Perceptual Ability Test Section

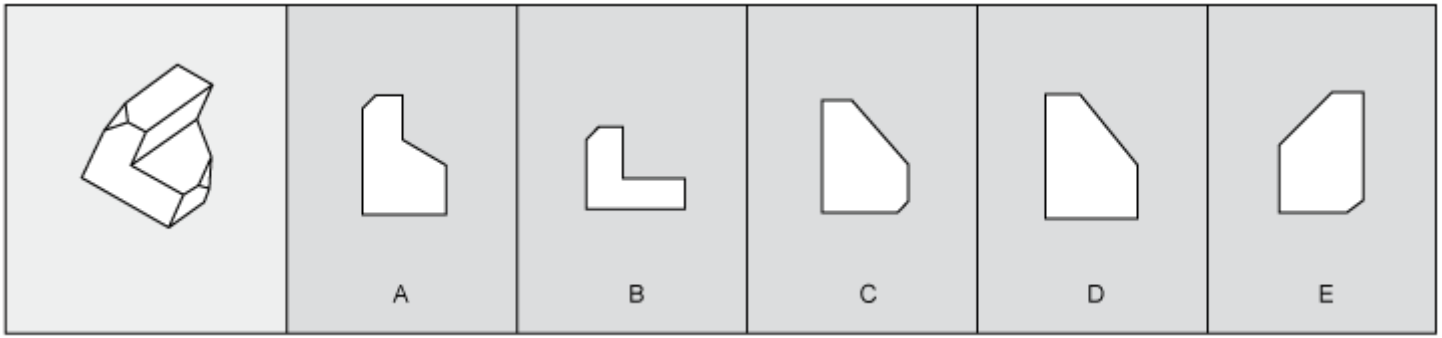
Perceptual Ability

The Perceptual Ability Test section assesses the candidate's ability to accurately perceive object dimensions and mentally manipulate objects in space. This includes, for example, the ability to differentiate among angles, or imagine how three-dimensional objects appear when viewed from different angles. The section includes the following question types:

Question Type	Description
Apertures	Evaluate a three-dimensional object and determine if it can pass through an opening.
View Recognition	Imagine how an object appears when viewed from different angles.
Angle Discrimination	Rank a series of angles from smallest to largest.
Paper Folding	Mentally unfold a piece of paper that has been folded one or more times and then hole-punched.
Cube Counting	Evaluate a stack of cubes and determine how much of each cube is exposed.
Spatial Relations	Identify the three-dimensional shape that a flat pattern produces when folded in a specific way.

Perceptual Ability - Apertures

For these question types, a three-dimensional object is shown at the left. This is followed by outlines of five apertures or openings.



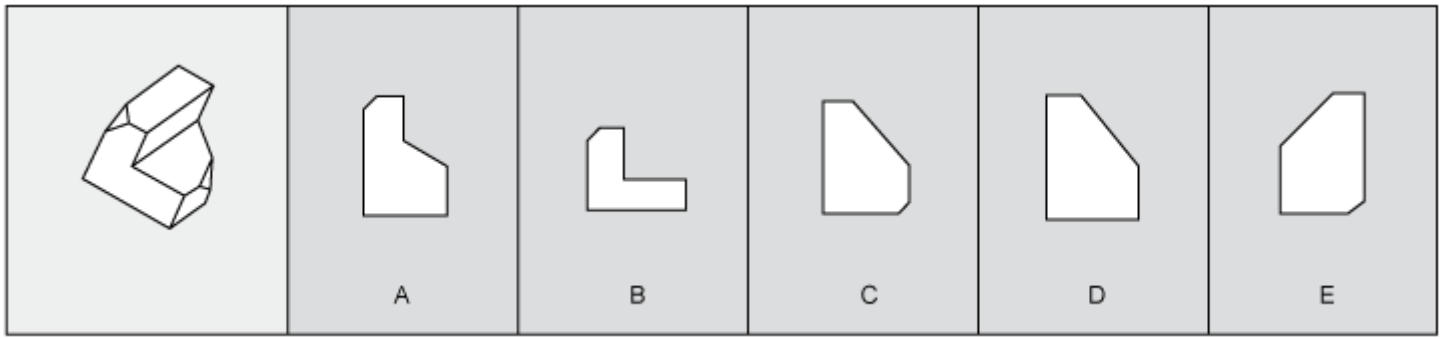
First, you are to imagine how the three-dimensional object appears from all directions (rather than from a single direction as shown). You must then identify the opening through which the object could pass directly if the proper side were inserted first.

