

VISUAL REASONING	LOGICAL DERIVATION	NUMERICAL ABILITY
	GENERAL KNOWLEDGE, ARCHITECTURE & DESIGN	
DESIGN THINKING	LANGUAGE INTERPRETATION	DESIGN SENSITIVITY

Following are the images of famous buildings in India. Based on the converging lines, identify how the photographer captured the image.

1.



3.



2.



4.



Source: CAAD- DRL

A. One Point perspective – 1,2
Three point perspective -3,4

C. One point perspective – 1,4
Three point perspective – 2,3

B. Two point perspective - 1,3
Three Point perspective – 2,4

D. One point perspective – 3,4
Three point perspective - 1,2

Answer key:

**C. One point perspective – 1,4
Three point perspective – 2,3**

Theory:

One point perspective: One point perspective (frontal or central perspective) has only one vanishing point on the horizon line located somewhere within the picture plane and all the orthogonal converge towards it.

Three-point perspective: Three point perspective uses three vanishing points where two of them are on the horizon line and the third is either high above the horizon line or way below it.

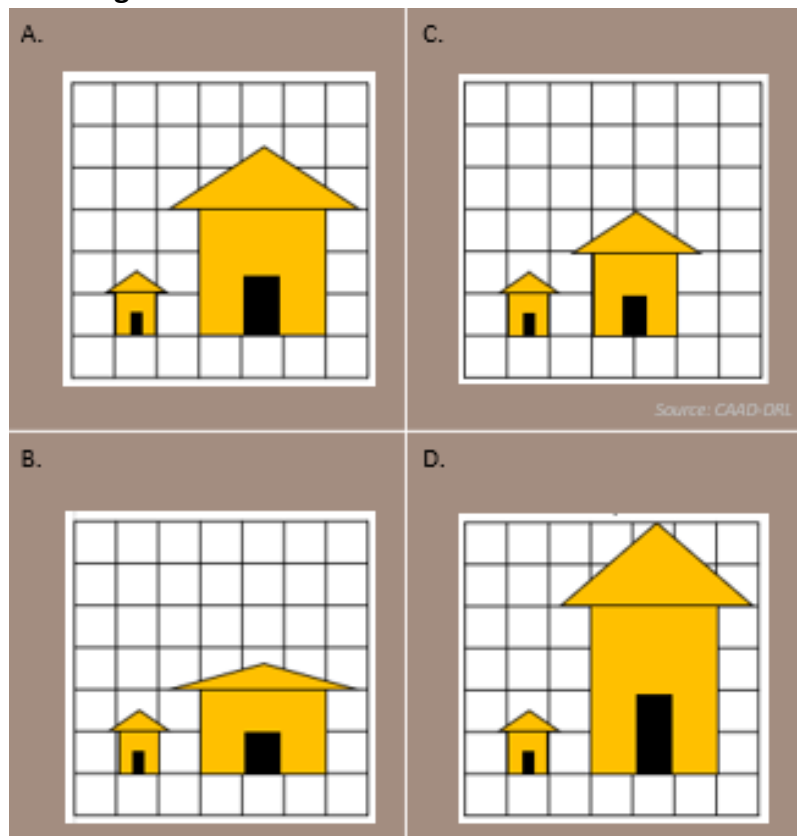
Suggested Reading: Basics of Perspective

" For a swift review of the subject, kindly consult the study materials available on the website"

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Identify which composition represents the correct scale factor, When the size of the house is enlarged to three times of its original size.



Answer key:

A. (Based on the square 1 x 1 is enlarged 3 x 3)

Theory:

PROPORTION: Proportion refers to the relationship of one part to another or to the whole, or between one object and another. This relationship may be one of magnitude, quantity, or degree. The height of the space is perceived in proportion to the human height and it dictates the spatial usage. Measurable change in the height of a ceiling seems to have a greater effect on our impression of a space

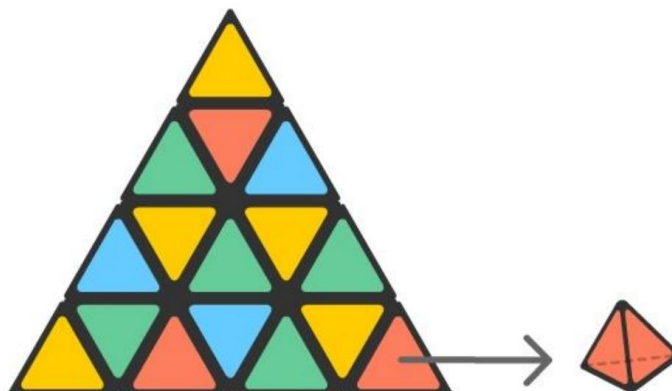
Suggested Reading: visual composition

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A tetrahedral puzzle is made of smaller tetrahedrons. Shown below is one side of the puzzle and a small tetrahedron. Assuming that all the faces of the puzzle are same, how many small tetrahedrons are there on the faces of the larger tetrahedron?



