Prisms & Pyramids Stations Set

Teacher Directions

This Anchor Problem is designed with 3 stations for students to explore. Depending on timing and the size of your class, you may:

- Have three stations set up, and have student groups rotate to each station.
    - Increase the efficiency and engagement by providing multiple sets of materials at each station, so that groups can explore simultaneously.
- Or, provide materials for one station to each group and have them share their findings with the class after exploring one set of materials.

Student-Facing Directions

Print the student-facing station direction cards, located on the following page. Cut them out, and keep them with the materials for each station. Alternatively, provide the entire set of directions to each student group.

Station 1: Fillable Containers

- Set out a pair of fillable containers - a pyramid and a prism with congruent bases.
    - You may set out multiple pairs of corresponding prisms and pyramids, if available. For example, you may allow students to explore different shapes (i.e. triangular bases, rectangular bases, square bases) or different sizes.
- Set up a large container of water - enough to fill the shapes multiple times.
- Place a tray underneath and/or paper towels nearby for spills.

Note: The prism should hold approximately 3 times the amount of water as the pyramid.
Video alternative if materials are not available for this station: Water Demonstration.

Station 2: Paper Pyramids

- Print the two-page template of the 4 pyramids one-sided.
- Then cut, fold and glue each shape together, so you end up with 4 separate figures.
    - The shapes are labeled “A” and “B.” It may be helpful to label the shapes more clearly for students after cutting and assembling them.

Note: When placed together, the three oblique “A” pyramids create a prism with the same dimensions as the pyramids, but ⅓ the height.

Station 3: Prisms and Pyramids Image Set

- Print out 1 or more copies of the image set.
- Students will explore the given dimensions and volumes, without physically manipulating materials at this station.

Note: Students should notice that the volume of each pyramid is one-third the volume of the corresponding prism.

Student-Facing Station Directions

Station 1: Fillable containers

Directions:

1. Fill the pyramid with water.
2. Carefully pour the contents into the prism.
3. Repeat until the prism is about full of water.
4. Pour the contents out and try the experiment again.
5. Discuss: What do you notice? What do you wonder? How are they related?

Station 2: Paper pyramids

Directions:

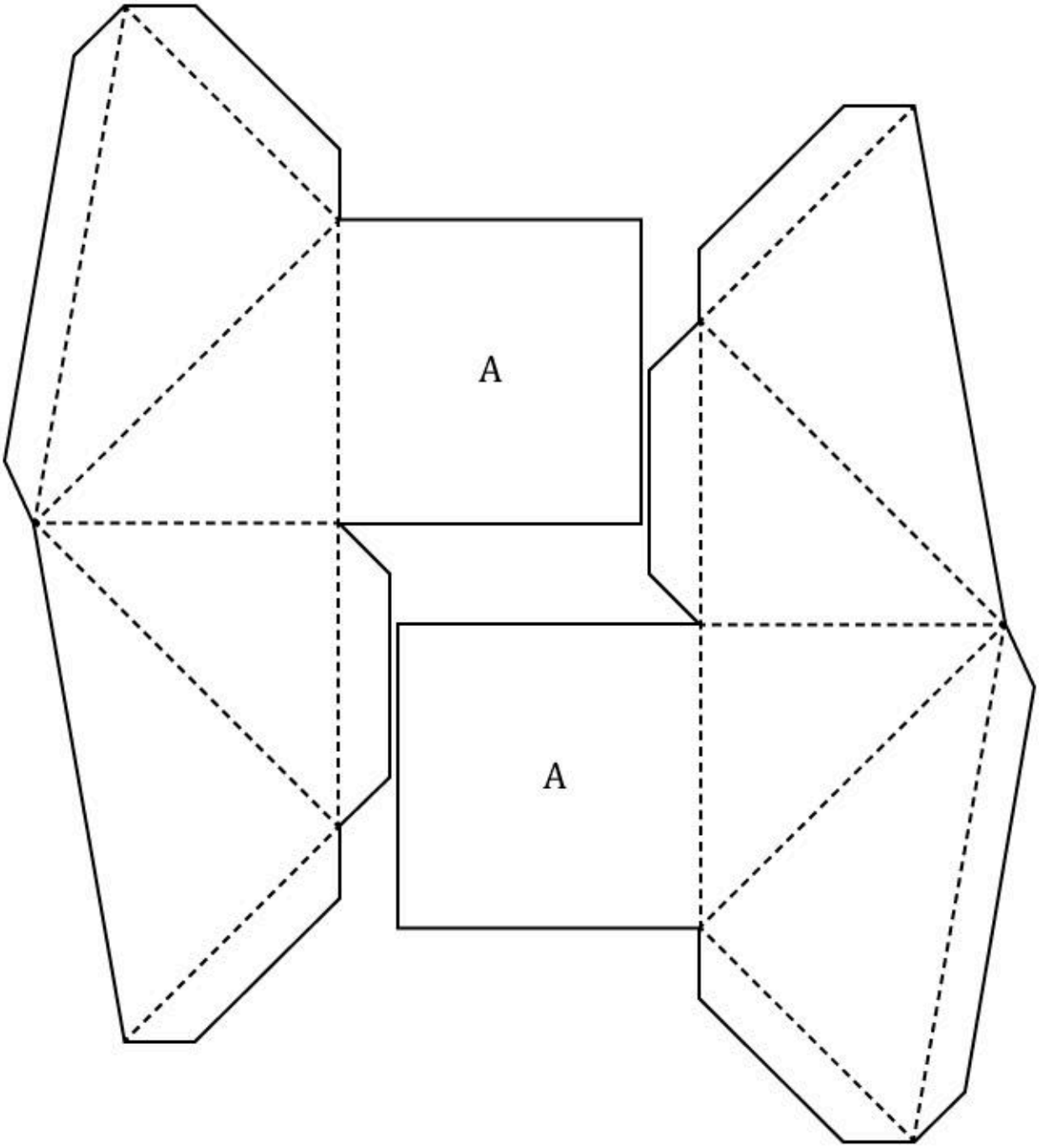
1. Look at the shape of the oblique “A” pyramids and right “B” pyramid. Since they have the same base and height, they all have the same volume.
2. Place the three “A” pyramids together to create a prism.
3. Discuss: What do you notice? What do you wonder? How does the volume of the prism you created relate to the volume of the pyramids?