Perceptual Ability - Apertures

Below are the rules that pertain to **Apertures** items.

1. Prior to passing through the aperture, the three-dimensional object may be turned in any direction. It may be started through the aperture on a side not shown.
2. Once the object is started through the aperture, it may not be turned or twisted. It must pass completely through the opening. The opening is always the exact shape of the appropriate external outline of the object.
3. Both objects and apertures are drawn to the same scale. Thus it is possible for an opening to be the correct shape but too small for the object. In all cases, however, differences are large enough to judge by eye.
4. There are no irregularities in any hidden portion of the object. However, if the object has symmetric indentations, the hidden portion is symmetric with the part shown.
5. For each object there is only one correct aperture.

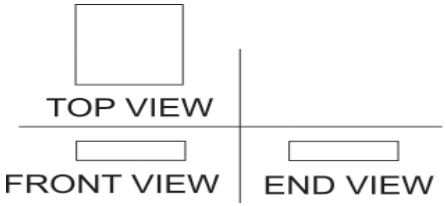
Question 1



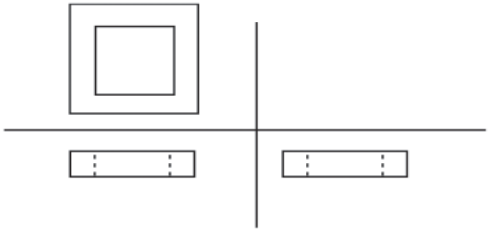
Correct Response: D
Content Classification: *Perceptual Ability: Apertures*

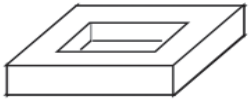
Perceptual Ability – View Recognition

The pictures that follow are top, front, and end views of various solid objects. The views are without perspective. That is, the points in the viewed surface are viewed along parallel lines of vision. The projection looking DOWN on the object is shown in the upper left-hand corner (TOP VIEW). The projection looking at the object from the FRONT is shown in the lower left-hand corner (FRONT VIEW). The projection looking at the object from the END is shown in the lower right-hand corner (END VIEW). These views are ALWAYS in the same positions and are labeled accordingly.



If there were a hole in the block, the views would look like this:



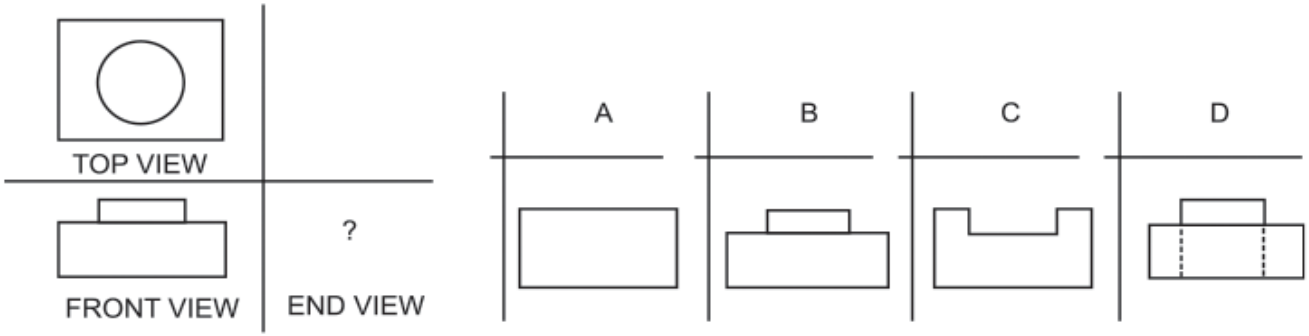


Note that lines that cannot be seen on the surface in some particular view are DOTTED in that view.

