**Willsden Primary School Week 4, Term 4 Year 5 / 6**

***1) Key lesson intentions / maths goals***

a) Students develop ideas that the same volume can have different dimensions

b) Students identify that the surface area of a cuboid can differ depending on the length of the sides.

c) Students thinking flexibly about shapes through use of intentional questions: ‘What else’, ‘What might’, ‘What could?’

***2) Australian Curriculum: Measurement and Geometry* Using units of measurement and Shape**

**Year 5**

Choose appropriate units of measurement for length, area, [volume](http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Volume), [capacity](http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Capacity) and mass

Calculate the [perimeter](http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Perimeter) and area of rectangles using familiar metric units

Connect three-dimensional objects with their nets and other two-dimensional representations

**Year 6**

Solve problems involving the comparison of lengths and areas using appropriate units

Construct simple prisms and pyramids

***3) Lesson outline***

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| **Lesson Activities** | **References**  **Open-ended Maths Activities (OMA)** | **Questions for the students**  Fluency, Understanding, Problem Solving, Reasoning | **Executive functions**  **Cognitive flexibility, Impulse control and Working memory** |
| **1. Same volume, different dimensions: Teacher lead activity**  Ask students to build the same cuboid to the one that is hidden behind the screen (12 cm3)  Change dimensions, asking students what they notice about the shapes.  Draw students’ attention to the same volume, but different size sides.  Ask the question: ‘someone told me that one of these shapes as the smaller total surface area. Could they be telling truth? How could you prove it?’  Record class data.  Ask why surface area is important – who could his be important for?  **2. Same volume, different dimensions: Student lead activity.**  Challenge: a chocolate maker has asked you to design a box that holds 36 chocolates. But, you must make it so that when they make the box or it, it uses the smallest amount of cardboard. | **Page 61, Question 3** | What do you notice about the cuboid? (U)  And what else?  What facts do you need to know? (F)  Why have you said…? (R)  How can you be sure of what you are saying? (R)  Can you justify why your answers are correct? (R)  What questions do you have? (F)  What would change if the size of the sides changed?  How can you convince me your cuboid has the smallest surface area? (R) | **Executive functions**  Impulse control – can they inhibit the impulse to stop after recording only a few different shapes?  Cognitive flexibility – can they continue to build cuboids with the same volume, but with different dimensions?  Working memory – How do they need to write down their thoughts? |