Year 6 Computer Home Learning Tasks

WEEK 2

Scratch Unit: Programming Computer Games
Lesson 1: Guess my Number

Key Vocab: algorithms, efficient algorithms and inefficient algorithms, logical reasoning.

Scratch jigsaw
https://scratch.mit.edu/projects/100911838/#editor

1. Complete the programme to play the game.
2. Assess how efficient it is.
3. Improve the programme to be more efficient.

Solutions - (DO NOT LOOK UNTIL YOU'VE COMPLETED THE TASK!)
https://scratch.mit.edu/projects/100911715/#editor
https://scratch.mit.edu/projects/100911918/#editor

Key question: What is happening with the algorithms - are they efficient?

WEEK 3

Scratch Unit: Programming Computer Games
Lesson 2: Binary Search

Key Vocab: Linear search, binary search.

Binary Search example - If the number thought of was 71.
Question: Is your number above 63? Answer: Yes
Question: Is your number above 94? Answer: No
Question: Is your number above 78? Answer: No
Question: Is your number above 70? Answer: Yes
Question: Is your number above 74? Answer: No
Question: Is your number 71?

Can you create an algorithm for a binary search using the Scratch code jigsaw?
https://scratch.mit.edu/projects/100912338/#editor

It should only take 7 questions for the computer to guess your number!

Extension: How many questions will the computer need to guess a number: between 0 and 1,023? Or between 0 and 1,048,575?
Can you change your code to find out?

WEEK 4&5

Scratch Unit: Programming Computer Games
Lesson 3: Selection Sort

Scratch jigsaw
https://scratch.mit.edu/projects/100912596/#editor

This algorithm searches through for the heaviest mass, then the next heaviest mass, and so on. Can you?

1) Enter weights to run the programme.
2. De-bug the programme.
3. Assess the algorithm - how useful is it?
4. Improve the programme to be more efficient.

Solution - (DO NOT LOOK UNTIL YOU'VE COMPLETED THE TASK!)
https://scratch.mit.edu/projects/99806682/#editor

WEEK 6

Scratch Unit: Programming Computer Games
Lesson 4: Prime Numbers

How could we use an algorithm to check prime numbers? What would the logical steps be?
You choose your challenge level:

1. Test numbers up to 100 using the Scratch programme: https://scratch.mit.edu/projects/99648060/
2. Complete worksheet - Sieve of Eratosthenes. https://www.mathgoodies.com/Webquests/number_theory
Can you complete it on the computer?
3. Try to build your own prime number checker in Scratch: https://scratch.mit.edu/projects/editor/#editor

WEEK 7

Scratch Extension 1:

Scratch programming using Bourne to Code

My LOL Cat

www.bournetocode.com

https://www.bournetocode.com/projects/7-CS-lolcats/index.html

Extension 2:

Scratch programming using Bourne to Code

Scratch Arcade

www.bournetocode.com

3 Arcade Game projects + extra resources

https://www.bournetocode.com/projects/7-CS-ScratchArcade/

Again designed for Year 7s but well worth a go.