

MODULE

Geometric Packing

- Investigate the surface areas and volumes of various three-dimensional objects.
- Explore rotations, reflections, dilations, and symmetry of figures.
- Experiment with spherical packing.
- Investigate the golden ratio and how it relates to architecture and package design.
- Perform ancient Egyptian multiplication and division.
- Understand the Honeycomb Conjecture and Pythagorean Theorem.

SESSION FOCUS

- 1 Surface Areas and Volumes
- 2 Surface Areas, Volumes, and Applications
- 3 Spherical Packing, Projection, and Pascal's Triangle
- 4 The Fibonacci Sequence, Pascal's Triangle Theory
- 5 Egyptian Math, the Golden Ratio, and the Pythagorean Theorem
- 6 Rotations, Reflections, Symmetry, Translations, and Dilations
- 7 Logic and Transformations

Dear Parent,

As parents and teachers, we realize it can be hard to get a child to discuss what he or she is learning in school. We hope the information provided on this page will assist you in communicating with your child about what he or she is learning.

Your participation in the learning process is extremely important, as you are your child's best teacher.

For the next few days, your child will be learning about designing packages based on appearance, practicality, and conserving material while completing the *Geometric Packing* Module.

Words students will learn in this Module include:

- edges
- faces
- greatest common divisor
- least common multiple
- surface area
- transformation
- vertices
- volume

Questions for Discussion

During the course of this Module, your child will be assessed on key concepts and activities. You might want to discuss these concepts and activities with your child. He or she will be asked to:

- Find the surface area and volume of standard three-dimensional objects. (*The objects include cubes, spheres, pyramids, and cylinders.*)
- Identify basic number theoretical concepts and apply them. (*Find Fibonacci and Pascal sequences and apply them to the golden ratio and three-dimensional objects.*)
- Explain how rotations, reflections, translations, and dilations are used in mathematics, architecture, and art. (*Rotations, reflections, translations, and dilations are used to create tessellations, which are then translated.*)

Student: _____

Parent: _____