

UCEED Sample Paper

Duration: 180 Minutes

Maximum Marks: 300

Instructions

- This is a full-length UCEED practice paper. **Part A** (Q1–Q57, 200 marks, computer-based) has three sections: **Section 1** NAT, Numerical Answer Type (Q1–Q14); **Section 2** MSQ, Multiple Select Questions (Q15–Q29); **Section 3** MCQ, Multiple Choice Questions (Q30–Q57). **Part B** (Q58–Q59, 100 marks, pen and paper) tests drawing and design aptitude.
- **Marking - Part A:** NAT: +4, no negative marking. MSQ: +4 if all correct options and no wrong option are chosen; +1 for each correct option chosen when no wrong option is chosen; –1 if any wrong option is chosen. MCQ: +3 for correct, –0.71 for wrong.
- **Marking - Part B:** each of the two questions carries **50 marks**, evaluated on your drawing and design response. There is no negative marking in Part B.
- Tap **View Solution** (Part A) or **View Model Approach** (Part B) under any question to jump to its worked explanation. Calculators and electronic gadgets are not allowed.

Section 1: Numerical Answer Type (NAT)

Q1. A wooden cube of side 4 cm is painted on all its outer faces and then cut into 1 cm cubes. How many of the small cubes have exactly one painted face?

(Numerical Answer Type - enter a numerical value; no options.)

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Q2. A logo covers 15% of a rectangular poster. If the poster has an area of 4800 cm^2 , what is the area of the logo in square centimetres?

(Numerical Answer Type - enter a numerical value; no options.)

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Q3. A book has its pages numbered from 1 to 120. How many times does the digit 1 appear across all these page numbers?

(Numerical Answer Type - enter a numerical value; no options.)

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Q4. A widescreen graphic keeps a length to width ratio of 16 : 9. If its width is 27 cm, what is its length in centimetres?

(Numerical Answer Type - enter a numerical value; no options.)

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Q5. A photograph is to be printed 8 inches wide at a resolution of 240 pixels per inch. How many pixels wide must the image file be?

(Numerical Answer Type - enter a numerical value; no options.)

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Q6. A designer quotes a fee of 6000 rupees and then offers the client a 12% discount on it. What is the amount the client finally pays, in rupees?

(Numerical Answer Type - enter a numerical value; no options.)

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Q7. A digital clock reads hours and minutes. The sum of the digits it displays at 12:00 is 3 ($1+2+0+0$). At 12:01 it is 4 ($1+2+0+1$) and so on. What is the sum of all the digits it displays from 12:00 to 12:59?



(Numerical Answer Type - enter a numerical value; no options.)

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Q8. Find the next number in the sequence 3, 6, 11, 18, 27, ...

(Numerical Answer Type - enter a numerical value; no options.)

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Q9. A rectangular floor measures 6 m by 4.5 m and is to be covered fully with square tiles of side 0.3 m. How many tiles are needed?

(Numerical Answer Type - enter a numerical value; no options.)

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Q10. A building 45 m tall is to be shown as a scale model at a scale of 1 : 150. What is the height of the model in centimetres?

(Numerical Answer Type - enter a numerical value; no options.)

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Q11. A painter mixes white and black in the ratio 5 : 3 to make 40 litres of grey. To darken it, the white is kept the same while more black is added so the ratio becomes 5 : 7. How many litres of black must be added?

(Numerical Answer Type - enter a numerical value; no options.)

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Q12. What is the measure, in degrees, of each interior angle of a regular octagon?

(Numerical Answer Type - enter a numerical value; no options.)

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Q13. An image measures 1200 pixels wide by 800 pixels tall. It is resized so that its width becomes 300 pixels while keeping the same shape. What is the new height in pixels?

(Numerical Answer Type - enter a numerical value; no options.)

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Q14. A circular wheel has a radius of 35 cm. Taking $\pi = \frac{22}{7}$, how many centimetres does it roll forward in one full turn?

(Numerical Answer Type - enter a numerical value; no options.)

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Section 2: Multiple Select Questions (MSQ)

Q15. In a town, there are four kinds of persons: Mizrabs, Frets, Dictions, and Scripts.

Rules:

- Each kind plays exactly 2 instruments.
- Each instrument is played by exactly 2 kinds.
- Some Mizrabs play Tabla.
- Some Frets play Sitar.
- The kind that plays Harmonium does not play Sarod.
- The kind that plays Tabla does not play Sitar.
- Mizrabs and Dictions do not play the same instruments.
- Frets and Scripts do not play the same instruments.
- Dictions do not play Harmonium.

Which of the following is / are TRUE?

A. Frets do not play Tabla



- B. Scripts play Tabla
- C. Mizrabs play Harmonium
- D. Dictions play Sitar

(One or more options may be correct.)

- (A) Frets do not play Tabla
- (B) Scripts play Tabla
- (C) Mizrabs play Harmonium
- (D) Dictions play Sitar

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Q16. Which of the following statements about typography are CORRECT?

- A. A serif typeface has no small strokes at the ends of letters, and Helvetica is a serif typeface.
- B. Kerning is the adjustment of space between two specific letters.
- C. Leading is the vertical space between lines of text.
- D. The x-height of a typeface is the height of its capital letter X.

