

**Activity:****ELASTIC SHAPES****Strand:** Space and Geometry**Stage:** 3/4

**Syllabus outcome:** **SGS 3.1** – Identifies three-dimensional objects, including particular prisms and pyramids, on the basis of their properties, and visualises, sketches and constructs them given drawings of different views.

**SGS 4.1** - Describes and sketches 3D solids including polyhedra and classifies them in terms of their properties.

**Key ideas / Working Mathematically** – identifying common three dimensional shapes and their properties

**Questioning:** Ideas of how to construct shapes

**Applying strategies:** Trialling methods to build shapes.

**Communicating:** Discussing and explaining, improving strategies.

**Reasoning:** During the activity

**Reflecting:** Checking, modifying, clarifying and fine-tuning final product.

**Literacy / Numeracy:** Increased confidence in students' understanding and usage of terms - metalanguage  
Increased confidence in describing and justifying mathematical processes  
Increased familiarity with working co-operatively with others – social skills

**Curriculum differentiation:** although all students are given similar instructions, the more capable students are able to produce a shape and describe and analyse its properties to a much more sophisticated level.

**Quality teaching:**

	<i>Intellectual Quality</i>		<i>Quality Learning Environment</i>		<i>Significance</i>	
Deep Knowledge	X		Explicit Quality Criteria	X	Background Knowledge	X
Deep Understanding	X		Engagement	X	Cultural Knowledge	
Problematic Knowledge			High Expectations	X	Knowledge Integration	X
Higher-order Thinking	X		Social Support	X	Inclusivity	X
Metalanguage	X		Students' Self-regulation	X	Connectedness	X
Substantive Communication	X		Student Direction	X	Narrative	
<b>Learning styles:</b>	Visual	X	Auditory	X	Kinaesthetic	X

**Lesson outline:**

- Students work in groups of five or six
- Explain that each group will be asked to construct a number of shapes from their elastic and that before they get to make the next shape they must explain to you why their shape is the one you asked for. Demonstrate this by asking four students to make a square. They should tell you that it has 4 equal sides and 4 right angles.
- Issue each group with a circle of elastic and ask them to make a rectangular prism. They should raise their hand when this shape is completed and they should justify to you (or your helper) what makes that a rectangular prism.
- Each time a shape is completed, give them another shape to make.
- In the process, introduce the concepts of prism vs pyramid and introduce the terms edge, vertex, face, cross section etc.
- For more capable students, give more difficult shapes.
- Call the group together a few minutes before the end of the lesson and ask students to summarise the main concepts.