HEXA-TETRA-FLEXAGON

This flexagon is made from a square sheet of paper that is 4 by 4 squares. The center 4 squares are cut out as shown in the pattern for the hexa-tetra-flexagon in Figure 1 below. Note that the pattern is flipped over to get the back side pattern.

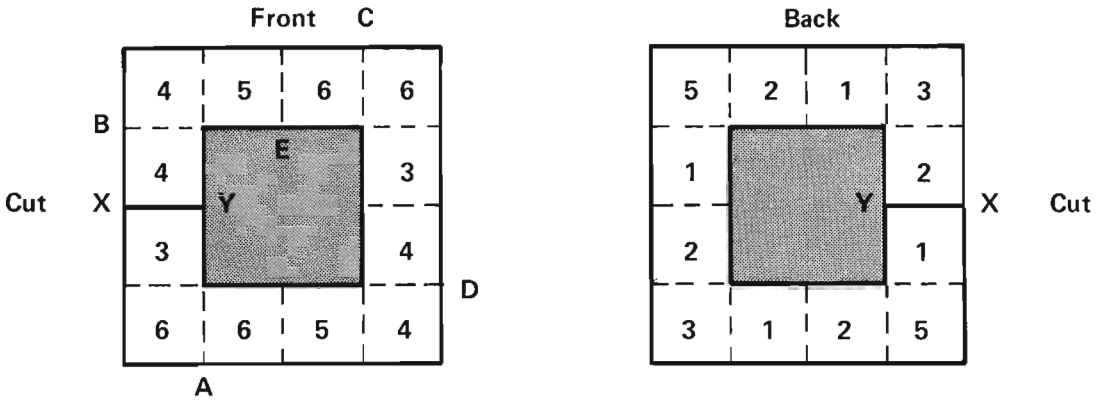
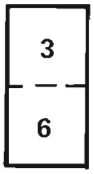


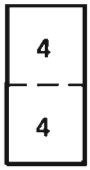
Figure 1

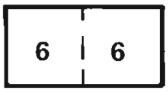
1. Draw and cut out a 4 by 4 square as in Figure 1.
   Number the squares on both sides as shown.

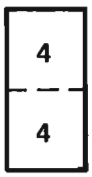
2. Cut out the center, shaded 2 by 2 square.
   Cut along the heavy black line XY.

3. Hold the pattern as in Figure 1.

4. Fold the lower left squares  at A so that the left 6-square is on top of the other 6-square.

5. Fold the upper left squares  at B so that the lower 4-square is on top of the other 4-square.

6. Fold the upper right squares  at C so that the left 6-square is on top of the other 6-square.

7. Fold the lower right squares  at D so that the lower 4-square is on top of the upper 4-square.

8. Turn the model over. The pattern should be that of Figure 3.

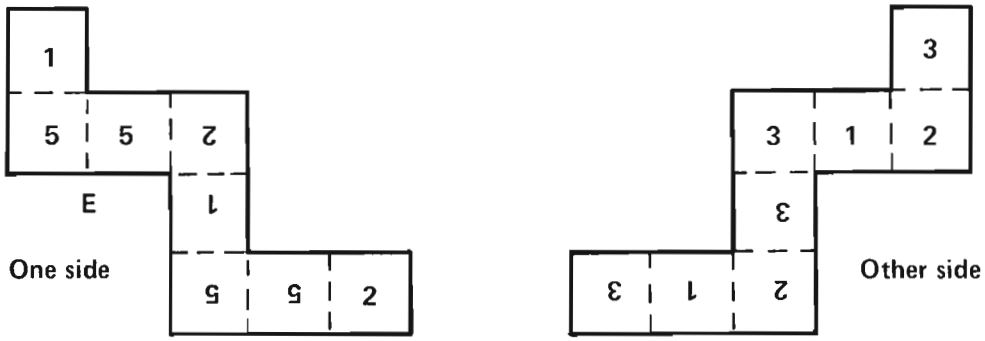


Figure 3

9. Fold the left [5] at E on top of the right [5] as in Figure 4.

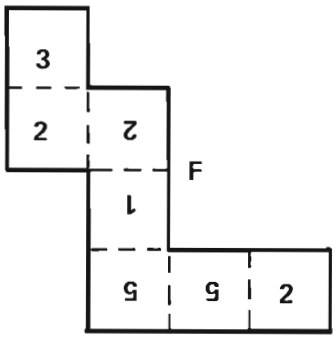


Figure 4

10. Fold a mountain fold at F so that a [2] is behind the middle [1]. The result is Figure 5.

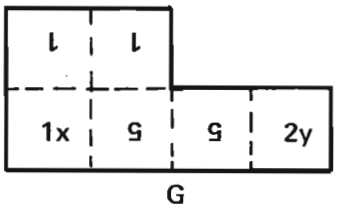


Figure 5

11. Lift the lower left 1-square (x).

    Fold a valley fold at G so that the left [5] is placed on top of the right [5]. The result is Figure 6.

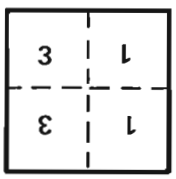


Figure 6

12. Place the top 3-square on top of the lower left 3-square to form the pattern of Figure 7.

Figure 7

13. Tape the edge between the lower 1-square and the 2-square behind it.
14. Turn the pattern to the 2-side.

    Flex along the vertical lines.

    - How many faces turn up?

15. Flex along the horizontal lines.

    - How many faces turn up?
    - What is the total number of faces of this model?

16. Make another hexa-tetra-flexagon model.

    Draw a different design on each face.

    Flex to find the different designs formed.

    - How many different designs are formed by the hexa-tetra-flexagon?