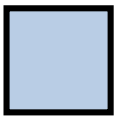
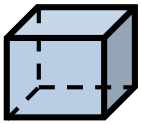
Surface Area and Volume: Introduction, Classifying and Nets - Notes



What is the difference between a two-dimensional figure and a three-dimensional figure?

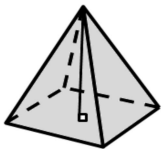


Two Dimensional Figures:

- When drawn two – dimensional figures are _____ to the paper
- They have two dimensions - - _____ and _____
- Examples are a _____, a _____, and a t _____
    - To create you might trace around a quarter (circle)

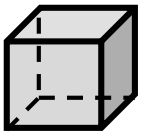
Three Dimensional Figures:

- When drawn three – dimensional figures appear to come " _____ " the paper
- They have three dimensions - - _____, _____ and _____
- Examples are a _____, a _____ and a _____
    - To create you might stack quarters on top of each other (cylinder)



Three – Dimensional Figures Type One:

Polyhedronal Solids (Polyhedrons)

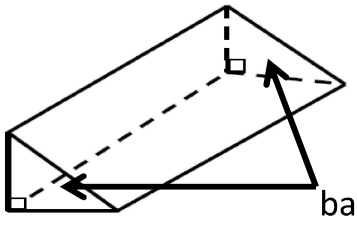


- A polyhedron has all flat surfaces that are shaped like polygons and enclose a single region of space
    - All the _____ _____ are called _____
    - The _____ _____ where the faces intersect are called _____
    - The _____ where _____ edges meet is called a _____ (plural = vertices)
    - The _____ _____ **faces** are called _____
        - **Remember**: While it can be, a base is not always the surface that a figure sits upon
- The two types of polyhedron are prisms and pyramids
    - **Type one: A** _____
        - A prism is a polyhedron with two bases
    - **Type two: A** _____
        - A pyramid is a polyhedron with only one base

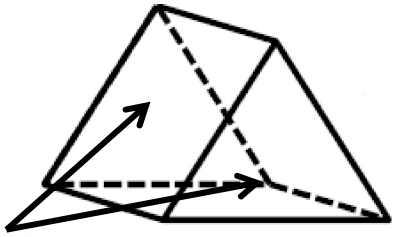
Properties and Types of Prisms

- **Prism**
  - A prism is a polyhedron with _____ _____ bases in _____ planes
    - Base = _____ _____ _____– shaped bases
      - With the _____ of a rectangular and square prism, you can tell the base by looking for the face that is _____ a _____
  - Common Types of Prisms
    - Remember – any polygon can be a base, these are just a few examples!

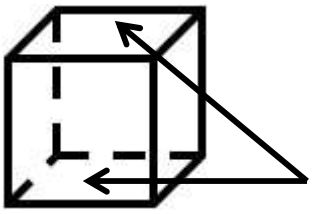
_____ **Prism** – bases are shaped like triangles, faces are rectangles



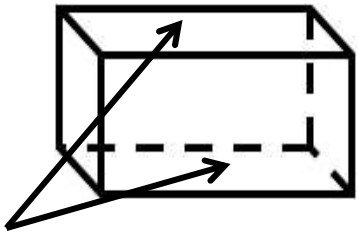
_____ **Prism** – bases are shaped like triangles, faces are rectangles



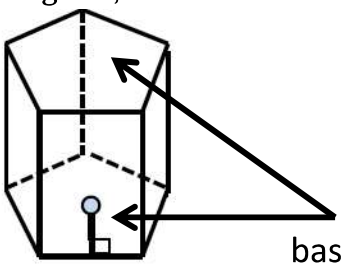
_____ **Prism (or cube)** – all bases and faces are squares



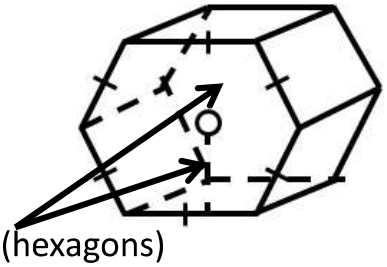
_____ **Prism** – all bases and faces are rectangles

