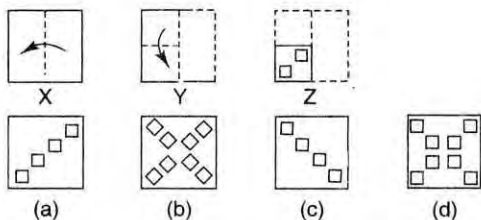


# UNIT 8

## Folding Paper Cutting

In this type of problems, a set of three figures showing the manner in which a piece of paper has been folded are given as X, Y and Z. In each of the first two figures X and Y, a dotted line together with an arrow on it has been given. The dotted line is the reference line along which the paper has to be folded and the arrow indicates the direction of the fold. In the third figure, there are marks showing the position and the nature of the cut made in the folded paper. The candidate has to select one of the figures from the four alternatives (a), (b), (c) and (d) which resembles the pattern when the paper is un-folded.

**Example 1.** Consider the following three figures X, Y and Z. There is one fold in X, another in Y and the way the paper is cut is shown in Z. From amongst the answer Figs. (a), (b), (c) and (d), select the one showing the unfolded position of Z.



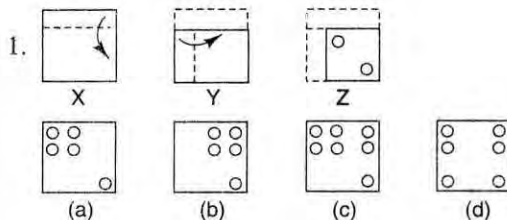
**Sol:** In figure X, the right half of the paper has been folded. Over the left half, in Fig. Y, the paper is

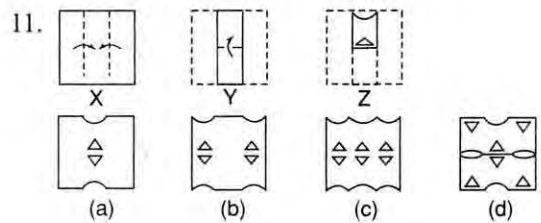
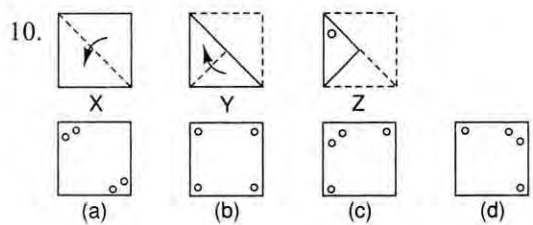
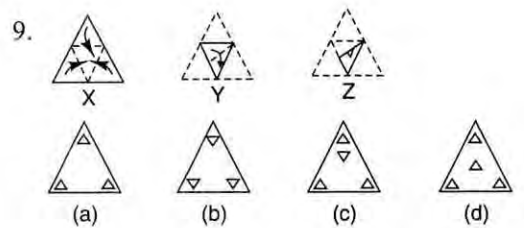
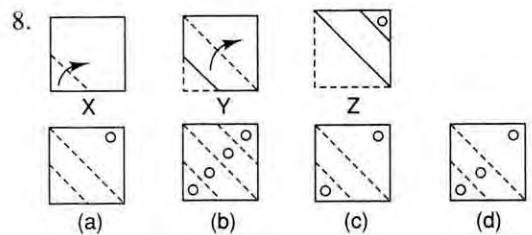
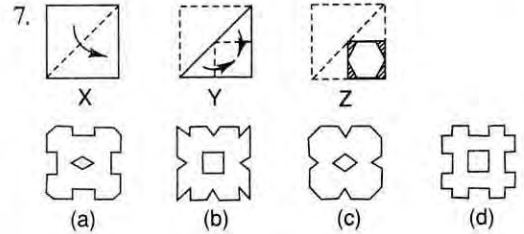
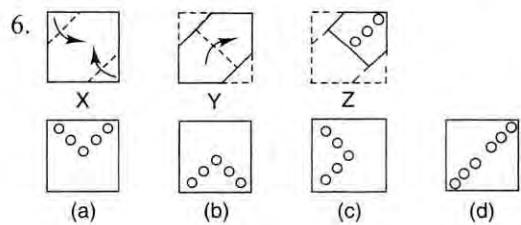
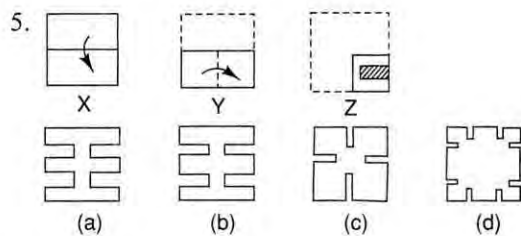
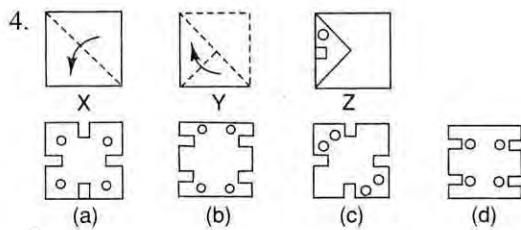
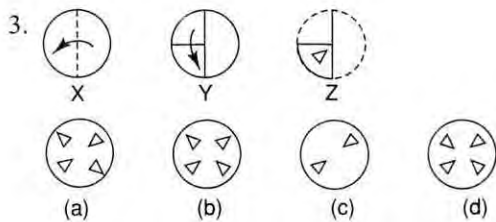
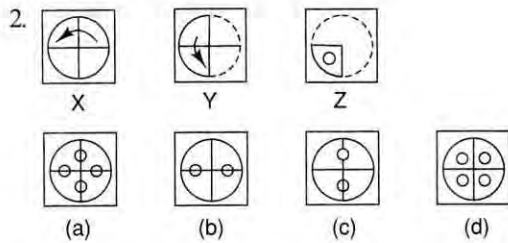
folded again to a quarter square. In Fig. Z, two squares are punched in the folded paper as shown.