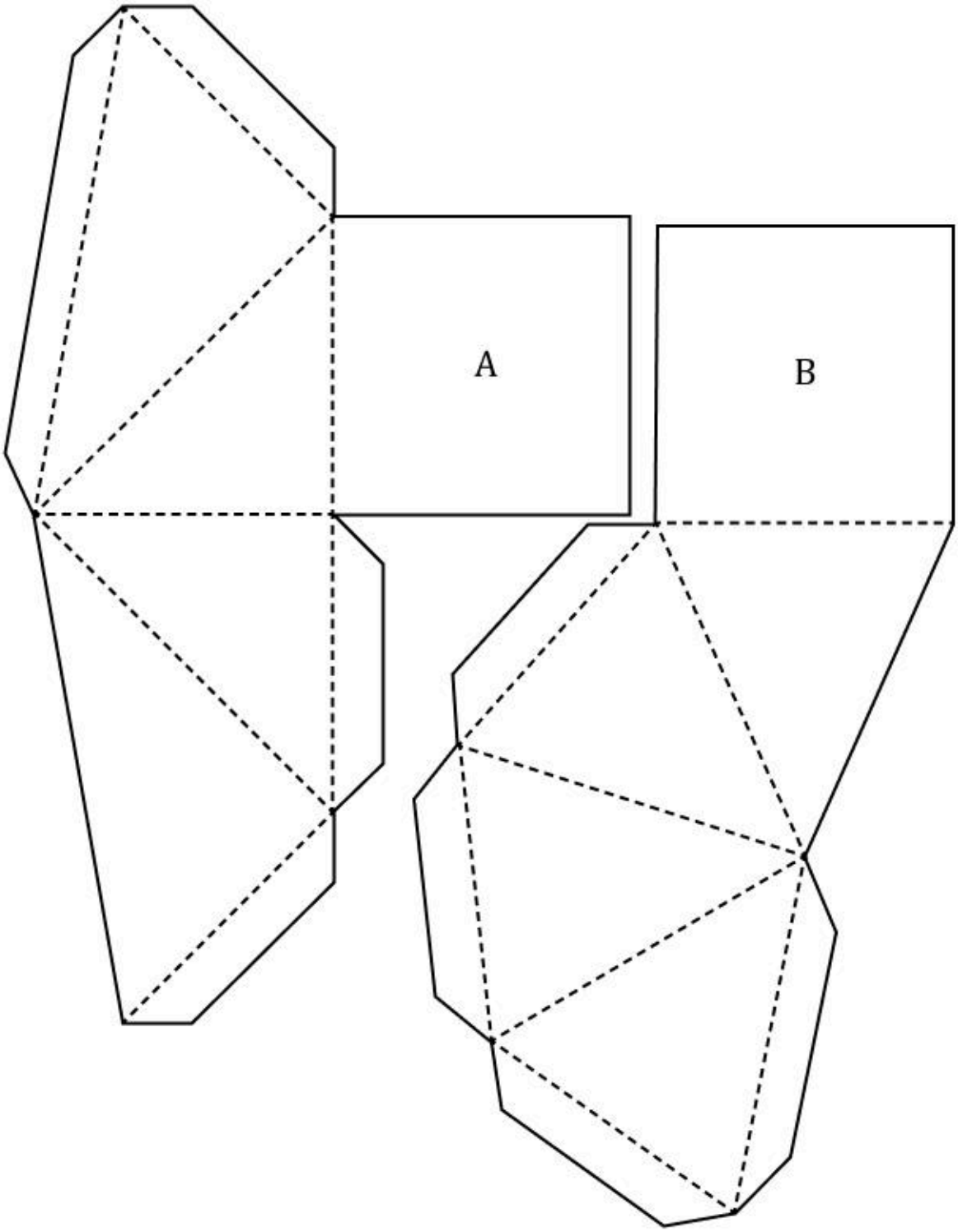
Station 3: Image Set

Directions:

1. Look at the three figures in the left column.
   Discuss: What shape are they? What are the dimensions? How do the shapes compare to each other? What do you notice about their volumes?
2. Look at the three figures in the right column.
   Discuss: What shape are they? What are the dimensions? How do they compare to each other? How do they compare to the shapes to the left? What do you notice about their volumes?
3. Discuss: What trend do you see? What rule or generalization could you write?

