Unit 5, Lesson 12

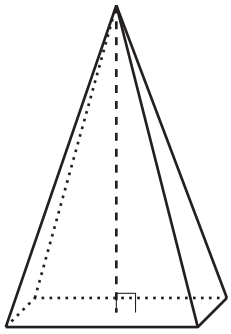
Prisms and Pyramids

Let's describe relationships between pyramids and prisms.

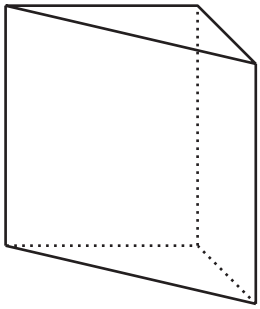
12.1 The Faces of Geometry

Three solids are shown.

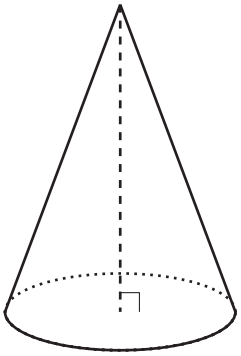
A



B



C



Draw all the surfaces of each solid.

12.2 Card Sort: Sorting Shapes

Your teacher will give you a set of cards that show geometric solids.

1. Sort the cards into categories of your choosing. Be prepared to describe your categories. Pause for a whole-class discussion.
2. Sort the cards into new categories in a different way. Be prepared to describe your new categories.

Are you ready for more?

The platonic solids are a special group of solids with some specific criteria:

- The faces are all congruent and are all the same regular polygon.
- They are convex, meaning that the faces only meet at their edges.
- The same number of faces meet at every vertex.

1. Draw a platonic solid constructed with faces that are squares.
2. Draw a platonic solid constructed with faces that are triangles.
3. Draw a different platonic solid constructed with faces that are triangles.

12.3 Building a Prism from Pyramids

Your teacher will give your group 3 nets. Each student should select 1 of the 3 nets.

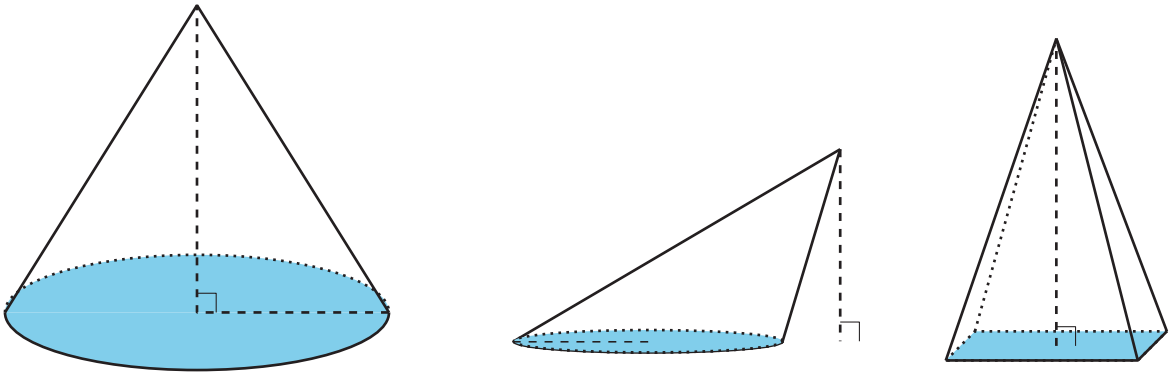
1. Cut out your net and assemble a pyramid. The printed side of the net should face outward.
2. Assemble your group's 3 pyramids into a triangular prism. Each pair of triangles with a matching pattern will come together to form one of the rectangular faces of the prism. You will need to disassemble the prism in a later activity, so use only a small amount of tape (or no tape at all if possible).
3. Make a conjecture about the relationship between the volume of the pyramid marked P1 and the volume of the prism.

4. What information would you need in order to verify that your conjecture is true?

Don't throw away your pyramids! You'll use them again.

Lesson 12 Summary

Pyramids and cones are different from prisms and cylinders in that they have just one base and an **apex**, or a single point at which the other faces of the solid meet.



Cones are like cylinders and prisms in that they can be *oblique* or *right*. If a line dropped from the cone's apex at right angles to the base goes through the center of the base, then the cone is right. Otherwise, the cone is oblique. Pyramids that have a clear center in their bases can also be considered right or oblique.