Classroom Challenge

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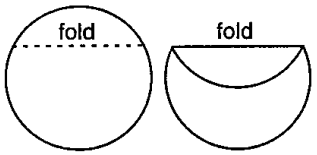
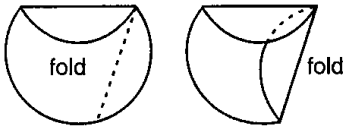
A Fraction Activity

1. Draw a large circle and mark its center. Fold the circle in half. What is the creased line called? Fold in half again to determine the true center of the circle. What angle has been formed? How many degrees are in a circle? What is the distance from the center to the circles' circumference called?

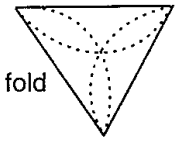
2. Mark a point on the circumference of the circle. Fold the point to the center. What is the new segment called? What is the part of the circumference called?



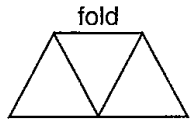
3. Fold again to the center, using one endpoint of the chord as an endpoint for the new chord.



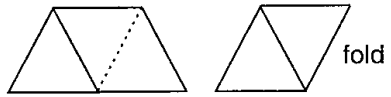
4. Fold the remaining arc to the center. Compare your equilateral triangle with that of your neighbor. Throughout the rest of the activity define the area of your triangle as one unit.



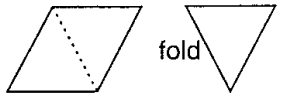
5. Find the midpoint of one of the sides of your triangle. Fold the opposite vertex to the midpoint. What is the area of the isosceles trapezoid if the area of the original triangle is one unit?



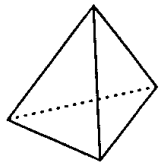
6. Note that the trapezoid consist of three congruent triangles. Fold one of these triangles over the top of the middle triangle. What polygon has been formed? What is its area?



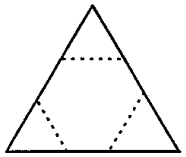
7. Fold the remaining triangle over the top of the other two triangles. What shape is formed? What is its area? This triangle is similar to the original triangle.

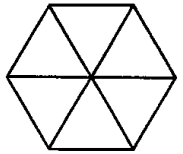


8. Place the three folded-over triangles in the palm of your hand, and open it up to form a three-dimensional shape. What new polyhedron has been formed? What is its surface area?

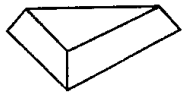


9. Unfold the polyhedron so that the large equilateral triangle is again considered. Fold each vertex to the center of the circle. What is the area of the resulting hexagon?





10. Turn the hexagon over and push gently so that the hexagon folds up to form a truncated tetrahedron.



11. Using only the fold lines already determined, create different polygons and determine their area. Using only the existing fold lines, construct polygons with the following areas. Name each polygon and draw a sketch.

1/4 unit	1/2 unit	19/36 unit
2/3 unit	3/4 unit	7/9 unit
8/9 unit	7/18 unit	23/36 unit