

# Semantics SV1

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## 1 Basics

In this section, some questions are intentionally vague. Please list your assumptions when answering them.

1. Create a calculator language which can handle integer addition, subtraction, multiplication and division.  
Specify its syntax.
2. Specify an operational semantics and a type system.
3. Is your system type safe? If not, how can you make it type safe?
4. (Optional) Implement your operational semantics and your type system with your favourite **functional** language.

## 2 Induction

1. Do sections 1, 2 and 3 of the induction worksheet. For exercise 11 (iv), you need only consider the rules (assign1), (assign2) and (if3).

## 3 Exam questions

*This set of work was partly adapted from David Berry's supervision questions.*

1. 2013P6Q9
2. 2015P6Q9