In the practice questions that follow, two views will be shown, with four options to complete the set. You are to select the correct option.

Perceptual Ability – View Recognition

Example:

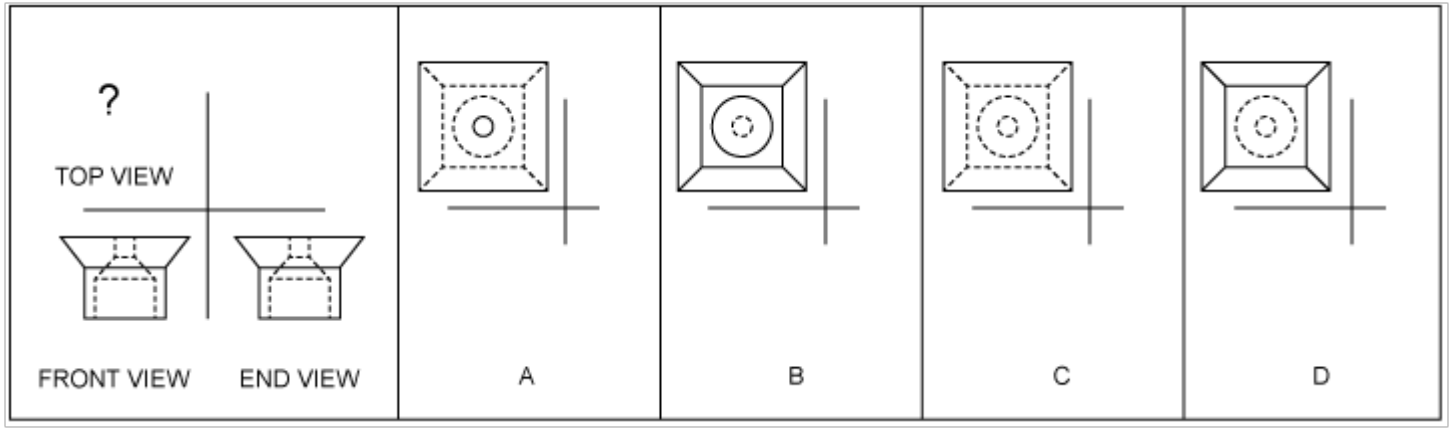


The front view shows that there is a smaller block on the base and that there is no hole.

The top view shows that the block is round and in the center of the base. The answer, therefore, must be B.

For view recognition questions, it is not always the end view that must be selected. For some questions, the top view or front view must be selected.

Question 2



Choose the correct TOP VIEW.

Correct Response: A
Content Classification: *Perceptual Ability: View Recognition*

Perceptual Ability – Angle Discrimination

Below is an example of an **angle discrimination** item.

You are to examine the four INTERIOR angles and rank each in terms of degrees from SMALL to LARGE. Choose the alternative that has the correct ranking.

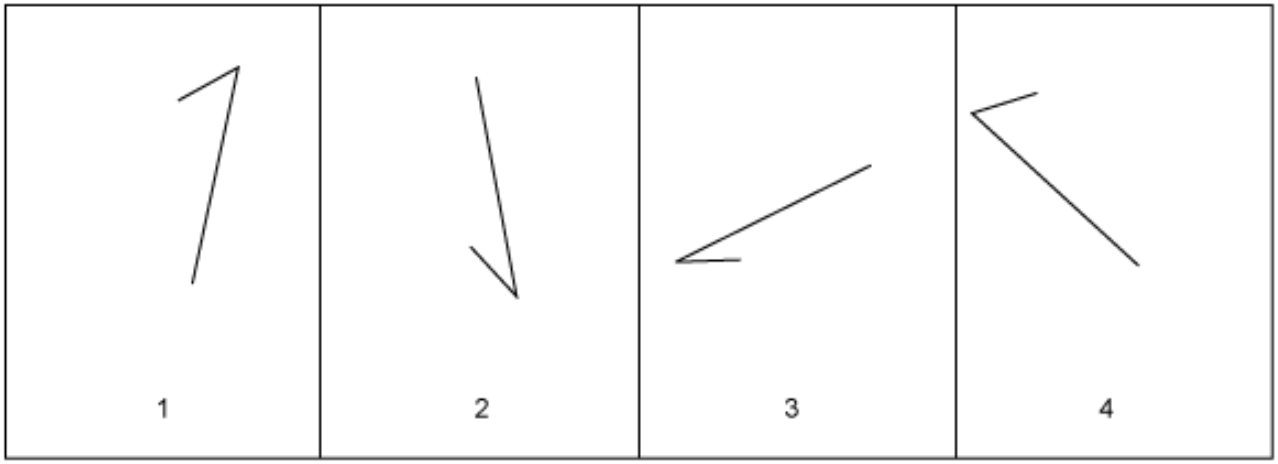
Example:

