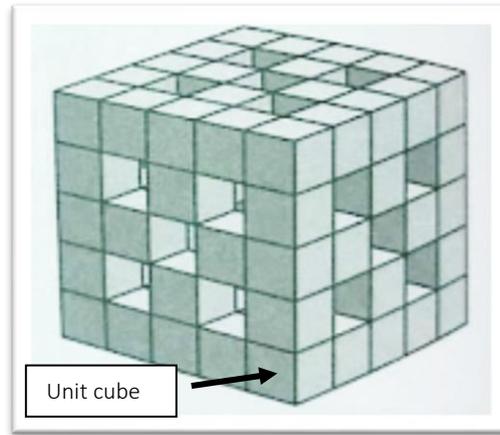


Title: Cube Task

Purpose: To develop students' ability to Question Pose



The purpose of this task is to strengthen students' ability to pose questions and define a problem in mathematics. Providing opportunities for students to pose questions that merit mathematical investigation and scrutiny is fundamental to the development of students' abilities to reason, problem-solve, and think critically. Please note, this task is not an example of a Classroom-Based Assessment.

Questions posed can be motivated by curricular content or real-world phenomena. A useful strategy for developing the skill of problem posing in students is the use and integration of multi-modal stimuli such as images, photographs, diagrams, digital manipulatives, video and/or audio recordings. The Assessment Guidelines for Mathematics note that 'defining the problem statement' is an integral aspect of the Mathematical Investigation and begins with the student posing and refining the problem to be explored. Problem posing is a creative act and is a skill that takes time to develop. Teachers must provide regular opportunities for students to develop these competences. It is suggested that this should be a focus of the plenary.

This task can be used with students during or at the end of their initial study of Geometry, Number and Algebra. If the task is used during a unit of learning the task is formative, as it provides an opportunity for the class teacher to assess student ability to sketch and analyse geometrical shapes, apply their knowledge of Geometry, Number and Algebra to a problem and justify a conclusion in terms of the original question posed.

The task is aligned to many of the Unifying strand's learning outcomes from the Junior Cycle Mathematics specification. For example, the teacher may choose to focus on:

- U4 Represent a mathematical situation in a variety of different ways, including: numerically, algebraically, graphically, physically, in words; and to interpret, analyse, and compare such representations
- U8 Apply their knowledge and skills to solve a problem, including decomposing it into manageable parts and/or simplifying it using appropriate assumptions

The task is linked to the following contextual strand learning outcomes from the Junior Cycle Mathematics specification:

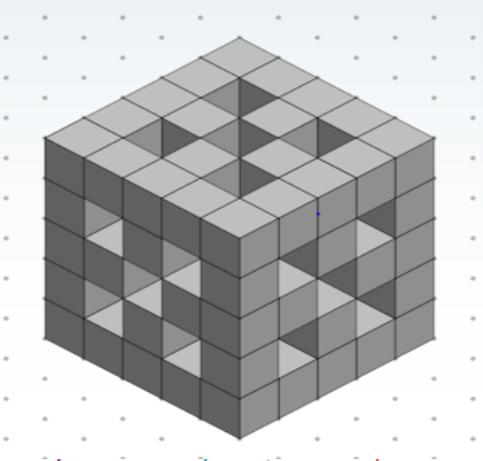
- N4 Analyse numerical patterns in different ways, including making out tables and graphs, and continue such patterns
- GT2 Investigate 3D solids
- AF1 Investigate patterns and relationships (linear, quadratic, doubling and tripling) in number, spatial patterns and real-world phenomena involving change

Useful Digital Resources

The following links are online resources which may be useful tools for students when they are engaging with this task.

<https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Isometric-Drawing-Tool/>

<http://voxelbuilder.com/edit.html#C/2ecc713498db34495ee67e22ecf0f1:A/>

	<p>Possible prompts for use with students:</p> <p>What do you want to know?</p> <p>What do you already know?</p> <p>Are there any concrete materials that could help you?</p> <ul style="list-style-type: none">• Building cubes? (Interactive online resources?)• Isometric graph paper for diagrams? <p>What assumptions are you making?</p> <ul style="list-style-type: none">• Is the core solid?• Is the pattern maintained on the sides that are not visible?
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