G6-36: Prisms and Pyramids

The solid shapes in the figure are called 3-D shapes.

Faces are the flat surfaces of a shape, edges are where two faces meet, and vertices are the points where 3 or more faces meet.

Pyramids have a point opposite the base. The base of the shape is a polygon; for instance, a triangle, a quadrilateral or a square (like the pyramids in Egypt), a pentagon, etc.

Prisms do not have a point. Their bases are the same at both ends of the shape.

1. Count the faces of each shape.

   a) [Diagram of a cube]  
      ____ faces

   b) [Diagram of a rectangular prism]  
      ____ faces

   c) [Diagram of a triangular prism]  
      ____ faces

   d) [Diagram of a pyramid]  
      ____ faces

   e) [Diagram of a hexagonal prism]  
      ____ faces

   f) [Diagram of a pentagonal prism]  
      ____ faces

   g) [Diagram of a square pyramid]  
      ____ faces

   h) [Diagram of a triangular prism]  
      ____ faces

2. Using a set of 3-D shapes and the chart below as reference, answer the following questions.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square Pyramid</td>
<td>Triangular Pyramid</td>
<td>Rectangular Prism</td>
<td>Cube</td>
<td>Triangular Prism</td>
</tr>
</tbody>
</table>

   a) Describe each shape in terms of its faces, vertices and edges. The first one has been done.

   Number of Faces | A | 5 | B | 4 | C | 8 | D | 6 | E | 5 |
   Number of Vertices | A | 3 | B | 3 | C | 6 | D | 8 | E | 5 |
   Number of Edges | A | 6 | B | 9 | C | 12 | D | 12 | E | 9 |

   b) Did any pair of shapes have the same number of faces, vertices or edges? If so, which shapes share which properties?
Melissa is exploring differences between pyramids and prisms. She discovers that ...

- A **pyramid** has one base.
  (There is one exception – in a triangular pyramid, any face is a base.)

- A **prism** has two bases.
  (There is one exception – in a rectangular prism any pair of opposite faces are bases.)

**IMPORTANT NOTE:**
The base(s) are not always on the “bottom” or “top” of the shape.

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**TEACHER:**
The activity that goes with this worksheet will help your students identify the base of a 3-D figure.

1. Shade the base and circle the point of the following pyramids.
   **NOTE:** The base will not necessarily be on the “bottom” of the shape (but it is always at the end opposite the point).

   a) ![Pyramid a](image)  
   b) ![Pyramid b](image)  
   c) ![Pyramid c](image)  
   d) ![Pyramid d](image)  
   e) ![Pyramid e](image)  
   f) ![Pyramid f](image)  
   g) ![Pyramid g](image)  
   h) ![Pyramid h](image)  

2. Now shade the bases of these prisms.
   **REMEMBER:** Unless all its faces are rectangles, a **prism** has two bases.

   a) ![Prism a](image)  
   b) ![Prism b](image)  
   c) ![Prism c](image)  
   d) ![Prism d](image)  
   e) ![Prism e](image)  
   f) ![Prism f](image)  
   g) ![Prism g](image)  
   h) ![Prism h](image)  

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**jump math**

**Geometry 2**
3. Kira has many prisms and pyramids. Can you circle the ones that have all congruent faces?

   a)   b)   c)   d)   e)   f)   g)   h)

4. Shade the bases of the following figures. Be careful! Some will have two bases (the prisms) and others will have only one (the pyramids).

   a)   b)   c)   d)   e)   f)   g)   h)   i)   j)   k)   l)   m)   n)   o)   p)

5. “I have a hexagonal base.” Name two 3-D shapes this could describe.