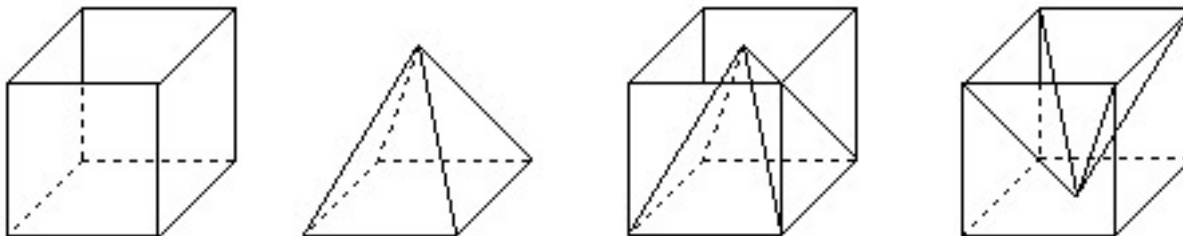


Volume of a Pyramid and Cone

Activity 6. Volume of a pyramid with square base

1) The following figures represent a cube and a pyramid with the same base and the same height. To determine the volume of the pyramid, we can fill it with beans (or water), and pour the content repeatedly into the cube.



- How many times do you think the volume of the pyramid will fit inside the volume of the cube with the same base and the same height?

Make a prediction, then conduct or observe the experiment.

2) Verify that the cube and the pyramid have the same height, and that the area of their bases is the same. Fill the pyramid with packing material or with seeds. Pour the content of the pyramid into the open cube. Repeat the procedure until the cube is filled. Count how many times does the volume of the pyramid fit into the cube.

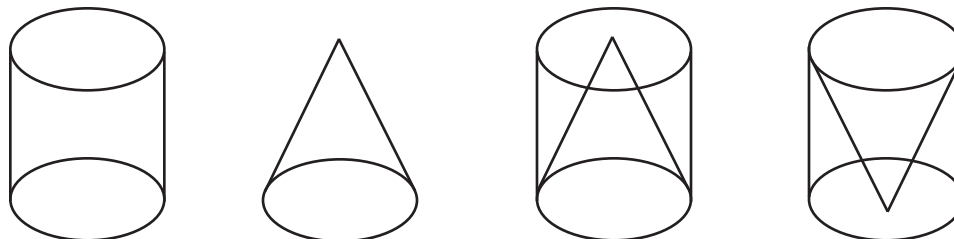
3) Let B be the area of the base, and h the height of the cube. The volume of the cube is given by $V = B \times h$.

- Based on the results of the experiment, what would be a formula for the volume of the pyramid?

Activity 7. Volume of a cone

1) The following figures represent a cylinder and a cone that have the same base and the same height.

- What is the volume of the cone compared to the volume of the cylinder?



- How many times do you think the volume of the cone will fit inside the volume of the cylinder with the same base and the same height?

Make a prediction, and then do the experiment.

2) Fill the cone with beans or other small light objects. Pour the content of the cone into the cylinder. Repeat the process until the cylinder is filled. Count how many times does the volume of the cone fit into a cylinder with the same base and height.

3) The volume of the cylinder is given by the product of the area of its base times its height, $V = B \times h$.

- Based on the experiment above, what would be a formula for the volume of a cone?