

1. Are the objects of geometry physical objects?
2. “When, in geometrical reasoning about triangles in general, we think of a triangle, we think about it in the abstract.” Discuss.
3. “In geometry mathematics discovers what is deducible from the axioms. The truth of the axioms can only be discovered by generalization from the evidence of the senses.” Is this true?
4. Is anything of Kant’s philosophy of geometry left standing by the discovery that the geometry of physical space may be non-Euclidean?
5. Is there any good objection to the claim that a natural number n is the class of all n -membered classes?
6. Is there a satisfactory way of interpreting numerical equations (e.g. $4 \times 6 = 24$) and inequations (e.g. $12 < 169 / 13$) which avoids assuming that there are such things as abstract objects?
7. Are there good reasons for holding that a cardinal number attribution, such as “Mars has 2 moons”, is really a statement about a concept?
8. Is it an analytic truth that the number of Fs is the number of Gs if and only if there is a one-to-one correlation between the Fs and the Gs ?
9. “A cardinal number is neither a multitude of units nor a set; it is a property of a set.” Discuss.
10. Every natural number n has a successor $n + 1$. How do we know that this is true?
11. What is Russell’s Paradox, and what is its significance for philosophy of mathematics?
12. What is the Simple Theory of Types? Should we accept it?
13. Assess the claim that mathematical entities are mental constructions.
14. Present and assess Dummett’s language-based argument against taking the so-called Law of Excluded Middle as a universally valid law of logic.
15. What is Hilbert’s finitist view of mathematics? Does it entail abandoning a commitment to infinite sets?
16. What is Gödel’s Second Incompleteness (or Underivability) Theorem? Explain its significance for Hilbert’s Programme.

PLEASE TURN OVER

17. “Quantification over mathematical entities is indispensable to science; therefore we should accept such quantification; but this commits us to accepting the existence of the mathematical entities in question.” Discuss.
18. Is mathematics just a body of useful fictions?

END OF PAPER