**COMPUTATIONAL THINKING IN AUSTRALIAN CURRICULUMS**

**DIGITAL TECHNOLOGIES AND MATHEMATICS**

**BREAK THE PROBLEM DOWN INTO MODULES AND SOLVE**
Define simple problems to deliver solutions. Define and decompose real-world problems to develop a software solution.

**HONEYCOMB PATTERN**
Space-filling patterns with hexagons occur in bees’ honeycomb and also tiling patterns on building surfaces. These patterns are called hexagonal tessellations or hexagonal tilings. Geometry and drawing software can be used to produce a hexagon and a honeycomb pattern.

**PIGEONHOLE PRINCIPLE**
The pigeonhole principle is a simple but powerful counting idea in mathematics. It states that when we have more objects (pigeons) than containers (holes) then at least one container must contain more than one object. This image illustrates this principle for the case of ten pigeons and nine holes.

**ABSTRACTION**
Removing non-essential information and focusing on principal structure only.

**DECOMPOSITION**
Breaking a complex problem down into simpler, less complex components.

**ALGORITHMS**
A sequence of instructions that can be performed.

**FOCUS ON SPECIFIC DETAILS OF A PROBLEM**
Draw a simple diagram of home network devices connecting to the internet via a wireless router.

**FLOWCHARTS OR PSEUDOCODE**
Involves branching (selection or decisions) and iteration (repetition). Trace to determine output. Code using a general-purpose programming language.

**RECOGNISE PATTERNS IN DATA TO CREATE INFORMATION**
Water storage and use. Daily water storage levels as a percentage of capacity.

**PATTERN RECOGNITION**
Classifying patterns in data and organising data logically. Representation and interpretation.

**DIVISION AS A REPEATED SUBTRACTION**
Multiplication of positive integers can be considered as repeated addition. In a similar way division of a positive integer by a smaller positive integer can be considered as repeated subtraction.

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**PROBLEM**
Consider the list of two-digit numbers {10, 11, 12 … 97, 98, 99}. Numbers are selected randomly, with repetition allowed. What is the minimum number of selections required to ensure that at least three of the selected numbers have the same first digit?

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