

Reading Guide #9: Frege's Logicism
Frege, Selections from the *Grundlagen*
Frege's "Letter to Russell"
Russell's "Letter to Frege"

1. How are numbers different from algebraic variables?
2. What fundamental lack does Frege find in our knowledge of mathematics?
3. Why is there no need for special laws for aggregative thought?
4. "Psychology should not imagine that it can contribute anything whatever to the foundation of arithmetic" (vi). Explain.
5. Describe Frege's three principles.
6. What are two reasons to give proofs?
7. "An a priori error is thus as complete a nonsense as, say, a blue concept" (§3). Explain.
8. Are the categories *a priori*, *a posteriori*, synthetic, and analytic psychological? What are they?
9. What makes a proposition analytic? What makes a proposition synthetic? What makes a proposition *a priori*? What makes a proposition *a posteriori*?
10. Why do we need a logic which assures us that our reasoning is free of gaps?
11. How does Frege attack Kant's account of arithmetic as depending on pure intuition?
12. Of what does Frege approve in Leibniz's proof that $2+2=4$? What is it missing?
13. What is the difference between something objective and something actual? What makes something objective?
14. How does Frege argue that mathematical objects can not be intuited?
15. How does Frege argue that numerical assertions apply to concepts, rather than objects?
16. Can numerical assertions be both about concepts and objective? Explain.
17. Must objects be in space? Explain.
18. Why does Frege attempt to define the meaning of 'the number which belongs to the concept *F* is the same as that which belongs to the concept *G*' (§62)?
19. What is Hume's principle?
20. What is Leibniz's law for identity? How does it help Frege define numbers?
21. What is Frege's definition of number?
22. How does Frege define '0'?
23. How does Frege define 'follows in the series of natural numbers'? How does Frege define '1'?
24. Are arithmetical theorems analytic or synthetic? Explain.
25. "Arithmetic thus becomes simply a development of logic..." (§87). Explain.
26. Why, on Kant's definition of analyticity, is the division of judgments into analytic and synthetic not exhaustive?
27. Contrast Frege's definition of analyticity (plant in the seeds) with Kant's definition (beams in the house).
28. How does Frege criticize Kant's claim that arithmetic depends on intuition?
29. How does Frege agree with Kant regarding geometry?
30. Why is the analyticity of mathematical proofs merely probable? What would make it certain?

31. What is Russell's paradox? How does it undermine Frege's work?