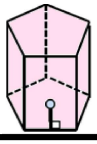


_____ **Prism** – bases are shaped like regular pentagons, faces are rectangles

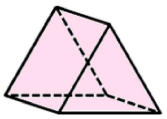


_____ **Prism** – bases are shaped like regular hexagons, faces are rectangles



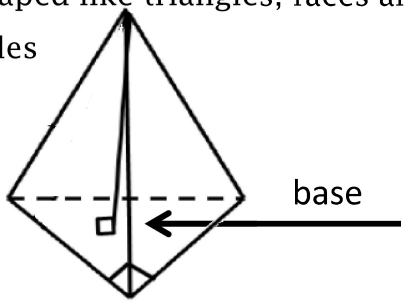


Properties and Types of Pyramids

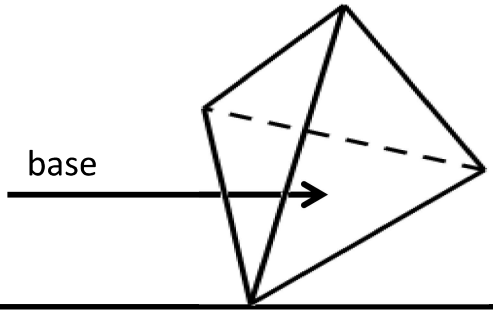


- **Pyramid**
  - A pyramid is a polyhedron with one base and all other faces meeting at a vertex that is parallel to the base.
    - Base = polygon – shaped
      - With the _____ of a triangular pyramid, you can tell the base by looking for the face that is _____ a _____
  - Common Types of Pyramids
    - Remember – any polygon can be a base, these are just a few examples!

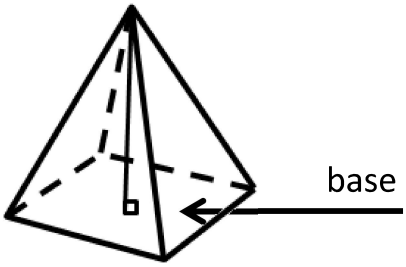
_____ _____ **Pyramid** – bases are shaped like triangles, faces are triangles



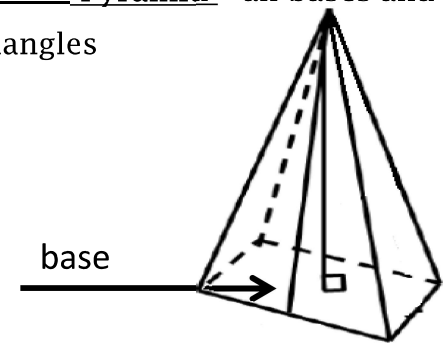
_____ **Pyramid** – bases are shaped like triangles, faces are triangles



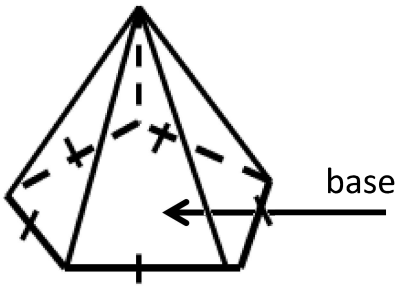
_____ **Pyramid**– all bases and faces are triangles



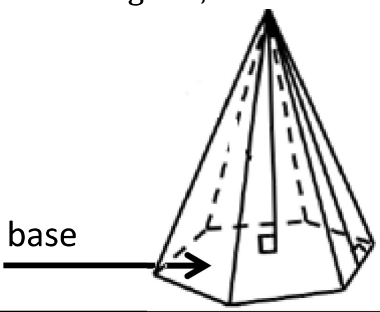
_____ **Pyramid** – all bases and faces are triangles



_____ **Pyramid** – bases are shaped like regular pentagons, faces are triangles



_____ **Pyramid** – bases are shaped like regular hexagons, faces are triangles

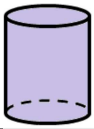


Three – Dimensional Figures Type Two:

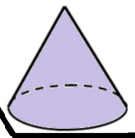
Non-Polyhedronal Solids

- Non-polyhedronal solids are three-dimensional figures where all of the _____ and _____ are not _____

  - The four types of non-polyhedronal solids are _____, _____, _____ and _____

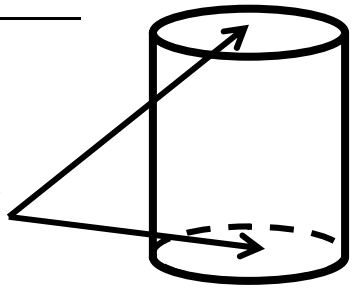


Cylinders and Cones



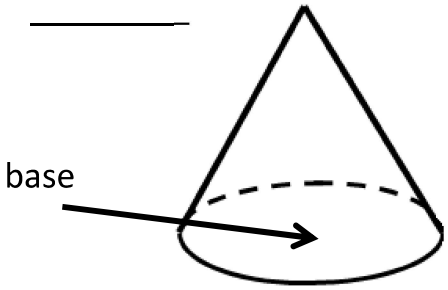
- **Cylinder**

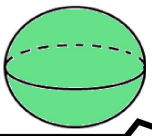
  - A cylinder is a non-polyhedronal solid with congruent _____ bases and a _____