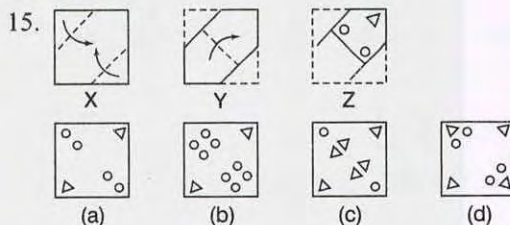
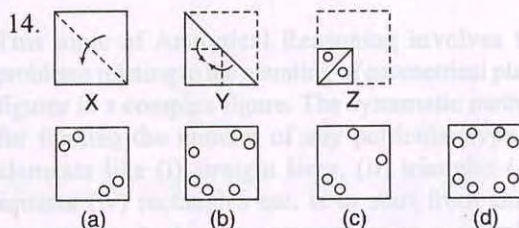
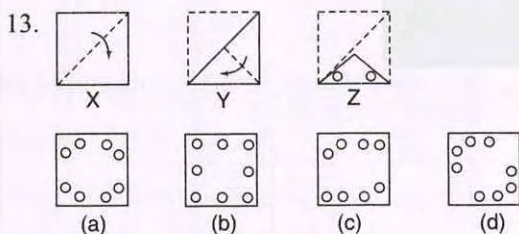
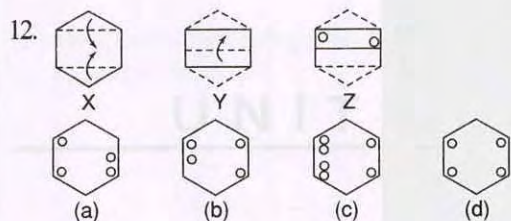
Clearly, the two squares will appear in each of the quarter square of the paper. Thus when the paper is unfolded, eight squares will appear over it and the figure thus resembles (d).

### EXERCISE

*Directions: The questions that follow contain a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Figure (Z) shows the manner in which the folded paper has been cut. These three figures are followed by four answer figures from which you have to choose a figure which would most closely resemble the unfolded form of Fig. (Z)*







## ANSWERS

1. (a) 2. (d) 3. (d) 4. (c) 5. (b)  
 6. (d) 7. (c) 8. (a) 9. (c) 10. (a)  
 11. (c) 12. (c) 13. (a) 14. (d) 15. (b)

Example 1: Find the number of straight lines and the number of triangles in the following figure given below.



Sol: Usually vertices are not marked, but we can mark to make the counting easy.

Number of straight lines are:

AB, BC, CD, DA, AC, BD, EH, AH, BH

So there are 9 straight lines in the diagram.

Now count triangles:

Number of small triangles are (consisting one component)

AGH, GHD, AFG, DGF, FHE and FCE = 6  
 Number of triangles with two components:  
 AHF, DHF, AFD, AFB, DFC, FBC = 7  
 Number of triangles with four components:  
 ABC, ADC, CDB and BDA = 4

∴ Total number of triangles contained in the figure = 6 + 7 + 4 = 17

Ans. Straight lines = 9

Triangles = 17

Example 2: Find the number of rectangles contained in the figure given below:



Sol: Rectangles from small to big are:

FEIH, HAKA, FEKA, EDCJ, JKDK, KOCH, HCKA, EDKJ and FEKA = 9

Ans. 9

Example 3: Find the number of squares in the figure given below: