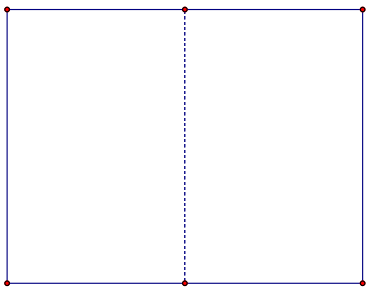
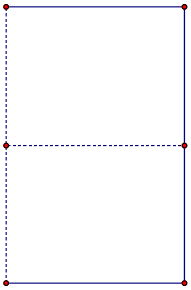
- Activity Name: Folded Polygons - Hexagon
- Objectives:
  As a result of this lesson the students will be able to:
  1. "Construct" regular polygons with paper and scissors
  2. Prove the mathematics that is involved in the pentagon construction.
- EALR/Standards:

  1.2 Understand and apply concepts and procedures from measurement.
  1.3 Understand and apply concepts and procedures from geometric sense.
  2.1 Investigate situations.
  2.3 Construct solutions.
  3.1 Analyze information.
  3.3 Draw conclusions and verify results
  4.1 Gather information
  4.2 Organize and interpret information.
- Materials:
  1. 8.5 by 11 inch paper.
  2. Scissors.
- Teacher Notes
  - Prerequisites for the learner:
    1. Properties of hexagon.
    2. Definition of regular.
  - Questions:
    1. See the lesson plan.
  - Solutions:
  - Assessment suggestions:
- The Activity:
  1. See the lesson plan.
- Assessment material:
- Extensions:
- References:
  - Paper and Scissors Polygons and More by Linda Silvey & Loretta Taylor, Dale Seymour Publications [ISBN 0-86651-959-9]

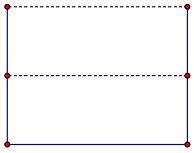
We will now explore the construction of a regular hexagon. Once again we will use the standard US 8.5 by 11-inch paper in all of our constructions but that is not necessary. Arrange the paper in landscape mode.

1. Arrange the paper in landscape orientation and fold in half (hamburger style).

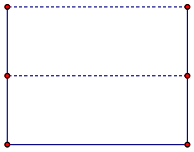




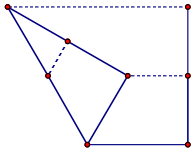
2. Fold the top edge down to the bottom and then fold the new top down to the bottom again.



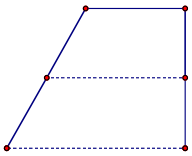
3. Unfold once.



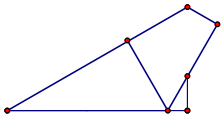
4. Fold the bottom left hand corner up to the latest fold line. What shape is this? (Ans? Trapezoid. Right Trapezoid)



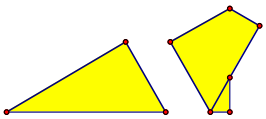
5. Flip the trapezoid and then bisect the angel in the bottom left hand corner,



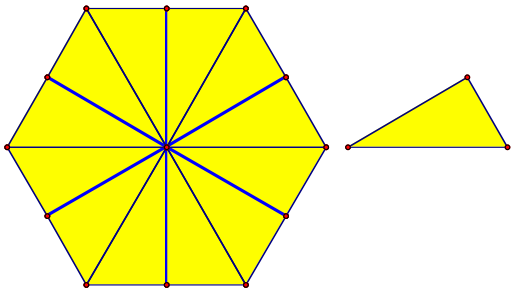
6. Then cut along the fold closest to the vertex.



7. Discard the piece on the right and unfold the triangular piece.



8. What shape is it



9. Why is it a hexagon?

   a. How many angles around the center? (Ans: 12)
   b. What is the measure of each one? (Ans: 30˚ = 360˚/12)
   c. What is the measure of each angle at the midpoint of what appears to be the edge? (Ans: 90˚)
   d. What is the measure of the third angle in the triangle? (Ans: 60˚)
   e. What is the measure of each vertex angle of the hexagon? (Ans: 120˚ which is what the measure of each angle in a regular hexagon should be.)

10. Is this really a proof?
   a. Why? Or Why not?