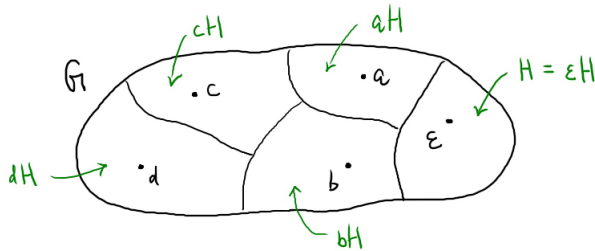


## Day 20: Lagrange's Theorem

1. Whiteboard page 1.
  - Discuss the coset equality rule, generalized in the next slide.
2. Whiteboard page 2.
  - Not a proof, because we can't manipulate (co)sets like elements without justification.
3. **Work on Day 20 Class Work. Leave 15 minutes for discussions.**
4. Whiteboard page 3.
5. **Proof of the Day:** Whiteboard pages 4 through 6.
  - **Page 4:** The picture should look like this:



- **Page 4:** Proof of ingredient #1 is in Chapter 19 reading.
  - **Page 6:** Show how  $ah = bk$  implies  $b^{-1}a = kh^{-1}$ . (Cross out  $b$  and  $h$ .)
6. **(Time permitting)** Whiteboard page 7.
    - Be sure to read the whiteboard and watch the video if we don't get to this in class!