Practice with Deductive Reasoning

1. Given the Venn diagram and the statement **Joe is a Pow.**, which of the following statements MUST be true? [Circle all that are true.]
   - A. Joe is a Leb.
   - B. Joe is a Wuff.
   - C. If you are a Pow, then you are a Wuff.
   - D. If you are a Wuff, then you are a Leb.
   - E. If you are a Leb, then you are a Wuff.
   - F. If Henry is not a Pow, then Henry is not a Wuff.
   - G. If Lucy is not a Leb, then Lucy is not a Pow.

Given the information, determine if a valid conclusion can be made. If no valid conclusion can be made, write **no valid conclusion**.

2. Statement 1: If two angles form a linear pair, then they are supplementary.
   Statement 2: \( \angle A \) and \( \angle B \) form a linear pair.
   Conclusion: \( \angle A \) and \( \angle B \) are supplementary.

3. Statement 1: If two angles form a linear pair, then they are supplementary.
   Statement 2: \( \angle A \) and \( \angle B \) are supplementary.
   Conclusion: no valid conclusion

4. Statement 1: If two angles form a linear pair, then they are supplementary.
   Statement 2: If two angles are supplementary, then the sum of their measures is 180°.
   Conclusion: If two angles form a linear pair, then the sum of their measures is 180°.

5. Statement 1: If something is a Tupp, then it is a Yip.
   Statement 2: If something is a Yip, then it is a Quop.
   Conclusion: If something is a Tupp, then it is a Quop.

6. Statement 1: If something is a Tupp, then it is a Yip.
   Statement 2: If something is a Tupp, then it is a Gopp.
   Conclusion: no valid conclusion
1. Three mysterious black boxes recently appeared in the cargo bay of the space station Entropy. The three boxes are labeled "widgets," "gadgets," and "widgets and gadgets." A note was attached to one of the boxes, obviously by some prankster on the recreational space station Empyrean, which read, "Each label is incorrect. But it is possible to determine the correct label for each box by selecting only one object from one of the boxes. How?" The note was signed "Space Happy." How indeed?

2. A group of six astronauts has been asked to explore three sectors of the space station to determine which area would be best for building a new housing project. They know that they are to work in teams of two, each team consisting of an engineer and a biologist. Leroy, Malik, and Nancy are biologists. Linda, Michelle, and Nikko are engineers. Unfortunately, a computer glitch has erased some of their instructions. Help them to figure out who the teams will be based on the information they have.

Linda is new, so she should work with an experienced team leader. Nikko is not scheduled to work with Malik this time.

Because this is Leroy's first mission he should be in charge of collecting soil samples. Malik joined the team at the same time as Leroy.

**Biolists**

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**Engineers**

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