**Your Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Objectives: E & C pathway students should attempt to complete all parts of this sheet. S pathway students should complete all numbered questions. F pathway students should complete Qs 1, 2, 3 and 5.**

**Algorithms Worksheet**

1. Explain in your own words what an ***algorithm*** is.
2. Explain why a cooking recipe is like an algorithm?
3. What does ***sorting*** mean?
4. A popular sorting algorithm is the ***bubble sort***. Watch the Youtube clip ***bubble sort (dance)*** and ***bubble sort (girls)***.

Show the stages of how a bubble sort could sort this list of fruit into alphabetical order.

melon

lemon

banana

apple

pear

After first pass:

lemon

melon

apple

banana

pear

After second pass:

After third pass:

1. What does ***searching*** mean?
2. ***Binary search*** is a popular searching algorithm. Watch the video that explains ***binary search*** a couple of times. Try to find another video on binary search and watch that also.

Explain the steps of how a ***binary search*** could find “banana” within this list of fruit.

lime

pear

apple

banana

orange

melon

lemon

Step 1:

Step 2:

Step 3:

**Extension:**

Research another sorting algorithm, e.g. merge sort or insertion sort. Find and watch some video clips that explain it. Try to understand how it works.

There are many different sorting algorithms, some working better than others in certain situations. What factors need to be considered in choosing the right sorting algorithm?

Find out how your chosen sorting algorithm compares to bubble sort in efficiency and speed.