
- What steps would you take to address them?

Male/Female Sex Characteristics Examples in Course Work

Jordan is covering a class for Professor Kane. The lecture notes provided to Jordan include a normal distribution example about height. In the example, the average male and female heights are given as well as the standard deviation. The class is then asked to determine whether James, at 5'4", is considered a typical height.

- What is the problem in this scenario?
- How would you remedy this situation?

Case studies by:

Kairi Black, Graduate Student
Department of Mathematics
Duke University

Haley Qualls, Assistant Director
Center for Sexual and Gender Diversity
Duke University

Edited by:

Stanley Pritchard, Graduate Student
Department of Mathematics
Duke University