Section 4.2: Algorithms for whole number operations

Algorithms for Addition of Whole Numbers:

- **Standard Algorithm:**

- **Intermediate (alternative) Algorithm:**

- **Lattice Method:**

- **Scratch Method:**

Algorithms for Subtraction of Whole Numbers:

- **Standard Algorithm:**

- **Adding the Complement:** The complement is the number that when added to the subtrahend produces a sum where each digit is 9. The complement will always have the same number of digits as the subtrahend.

- **Subtract from the base:**

Algorithms for Multiplication of Whole Numbers:

- **Standard Algorithm:**

- **Intermediate Algorithm:**

- **Lattice Method:**

- **Russian Peasant Algorithm:** The Russian Peasant Algorithm for multiplying two numbers involves halving one number (and disregarding remainders) while doubling the other. The process stops when 1 is reached in the halving column. To find the product, each row with an even number in the halving column is crosses out and the remaining numbers in the doubling column are added.

- **Egyptian Algorithm:** This algorithm is based on the fact that every number can be written as the sum of numbers that are powers of 2. The process involves doubling one of the number involved.

<u>**Algorithms for Division of Whole Numbers:**</u>

- **Standard Algorithm:**

- **Scaffold Method:** The better you are at estimating the quicker the problem is solved.