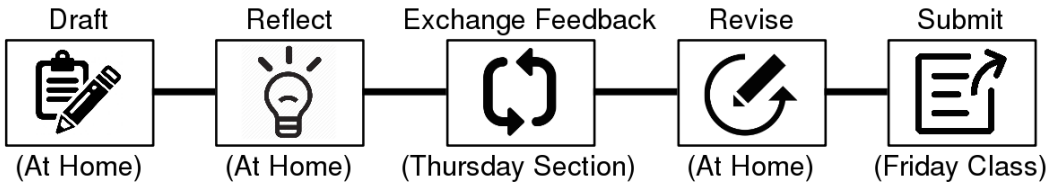
Math 240: Peer-Assisted Reflection #1

Due Dates: 9/29 (draft), 9/30 (final) Name: _____

The PAR Process



Note: Write your draft on a separate sheet and bring it to section. I will pass out a hard copy of this sheet for your self-reflection; bring that to section as well. Turn in both on Friday, plus your final draft.

Problem Statement

The newly-appointed queen of a newly-discovered land hires three explorers to map her territory: Emily, Jack, and Lila. The explorers have their own equipment and their own quirks.

Jack Jack has a miscalibrated compass—it is off by 45°. When Jack thinks he's walking east, he is actually walking due northeast. When Jack walks in what he thinks is a cardinal direction, he measures distance accurately.

Emily Emily is a careful explorer with an accurate compass. When Emily measures distance in a cardinal direction, it too is accurate.

Lila Lila is an excitable explorer. Her compass is accurate, but when she walks north, she skips and twirls. As a consequence, when Lila walks north, the distance she thinks she travels is *half* the distance she actually traveled.

Further, each explorer only walks in what they think are cardinal directions (i.e., north, east, south, and west). The queen declares that her palace is the center of the nation and that all measurements be made relative to her palace. She then sends the explorers on their way.

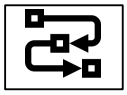
1. Emily finds the ruins of an ancient civilization located 70 miles east and 40 miles north of the queen's palace. She records the *royal coordinates* $(70, 40)$ in her logbook. The other explorers find the same ruins. What coordinates do they record in their logbook?
2. Each explorer is familiar with the Pythagorean theorem, and uses it with his/her own coordinates to compute the distance from the palace to the ruins. What distances do they compute? Are they all the same? Explain why any differences or similarities appear in the distance calculation.
3. The queen values accuracy and will behead anyone who reports inaccurate distances (strangely, the queen is just fine with inaccurate directions). Lila, unfortunately, cannot be convinced to change her coordinates. However, she might be convinced to use a different formula for distance, rather than the Pythagorean theorem. Is there a formula that Lila can use to accurately compute distances from her coordinates?
4. Suppose that Jack starts skipping and twirling and records a distance *half* as far as he actually travels when he thinks he's walking north. Is there a formula that he can use to compute distances accurately? How does this formula relate to Lila's? Explain.

Reflection

Turn the page and check off the icons that you think you did well; circle icons that you want feedback on.

Feedback Provided By: _____

Suggestions Communication **Strengths**

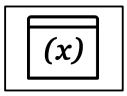


Show All Steps

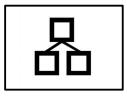
Explain Why,
Not Just What

Avoid Pronouns

Use Correct
Definitions



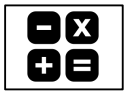
Define Variables,
Units, etc.



Create Diagrams

Suggestions Accuracy **Strengths**

Check Problem
Setup



Check Your
Calculations

Solve Multiple
Ways

Verify Answer
is Reasonable

Other
(Write Below)