**WEEK 5 – Equivalent Volume Coding**

**Unit:** Spatial Sense

**Grade:** Intermediate (7-8)

**Curriculum Expectation**   
show that the volume of a prism or cylinder can be determined by multiplying the area of its base by its height…

**SEL:** work collaboratively on math problems – expressing their thinking, listening to the thinking of others, and practising inclusivity – and in that way fostering healthy relationships

**Activity  
1)** Students will use Scratch for this activity through tinkering with code to calculate volume and create a new net. Go to: https://scratch.mit.edu/projects/386582900 or scratch.mit.edu and search bdickso9 and find *Cube Net.* **2)** Run the program by clicking the green flag. Once you run the program , click “See inside”, based on the measurements of the square (use units3 rather than cm3 or m3) calculate the volume of the cube created by the net.   
**3)** One you have calculated the volume of the cube, create another prism with an identical volume. Calculate its dimensions.   
**4)** Once done, sketch the net for this prism on a sheet of paper.   
**5)** Using Scratch build the code (you may adjust the code already built as the pen function is not easy to find in newer versions of Scratch) to have your Sprite sketch out the net of this prism. You must also change the Sprite’s costume, colour, background etc.   
**Note:** if you have not done a Scratch lesson yet, it is advised that you complete the intermediate lesson from weeks 1 and 3 to expose yourself to coding and to Scratch. If computer access is unavailable, using the attached screenshots, students can run an unplugged version of this game by using the screenshot below to estimate the volume. Use tape or string track their ‘sprites’ movement and plot out their new net. The important part is that students are creating the nets of a prism with equivalent volume.

**Check for Understanding**   
I understand how to calculate prisms with equivalent volume and determine dimensions  
I understand how to create a net of a prism with a set volume and dimensions   
I can write step-by-step code to create the net of a prism with determined dimensions

**Materials**   
Recording sheet (attached below), access to Scratch or space to program unplugged ‘sprites’

Unplugged Coding: This activity can be done to compliment or replace the online Scratch activity if access to a computer is not available. Students will sketch out the net that they want to build. Students will draw or stack these blocks to create their own ‘code’ to program their sprite to move to trace the net. Once the sprite has moved, use something to trace on the ground to ensure that the Sprite is the following the correct path. For the unplugged activity only (otherwise, use the measurements in the code), assume that the dimensions of the cube are 2 steps by 2 steps by 2 steps to create a prism with equivalent volume

Angle

String

Movement

Turn \_\_\_\_\_\_\_ 0 in \_\_\_\_\_\_ direction.

Take 1 step forward

String down

A screenshot of a cell phone

Description automatically generated