Alternatives:

A. 1-2-3-4
B. 2-1-4-3
C. 1-3-2-4
D. 3-4-1-2

The correct ranking of the angles from small to large is 2-1-4-3. Therefore, alternative B is correct.

Question 3



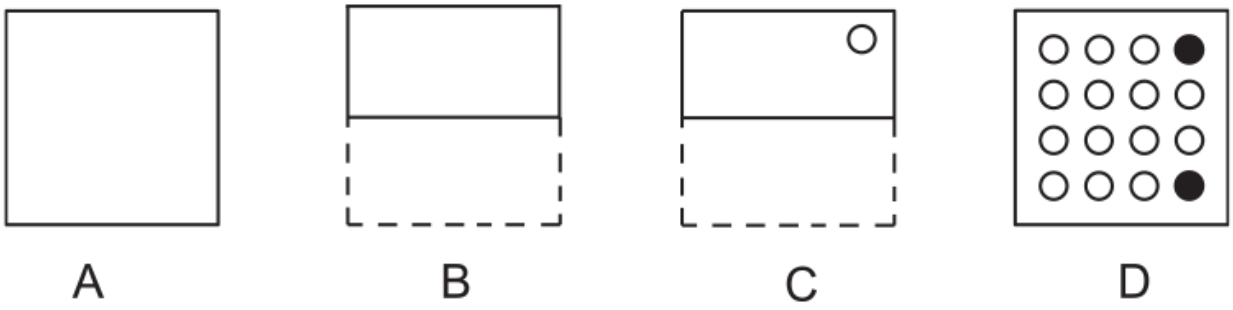
A) 2-3-4-1
B) 2-3-1-4
C) 3-2-1-4
D) 3-2-4-1

Correct Response: C
Content Classification: *Perceptual Ability: Angle Discrimination*

Perceptual Ability – Paper Folding

A flat square of paper is folded one or more times. The broken lines indicate the original position of the paper. The solid lines indicate the position of the folded paper. The paper is never turned or twisted. The folded paper always remains within the edges of the original square. There are multiple folds in each item. After the last fold, a hole is punched in the paper. Your task is to mentally unfold the paper and determine the position of the holes on the original square. Choose the pattern of black circles that indicates the position of the holes on the original square. There is only one correct pattern for each item.

Example 1.

