The *Philosophical Investigations* ends, famously, with an indictment of scientific psychology, claiming that ‘an investigation is possible in connexion with mathematics which is entirely analogous to our investigation of psychology’ (PI II, p. xiv). Wittgenstein goes on to propose that the foundations of mathematics ‘... is just as little a mathematical investigation as the other is a psychological one.’ It will not contain calculations, so it is not for example logistic. It might deserve the name of an investigation of the ‘foundations of mathematics’. In this chapter, I want to take up the invitation to pursue the analogy, not only in terms of methodology, but also in terms of substantive similarities between the foundations of mathematics and the foundations of psychology. Mathematics and psychology are very different practices, but comparing foundational features is surprisingly illuminating. As Wittgenstein says earlier in the *Investigations*, ‘the kind of certainty is the kind of language-game’ (PI II, pp. xi, 224). So, to investigate the kinds of certainty belonging to these two language-games will reveal similarities and differences.

### 5.1 Platonist and Cartesian certainty

The certainty we have in mathematics and in psychology has led philosophers to look for special kinds of entities or realities lying behind the surface appearances: calculating in mathematics and wincing and crying in pain. Actual calculating, the writing of numerals on a page, is a temporally extended event subject to different kinds of failing. In adding, we may fail to carry a number over to the next column. We may take an ‘X’ for a ‘+’. We may make some random error. We may make some systematic error. Equally, crying and wincing might not be genuine. The behaviour might occur in the context of a play. It may be
deceitful. It may be an exaggerated behaviour. For all that, the certainty of mathematical propositions is not contingent (for that would only be psychological certainty). And the certainty secured by introspection is essential to the mental states in question. The certainty of mathematics and introspective awareness seems to reside in the very nature of mathematics and conscious experience. Further, this certainty is not undone because of the fallibility of actual calculations and the possibility of deceit with respect to our sensations, emotions and intentions. There is a problem, then, of showing how the propositions belonging to these two domains are certain while nonetheless being compatible with our fallibility in calculating and the fact that the certainty in ascribing psychological states to others is open to manipulation.

The traditional solution to the problem of certainty, and the solutions of Bertrand Russell (1912) and William James (1918), is to hypothesize the existence of metaphysically distinct realms. In the first instance, it is a metaphysical problem in accounting for the certainty of mathematics, not an epistemological one. The Platonist theory posits the existence of a realm of objects and numbers that exists independently of our calculations. Our calculations are the contingent means we have for constructing mathematical propositions. Thus, the conflict between contingent fallibility and absolute certainty is apparently resolved. Cartesian certainty, on the other hand, is epistemological; yet, behavioural expressions of pain or emotion or intention are only contingently connected to the mental states of a subject. Here the certainty of psychological knowledge must be made compatible with a contingent knowledge of the states of others. The solution is found in the idea that there is a domain of mental objects with special properties. These properties bring with them a principled distinction between first-person and third-person usage. First-person avowals are certain for the subject. The special properties of mental ideas ensure this certainty. Consequently, others have only a contingent grasp. Again, a metaphysical theory of special objects, ideas, is used to save a privileged place for certainty while acknowledging the problems raised by deception or failure to understand the mental states of others. Numbers and ideas, given their very special features, are utterly detachable from the contingent attempts to capture them in calculation or in the behavioural ties that express mental states. Only if they are so detachable can the certainty and necessity, which is essential to them both, be possible. But this solution comes with an immediate problem. The metaphysical theory of mathematics makes it impossible to understand how a mathematical or logical proposition could ever be applied. The metaphysical theory