GETTING OFF THE PLANE: FROM TESSELLATIONS TO SOLIDS

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TARGET AUDIENCE: Mathematics teachers in the Intermediate Phase.

TIME-SLOT: 2 hours

MAXIMUM NUMBERS OF PARTICIPANTS: 40

MOTIVATION FOR WORKSHOP

- To expose teachers to simple materials that help learners to explore and understand some aspects of three-dimensional geometry.
- To demonstrate how children can experience solid shapes through simple paper, pencil, and scissor activities.

CONTENT OF WORKSHOP

Participants will:

- Explore some tessellations.
- Create the Platonic solids from partial tessellations.
- Explore the development of lessons from simple beginnings.
- Learn how to make mathematics learning fun for their students.
- Explore how to introduce their students to 3-dimensional geometry.

PROPOSED TIME ALLOCATION FOR WORKSHOP ACTIVITIES

Activity	Time
Presenter gives a brief presentation on tessellations	10 minutes
Participants will construct a *cube* for themselves, and compare and discuss their nets	20 minutes
Participants will construct a *tetrahedron* and an *octahedron* and for themselves, and compare their nets	20 minutes
Participants will discuss their experience to date, and share their insights	15 minutes
Participants will construct an *icosahedron* for themselves, and compare their nets	10 minutes
Participants will construct an *icosahedron* for themselves, and compare their nets	15 minutes

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Participants will discuss their findings and produce a *dodecahedron*.	15 minutes
General discussion and ideas for further lessons on solids.	15 minutes

ABSTRACT

The world at large is three dimensional, but for many children school leaves the exploration of 3-D geometry to late in the primary years. However, as participants will experience in this workshop, some of the basic ideas solid shapes can be explored with the use of very simple and readily available materials. This workshop provides opportunity for teachers in the Intermediate Phase to explore the construction and geometric properties of the Platonic solids for themselves, and also explore ideas for repeating the experience for their own students. Simple materials, such as paper and scissors combined basic cutting and sticking skills can be powerful tools for exploring some basic geometric ideas and terminology, such as surface, edge, vertex, and angles. Providing children with these experiences through their own handiwork has the potential for a lasting impact on their attitude to studying geometry. Geometry should, and can, be fun! All materials will be provided, including scissors, although participants are encouraged to bring along their own favourite pair!