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| Algorithms and coding in the Victorian Curriculum Mathematics 7–10 |
| Strand: Number and Algebra sub-strand: Patterns and algebraInstructions: The following document can be used as a planner to summarise a brief description of suitable activities related to the elaborations for the content descriptions for algorithms and coding. |
| Level | **Content description** (mandatory) | **Elaborations** (optional/advisory) and sample activity<Insert a brief description of a sample activity below each elaboration > |
| 7 | Design and implement mathematical algorithms using a simple general purpose programming language [(VCMNA254)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA254) | Finding the sum of a set of consecutive numbers using a loop structure | Constructing geometric patterns such as a honeycomb, using dynamic geometry functionality |
| 8 | Use algorithms and related testing procedures to identify and correct errors [(VCMNA282)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA282) | Debugging search and sort programs | Testing a number for divisibility |
| 9 | Apply set structures to solve real-world problems[(VCMNA307)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA307) | Using a sort algorithm to determine the median of a set of numbers | Exploring variation in proportion and means of random samples, drawn from a population |
| 10 | Implement algorithms using data structures in a general-purpose programming language[(VCMNA334)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA334)  | Using two-dimensional arrays such as matrices to represent and implement sequences of transformations of sets of points in the plane | Using pointers in algorithms |
| 10A | Devise and use algorithms and simulations to solve mathematical problems [(VCMNA358)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA358) | Applying a systematic guess-check-and-refine algorithm to identify an approximate value for the root of an equation in an interval | Developing simulations for counter-intuitive problems in probability such as the Monty Hall problem or derangements |