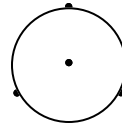
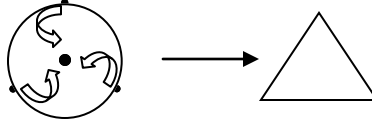


## Circle Folding Lesson

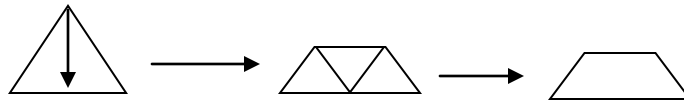
1. Cut out circle including dots on the circumference



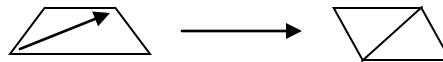
2. Fold dots into center to cover center dot. This should produce a large equilateral triangle. Discuss with class



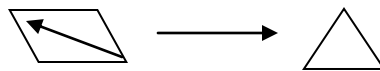
3. Fold apex of triangle down to the midpoint of the base. Should produce a trapezoid. Discuss with class



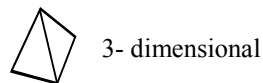
4. Fold up left bottom corner of trapezoid to right upper corner of the trapezoid. Should produce a parallelogram/rhombus. Discuss with class



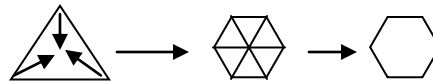
5. Fold up remaining lower corner to produce a second equilateral triangle. Discuss with class



6. Allow flaps to “rise up” and form a triangle pyramid. Discuss with class



7. Open up and lay it flat so that it is once more a large equilateral triangle. Fold vertices into center (dot) to produce a hexagon. Discuss with class



8. GRAND FINALE. Allow flaps to “rise up” again. Overlap these triangular flaps to form a truncated tetrahedron - a 3-D shape with a triangular base, a smaller triangular top, and 3 trapezoidal sides. Truncated means having the top cut off - this is like a pyramid with the tip cut off.



Possible extension questions: 1) What is the relationship between the top and bottom triangular faces in the truncated tetrahedron? 2) What is the relationship of either the top or bottom triangular face to the original triangle? 3) What is the side trapezoidal face's relationship to our first larger trapezoid? 4) If the center dot was not in the diagram, how could you find the center?

Possible variations: Use geometric construction techniques to produce perfect figures.

### Vocabulary that may arise in conversation:

|           |             |               |                    |
|-----------|-------------|---------------|--------------------|
| Angles    | Equilateral | Parallelogram | Midpoint           |
| Parallel  | Similar     | Symmetry      | Rhombus            |
| Rotations | Reflections | Trapezoid     | Pyramid            |
| Face      | Edge        | Ratio         | Triangular Pyramid |
| Vertex    |             |               |                    |