A. 64

B. 54

C. 48

D. 44

Answer key:

D. 44

Theory:

A tetrahedron has 3 sides and 1 base. On all the sides, same no. of tetrahedrons should be visible.

Total number on face 1 = 16

Total number on face 2 = 16 - 4 = 12

(the deduction is because they are already counted for the face 1)

Total number on face 3 = 16 - (1+2+2+2) = 9

(the deduction is because they are already counted for the face 1 and 2)

Total number on base = 16 - (3+6) = 7

(The deduction is because they are already counted for faces 1,2 and 3)

So, **Total no. of Tetrahedrons = 16 + 12 + 9 + 7 = 44**

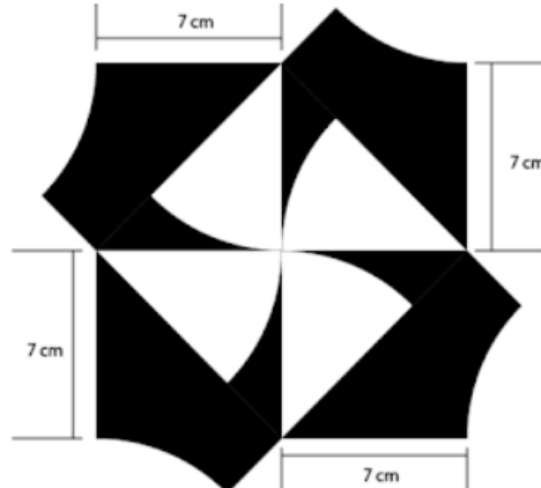
Suggested Reading: Solids and Geometry

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To find the solution, let us consider only one pattern as shown in the below image. I've partitioned the pattern into regions, namely A,B,C,D. Here C and D are the same shapes



A. 160

B. 142

C.140

D. 132

Answer key:

C. 140

Theory:

A is easy to obtain, the area is half the square area = $\frac{1}{2} \times (7 \times 7) = 24.5$

Area of C = Area of half square (say A) - area of B
(Note that area of B and C taken together is half the area of the square)

Fortunately, area of B = area of sector of length 7 and angle 45 degrees = $\frac{1}{2} \times \text{square}(7) \times \theta$

Here theta should be converted to radians, π radians = 180 degrees

so, $45 \text{ deg} = \pi \times 45 / 180 = (22 \times 45) / (7 \times 180)$

so, area of B = $\frac{1}{2} \times \text{square}(7) \times (22 \times 45) / (7 \times 180)$

B = 19.25

Area of C is thus, = $24.5 - 19.25 = 5.25$

Area of D will also be 5.25 So, the area of one pattern in black = $24.5 + 5.25 + 5.25 = 35$

For four such patterns, area = $35 \times 4 = 140$

Suggested Reading: Pattern and Geometry

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_____ Windows project outside the external wall of a room.



Source: istockphoto.com

A. Clerestory	B. Lantern
C. Skylight	D. Bay
Answer key: D. Bay	Theory: BAY WINDOW: A window space projecting outward from the main walls of a building and forming a bay in a room. These Windows admit more light, increase opening area, provide ventilation and improve the appearance of the building.

Suggested Reading: Basics of building construction/Components
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The Leaning Tower of Pisa leans due to:



Source: *Leaning Tower of Pisa | History, Architecture, Foundation & Lean | Britannica*

A. Earthquake damage

C. Architect's error

B. Soft, unstable ground

D. intentional design

Answer key:

Theory:

Explanation: Unstable foundation

Constructed in 1173, the tower began to lean within five years as its shallow foundation (around 3 meters deep) couldn't properly support its weight on the loose, water-saturated soil composed of clay, sand, and shells.

This uneven settling caused the south side of the tower to sink faster than the north side, resulting in the tilt we see today.

