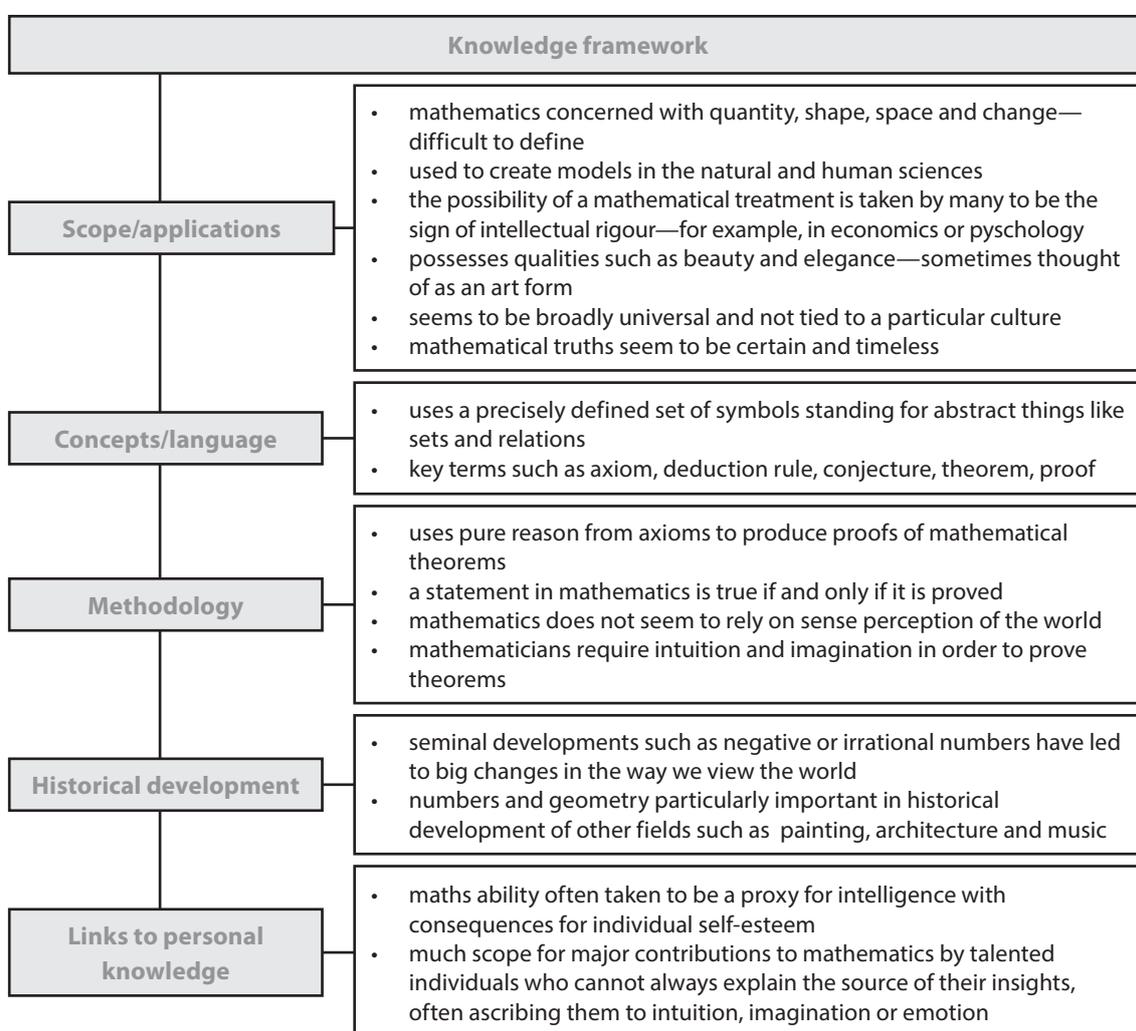


Mathematics

Is there a distinction between truth and certainty in mathematics? Is mathematics independent of culture? Is mathematics discovered or invented?