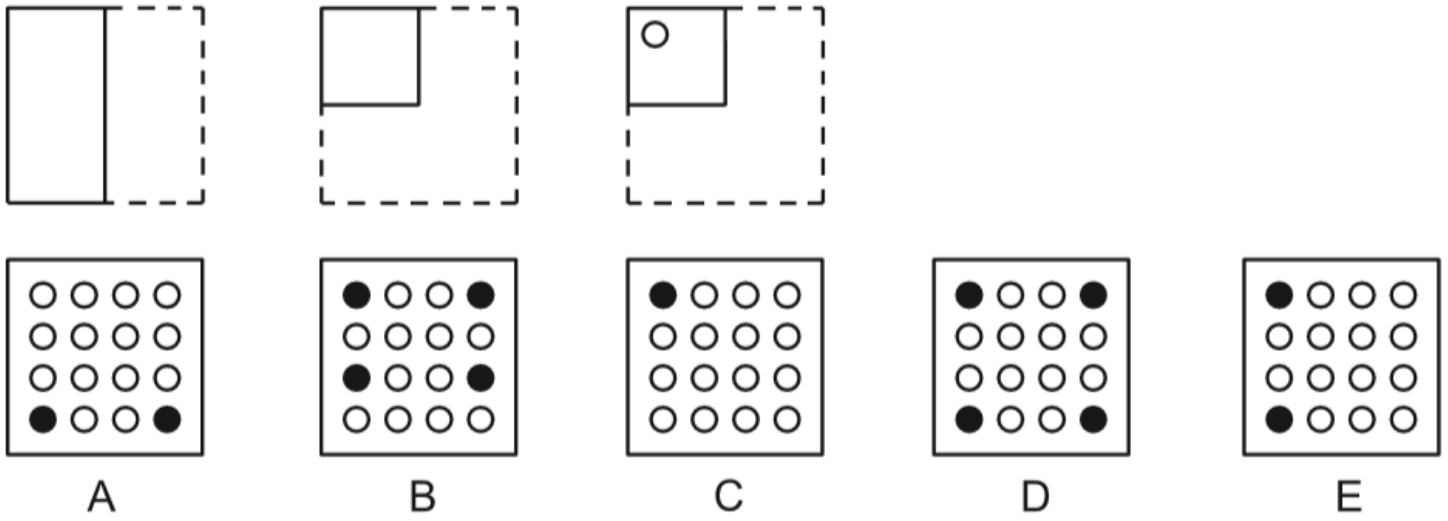


In Example 1 Figure A shows the original paper. Figure B shows the result of the first fold. Figure C shows the position of the punched hole on the folded paper. When the paper is unfolded the pattern of the holes on the original square is shown by the dark circles in Figure D. The answer has two holes since the paper was two thicknesses when punched.

Perceptual Ability – Paper Folding

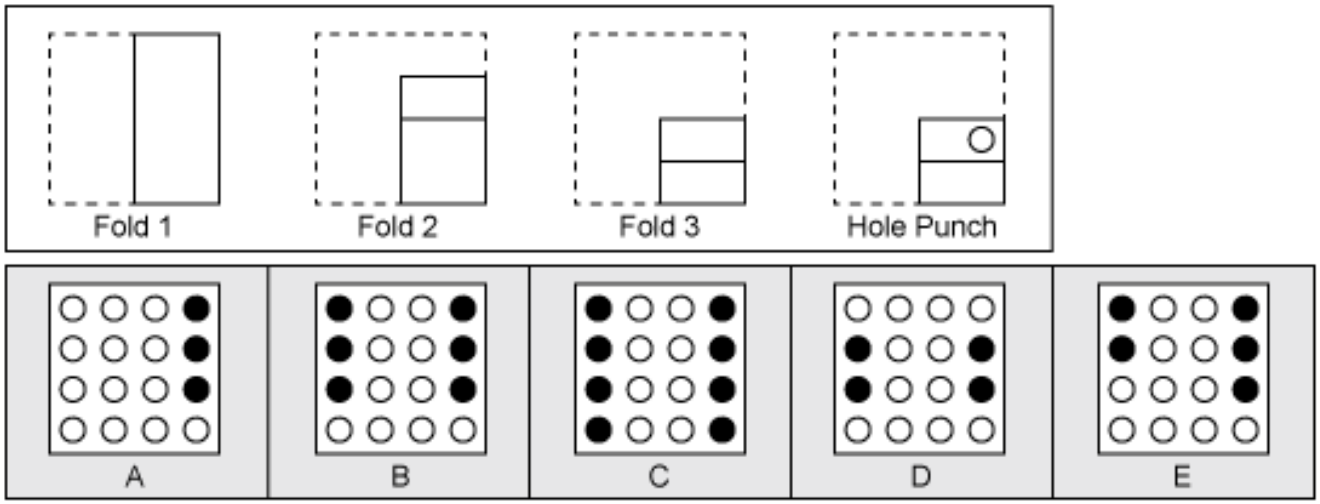
Example 2 shows an item as it appears on the test.

Example 2:



The correct answer to Example 2 is D. The paper was four thicknesses when punched and the holes are located in each of the four corners.

