Handout: Features of a "Good" Mathematical Explanation

Has a clear purpose

- Makes clear at the outset what is being explained and why you start there; and carefully connects the explanation to the question or idea being explained
- States what is known and what needs to be determined

Has a logical structure

- Starts at the beginning, and goes step-by-step in a logical fashion, being careful not to skip any steps
- States what you are doing and why you are doing it throughout
- Summarizes at the end what has been explained, and links that back to the original question, claim, or problem

Uses representations and language clearly and carefully

- Strives to be as simple and clear as possible
- Uses mathematical language accurately and consistently
- Defines terms as needed
- Uses representation(s) accurately
- Carefully labels any diagrams
- Uses units (when applicable)
- Makes explicit correspondences between the problem, the verbal/written explanation, and any representations

Focuses on meaning and is oriented to the listener(s)

- Shows what something means or why is true, and is convincing to the person to whom you are explaining
- Takes into account the background knowledge of the listener/reader
- Uses words that will be understood by the listener/reader
- Breaks things down – does not assumes the listener/readers knows what you are thinking
- Elaborates and emphasizes the part of the explanation that is most complex or confusing
- Uses representations that highlight meaning
- May include an example