Mathematics is founded on a set of more or less universally accepted definitions and basic assumptions. It proceeds from a system of axioms using deductive reasoning to prove theorems or mathematical truths. These have a degree of certainty unmatched by any other area of knowledge, making it excellent raw material for study in TOK.

Despite, or rather because of, the strict confines of mathematical logic, mathematics is an enormously creative subject, asking of its practitioners great leaps of the imagination. Pure mathematics requires no prior sense perception at the start of inquiry but the application of mathematics to real-world situations requires techniques such as those used in the natural and human sciences. Indeed, most research in the natural and human sciences is underpinned by mathematics. There are also often close links between mathematics and the arts where formal requirements for harmony or symmetry impose mathematical structures on a work.



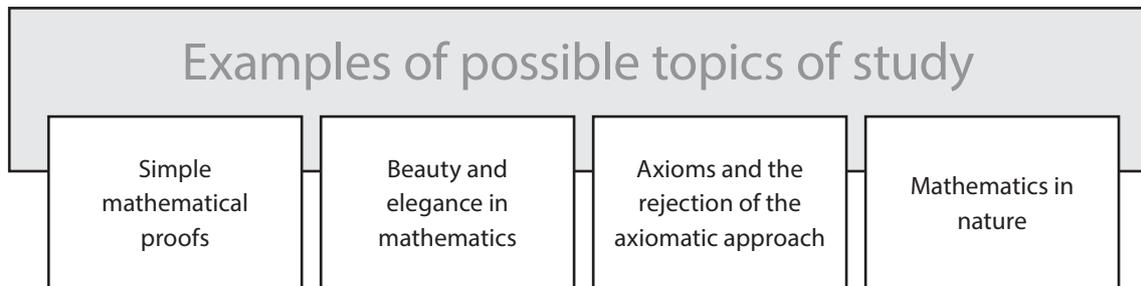
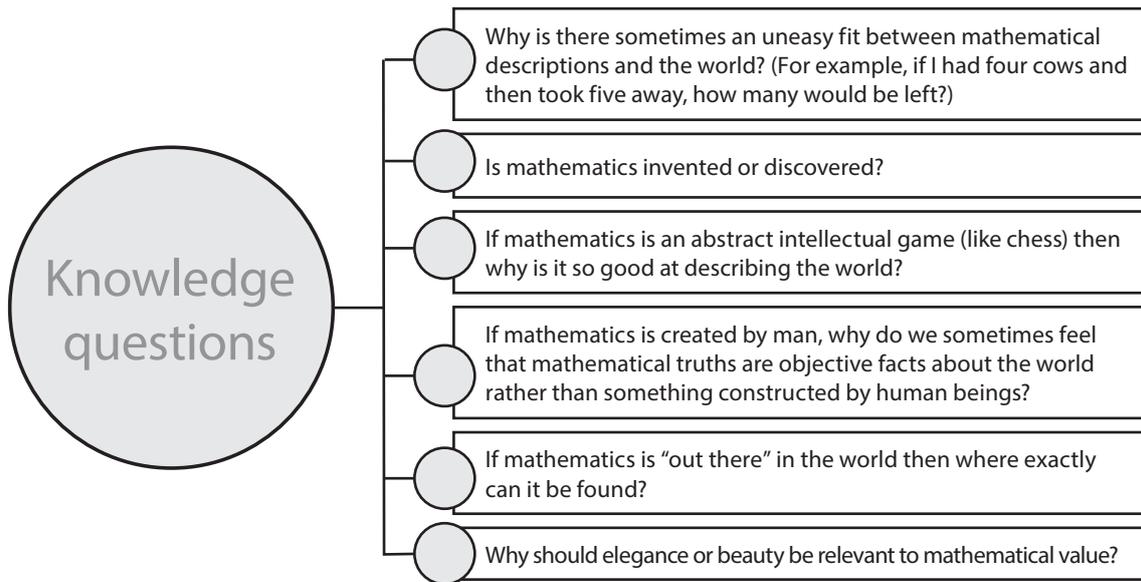


Figure 11