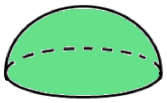
- **Cone**

  - A cone is a non-polyhedronal solid with a _____ base and a _____



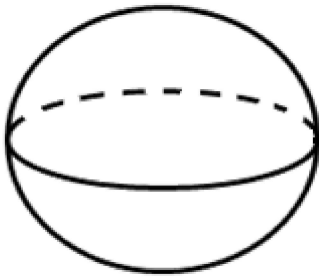


Spheres and Hemispheres



- **Sphere**

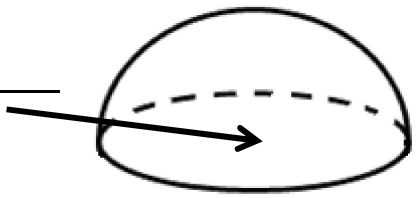
  - A sphere is the set of all points in _____ a given distance from a given point called the _____



- **Hemisphere**

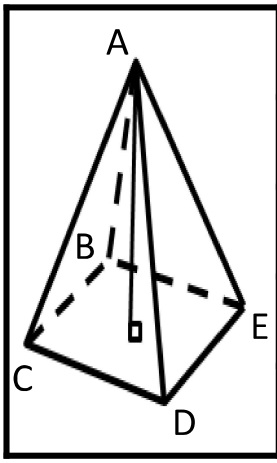
  - A hemisphere is a _____ of a sphere that is created when the _____ _____ (the largest circle possible in a sphere) is drawn on a sphere

_____ _____
(base)



Naming Faces, Bases, Edges and Solids

- With any three-dimensional figure you will need to name (if they exist) the base(s), edges, faces and vertices
  - Bases and faces are named by the corner points of the polygons
  - Edges are named with the letters of the endpoints
  - Vertices are named as a single point



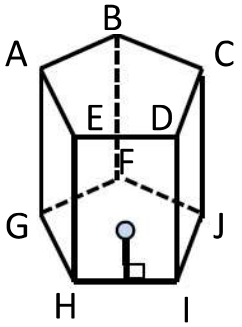
Base:

Faces:

Edges:

Vertices:

Solid:



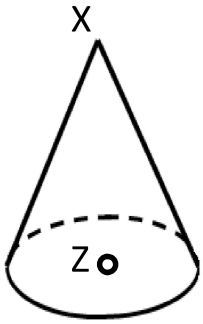
Base:

Faces:

Edges:

Vertices:

Solid:



Base:

Faces:

Edges:

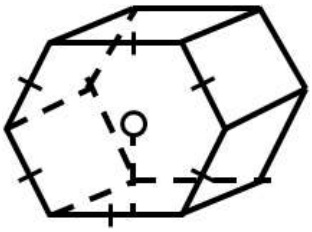
Vertices:

Solid:

Drawing Nets

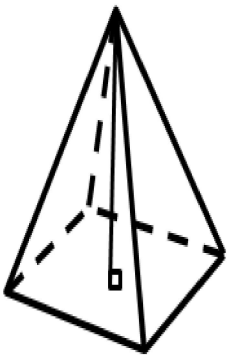
A net is...

- A pattern for a _____ – _____ figure in _____ dimensions
  - Similar to taking a cardboard box and cutting it along its seams so that you can lay it out flat
- It's drawn so that it could be refolded back into the _____ _____ without any sides _____



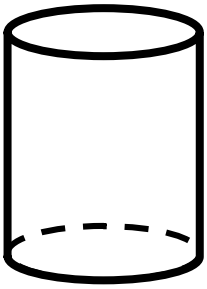
2 _____ for bases

6 _____ for faces



1 _____ for the base

4 _____ for faces



2 _____ for the bases

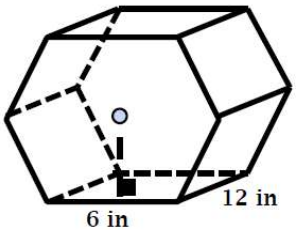
1 _____ for the face

Name: _____ Date: _____ Hour: _____

Surface Area and Volume: Introduction, Classifying and Nets - Assignment

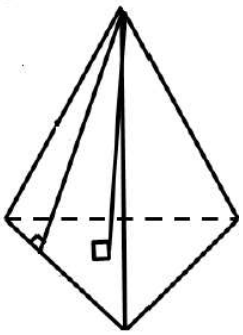
Part One: Classify each three – dimensional figure. Give the most specific name possible (i.e. triangular prism instead of prism).