Question 4



Correct Response: B
Content Classification: *Perceptual Ability: Paper Folding*

Perceptual Ability – Cube Counting

Each figure has been made by cementing together cubes of the same size. After being cemented, each group was painted on all sides EXCEPT for the bottom on which it is resting. The only hidden cubes are those required to support other cubes.

For the following questions you are to examine each figure closely to determine how many cubes have:

only **one** of their sides painted.
only **two** of their sides painted.
only **three** of their sides painted.
only **four** of their sides painted.
all **five** of their sides painted.

Note: there are no problems for which zero (0) is the correct answer.

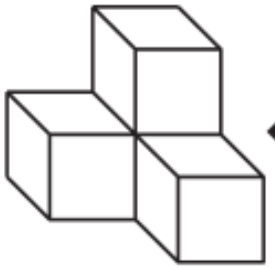
Perceptual Ability – Cube Counting

Example:

PROBLEM Z

In Figure Z, how many cubes have two of their exposed sides painted?

A. 1 cube ← **Answer**
B. 2 cubes
C. 3 cubes
D. 4 cubes
E. 5 cubes



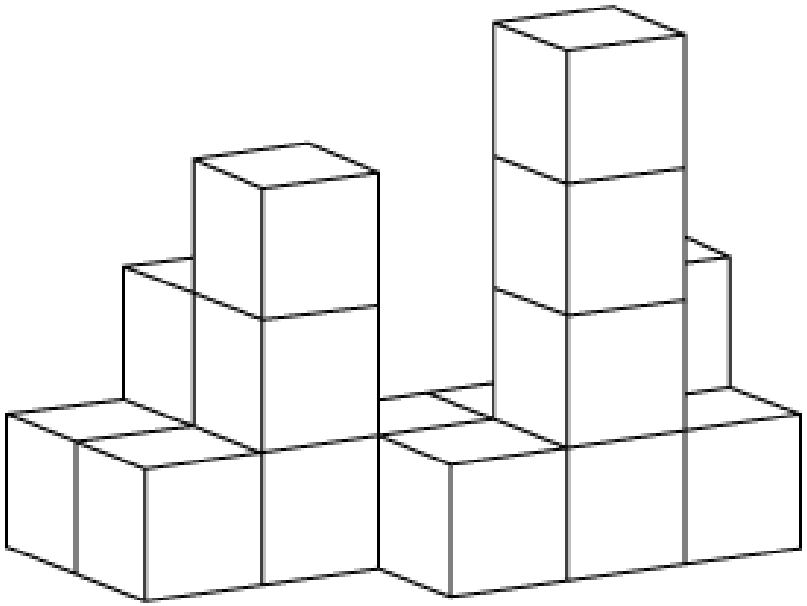
Invisible cube

FIGURE Z

There are four cubes in Figure Z, three that are visible and one supporting the top cube that is invisible. The invisible cube has only two sides painted. The top cube has five sides painted. The remaining two cubes have four sides painted.

Remember, after being cemented together, each figure was painted on all exposed sides EXCEPT the bottom on which it is resting.

Question 5



How many cubes have two of their exposed sides painted?