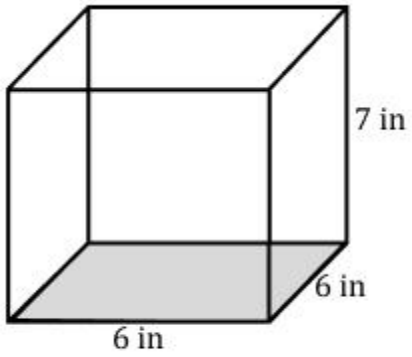
Oblique & Right Pyramid Templates





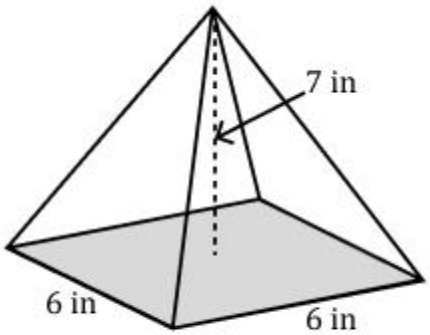
Prisms and Pyramids - Image Set

Rectangular Prism A



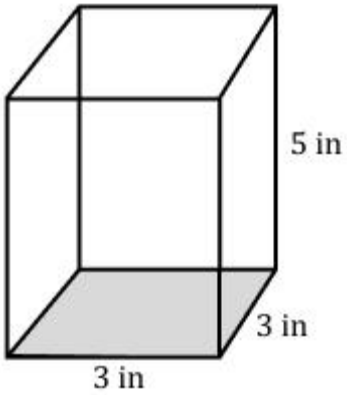
Volume: 252 in^3

Rectangular Pyramid A



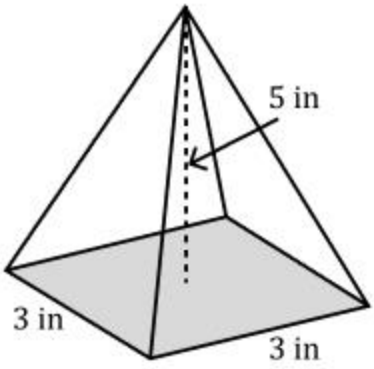
Volume: 84 in^3

Rectangular Prism B



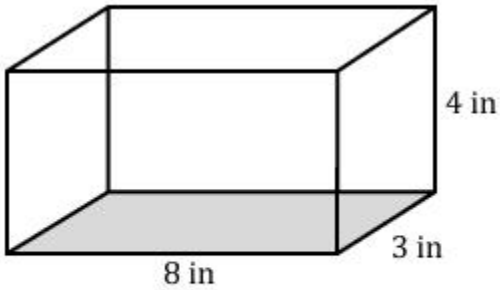
Volume: 45 in^3

Rectangular Pyramid B



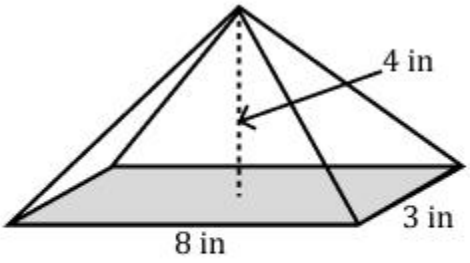
Volume: 15 in^3

Rectangular Prism C



Volume: 96 in^3

Rectangular Pyramid C



Volume: 32 in^3