C) Soft, Unstable Ground

Suggested Reading: History of Architecture

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During the brainstorming phase, what is encouraged?

A. Criticizing and dismissing all ideas

B. Limiting the number of ideas generated

C. Postponing idea generation for later stages

D. Allowing free-flowing idea generation without judgment

Answer key:

D. Allowing free-flowing idea generation without judgment

Theory:

"Brainstorming is a technique commonly used in the ideation phase of design thinking to generate a large quantity of ideas without judgment.

Suggested Reading: Design Thinking

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Read the passage below and determine the correct answer.

Passage: It is now widely acknowledged that the movement against racism in Western European societies is gaining momentum. Openness to diversity and multicultural societies resulting from mass immigration have also contributed to reduce discrimination suffered by minority groups. Unfortunately racial discrimination remains prevalent. Racial discrimination can create anarchy and damage the delicate fabric of society which can undermine a nation's resilience.

Mass immigration leading to multicultural societies has contributed to increased racism in Western Europe.

A. True

C. Cannot say

B. False

Answer key:

Theory:

The text clearly states that "multicultural societies resulting from mass immigration have also contributed to reduce discrimination suffered by minority groups"

B. False

Suggested Reading: True/False/Cannot Say

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Choose the correct alternative from the following options as given below for the Assertion (A) and Reason (R) given in each of the questions.

Assertion (A)

Most of the Himalayan rivers are perennial.

Reason (R)

They are fed by melting snow..

A. if both A and R are true and R is the correct explanation of A

C. if A is true but R is false

B. if both A and R are true and R is not the correct explanation of A

D. if A is false but R is true

Answer key:

Theory:

Option A:

Most Himalayan rivers are perennial because they are fed by the melting snow throughout the year.

Thus, both A and R are true & R correctly explains A.

A. if both A and R are true and R is the correct explanation of A

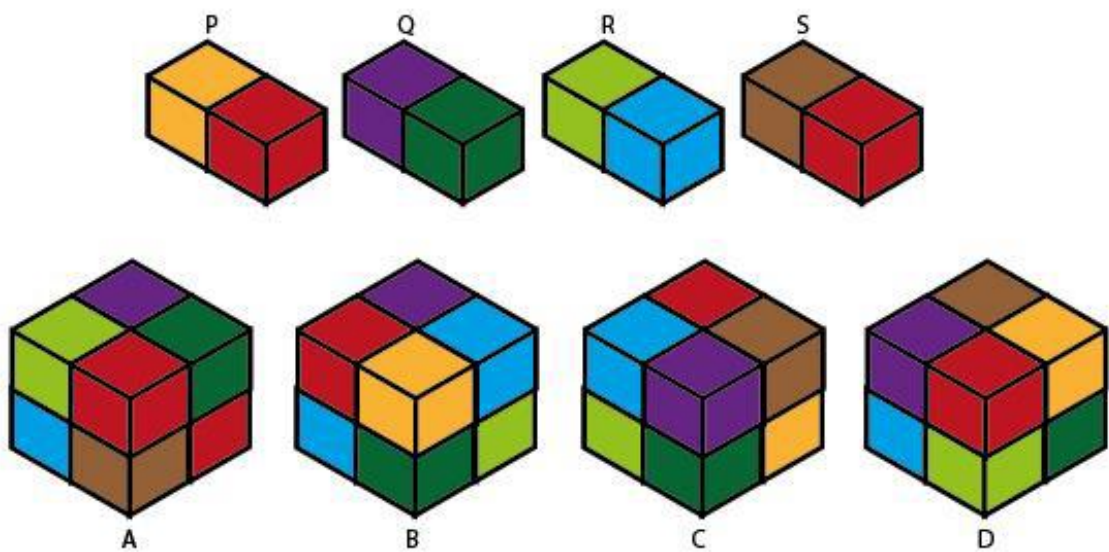
Suggested Reading: Assertion and Reason Type Questions

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Four solid pieces P, Q, R and S are arranged to form a cube. Which of the cubes shown in the options is/are NOT possible?



A. A and C

C. A and D

B. B and D

D. B and C

Answer key:

Theory:

B and D :

The Block Q consisting of dark green and purple painting blocks are seen in opposite corners in B and D options. In all the other cases, the colours are together. Hence B and D are the options that cannot be possible using the given blocks.

B. B and D

Suggested Reading: Principles of design

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