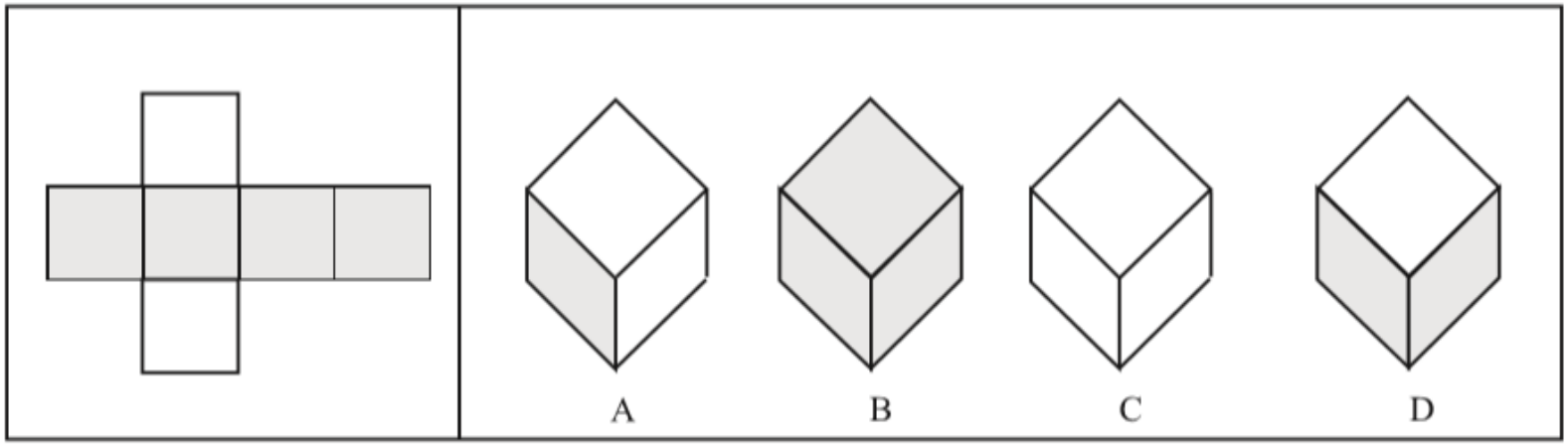
A) 1 cube
B) 2 cubes
C) 3 cubes
D) 4 cubes
E) 5 cubes

Correct Response: D
Content Classification: *Perceptual Ability: Cube Counting*

Perceptual Ability – Spatial Relations

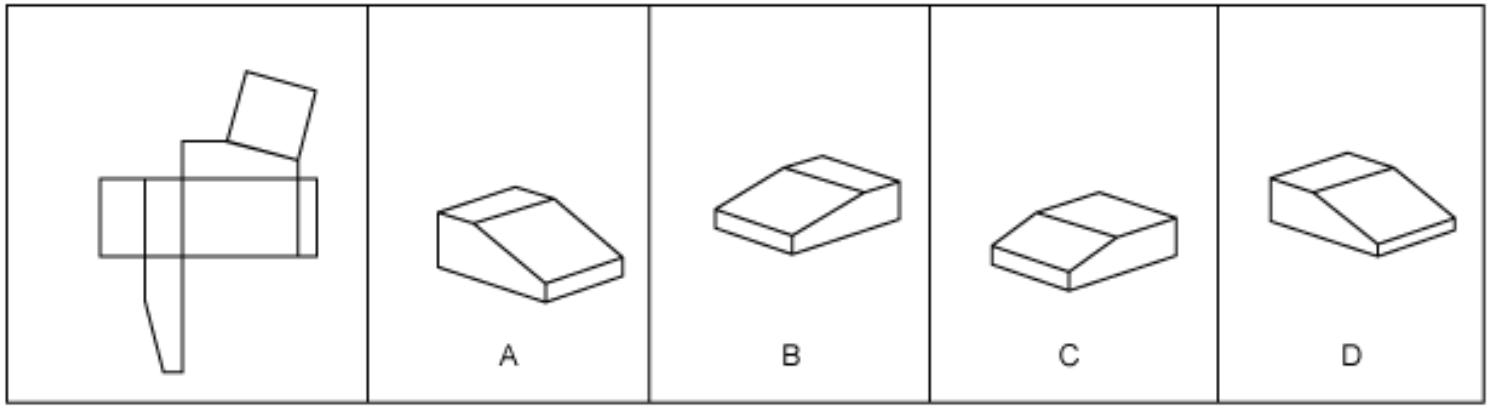
A flat pattern will be presented. This pattern is to be folded into a three-dimensional figure. The correct figure is one of the four given at the right of the pattern. There is only one correct figure in each set. The outside of the pattern is what is seen at the left.

Example:



One of the above figures (A,B,C or D) can be formed from the flat pattern given at the left. The only figure that corresponds to the pattern is D. If the shaded surfaces are looked at as the sides of the box, then all four sides must be shaded, while the top and bottom are white.

Question 6



Correct Response: B
Content Classification: *Perceptual Ability: Spatial Relations*