Claim: For any ring R, the additive inverse of an element is unique.
Justification:

1. Let R be a ring, and let $x \in R$.
2. By __________, x has an additive inverse. Call it y.
3. Let z be *any* additive inverse of x.
4. By __________, $x + y = x + z$.
5. By __________, $y + (x + y) = y + (x + z)$.
6. By __________, $(y + x) + y = (y + x) + z$.
7. By __________, $y + x = 0$.
8. By __________, $0 + y = 0 + z$.
9. By __________, $0 + y = y$ and $0 + z = z$.
10. By __________, $y = z$.

Followup questions:

1. Why is it important to consider *any* ring R?
2. Why does the statement $y = z$ complete the justification?
3. Which properties of a ring did you *not* need to complete this argument?