

**UNIVERSITY OF LONDON**

**577 0090**

**MA Examination**  
for Internal Students

**PHILOSOPHY**

**Philosophy of Mathematics**

Tuesday 27 May 2008: 2.30 -5.30pm

Candidates should answer **THREE** questions. Avoid overlap in your answers.

© University of London 2008

UL08/776

Page 1 of 3

1. 'A *point* is that which has no part. A *line* is breadthless length.' (Euclid). Why might these definitions be thought inadequate? Is there any better account of what points and lines are?
2. Are there good grounds for rejecting the view that the mathematical geometer studies Abstractions?
3. 'Through any two points runs exactly one straight line.' Does sensory experience provide us with good reason to accept this?
4. What did Kant mean by claiming that the truths of pure geometry are synthetic a priori? What are the merits and drawbacks of this view?
5. Is there a satisfactory elaboration of the view that cardinal numbers are multitudes of units?
6. **Either** (a) Can numerical equations be understood without taking numbers to be objects?  
**Or** (b) Assess the view that though the statement '182 apples divided among 14 is 13 apples each' is about apples, the statement ' $182 / 14 = 13$ ' is about numerals of the decimal system.
7. 'There is in every step of an arithmetical calculation a real induction, a real inference of facts from facts; and what disguises the induction is simply its comprehensive nature, and the consequent extreme generality of the language.' (Mill). Discuss.
8. Assess Frege's reasons for his claim that an attribution of number, such as that Elizabeth II has four children, is a statement about a concept.
9. Show that the (naïve) Principle of Comprehension (that for any predicate  $Fx$  in the language of mathematics, there is a class whose members are exactly the  $Fs$ ) is false. What is the significance of this fact for logicism?
10. Is there good reason for thinking that some mathematical propositions are neither true nor false?
11. Explain
  - (a) Hilbert's finitism and
  - (b) how he hoped to square his admiration for Cantor's theory of the transfinite with his finitism.

12. 'We should believe that entities exist if they are posited by mathematical theories that are indispensable to our best overall scientific account of the world; all other mathematical posits we should treat as fictions.' Discuss.
13. Explain and evaluate the claim that pure mathematics is about nothing but abstract structures.

**END OF PAPER**