1. _____

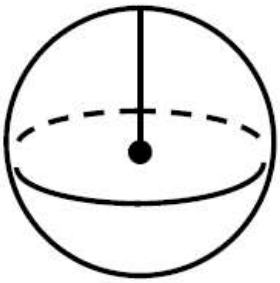


2. _____

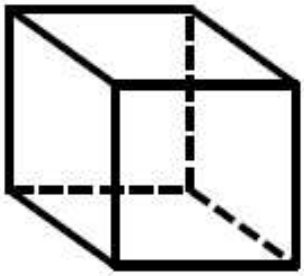
3. _____



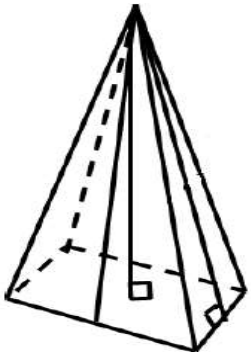
4. _____



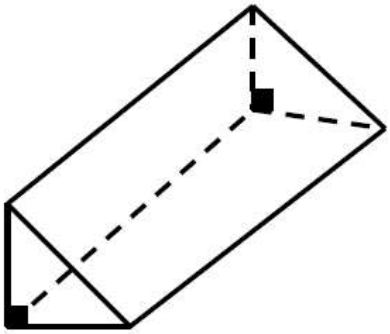
5. _____



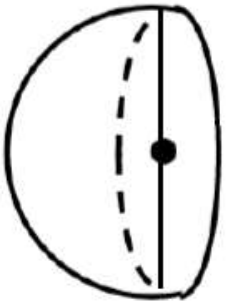
6. _____



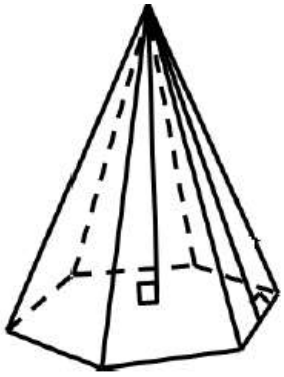
7. _____



8. _____

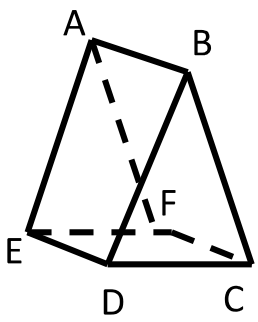


9. _____



Part two: Name all of the parts of the given three – dimensional figure.

10.



Base:

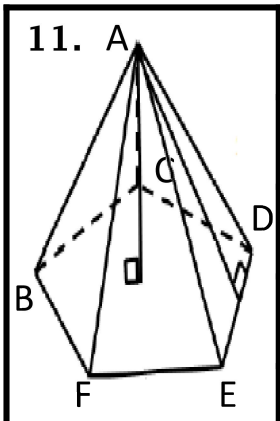
Faces:

Edges:

Vertices:

Solid:

11.



Base:

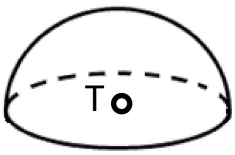
Faces:

Edges:

Vertices:

Solid:

12.



Base:

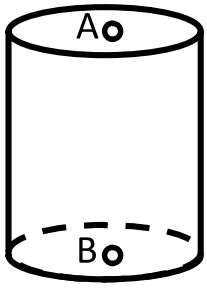
Faces:

Edges:

Vertices:

Solid:

13.



Base:

Faces:

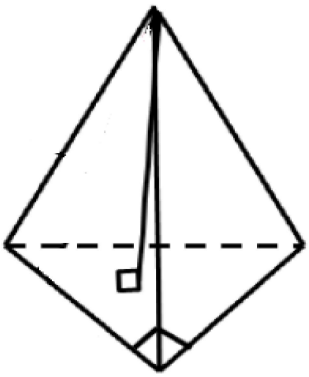
Edges:

Vertices:

Solid:

Part three: Draw a net for each solid.

14.



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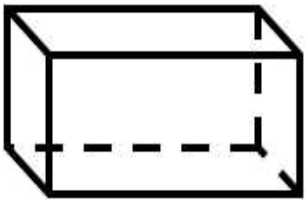
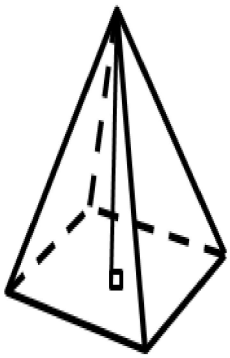
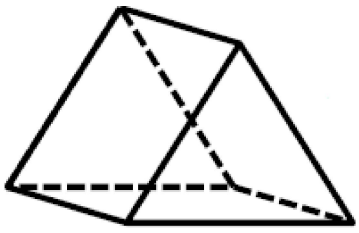


16.



17.



18.