(One or more options may be correct.)

- (A) A serif typeface has no small strokes at the ends of letters, and Helvetica is a serif typeface.
- (B) Kerning is the adjustment of space between two specific letters.
- (C) Leading is the vertical space between lines of text.
- (D) The x-height of a typeface is the height of its capital letter X.

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Q17. Which of the following statements about colour models is / are CORRECT?



- A. In the RGB model, full red, green and blue light together make black.
- B. CMYK is the colour model used mainly by computer and phone screens.
- C. In CMYK printing, the K stands for the key (black) plate.
- D. Cyan, magenta and yellow are the additive primary colours.

(One or more options may be correct.)

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Q18. Which of the following statements is / are CORRECT?

- A. Raymond Loewy designed the Sydney Opera House.
- B. Dieter Rams, linked to Braun, put forward ten principles of good design.
- C. The Eames Lounge Chair was designed by Philippe Starck.
- D. M. F. Husain was a celebrated Indian painter.

(One or more options may be correct.)

- (A) Raymond Loewy designed the Sydney Opera House.
- (B) Dieter Rams, linked to Braun, put forward ten principles of good design.
- (C) The Eames Lounge Chair was designed by Philippe Starck.



(D) M. F. Husain was a celebrated Indian painter.

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Q19. Which of the following are traditional Indian art or craft forms?

- A. Madhubani painting of Bihar
- B. Pattachitra of Odisha
- C. Phulkari embroidery of Punjab
- D. Blue Pottery of Jaipur

(One or more options may be correct.)

- (A) Madhubani painting of Bihar
- (B) Pattachitra of Odisha
- (C) Phulkari embroidery of Punjab
- (D) Blue Pottery of Jaipur

[View Solution](#)

Q20. Which of the following statements about materials and making is / are CORRECT?

- A. Thermosetting plastics can be melted and reshaped again and again.
- B. For the same volume, aluminium is heavier than steel.
- C. Injection moulding is a common process for producing plastic parts.
- D. Ordinary glass is made mainly from silica sand.

(One or more options may be correct.)

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- (B) For the same volume, aluminium is heavier than steel.
- (C) Injection moulding is a common process for producing plastic parts.



(D) Ordinary glass is made mainly from silica sand.

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Q21. Which of the following statements about the environment is / are CORRECT?

- A. The three Rs of waste management are Reduce, Reuse and Recycle.
- B. CFC gases are completely harmless to the ozone layer.
- C. Solar and wind are renewable sources of energy.
- D. Burning coal releases no carbon dioxide.

(One or more options may be correct.)

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- (B) CFC gases are completely harmless to the ozone layer.
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Q22. Which of the following statements about cameras and photography is / are CORRECT?

- A. A higher f-number means a wider aperture opening.
- B. A tripod is used to raise the ISO of a camera automatically.
- C. A shutter speed of $1/1000$ s lets in more light than $1/30$ s.
- D. A wide-angle lens has a shorter focal length than a telephoto lens.

(One or more options may be correct.)

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Q23. Which of the following statements about Indian architecture is / are CORRECT?

- A. The Taj Mahal was built by Emperor Ashoka.
- B. The Sun Temple at Konark is designed in the form of a giant chariot.
- C. Charles Correa was an Indian architect.
- D. The master plan of Chandigarh was led by Le Corbusier.

(One or more options may be correct.)

- (A) The Taj Mahal was built by Emperor Ashoka.
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- (C) Charles Correa was an Indian architect.
- (D) The master plan of Chandigarh was led by Le Corbusier.

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Q24. Which of the following statements about image file formats is / are CORRECT?

- A. JPEG uses lossy compression.
- B. PNG files cannot store transparency.
- C. SVG is a raster (pixel-based) format.
- D. GIF supports simple animation.

(One or more options may be correct.)

- (A) JPEG uses lossy compression.
- (B) PNG files cannot store transparency.



- (C) SVG is a raster (pixel-based) format.
- (D) GIF supports simple animation.

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Q25. Which of the following statements about solid shapes is / are CORRECT?

- A. A cube has 8 faces.
- B. A regular tetrahedron has 4 triangular faces.
- C. A cylinder has three flat faces.
- D. A sphere has 6 vertices.

(One or more options may be correct.)

- (A) A cube has 8 faces.
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- (C) A cylinder has three flat faces.
- (D) A sphere has 6 vertices.

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Q26. Which of the following statements about colour theory is / are CORRECT?

- A. Orange is a secondary colour made by mixing red and yellow.
- B. Green pigment can be mixed from blue and yellow.
- C. Analogous colours sit next to each other on the colour wheel.
- D. Black and white are called hues.

(One or more options may be correct.)

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- (C) Analogous colours sit next to each other on the colour wheel.
- (D) Black and white are called hues.

[View Solution](#)

Q27. Which of the following statements about design and art movements is / are CORRECT?

- A. Art Nouveau is known for rigid straight lines and industrial grids.
- B. The De Stijl movement is famous for realistic portrait painting.
- C. Art Deco features bold geometric patterns and rich colours.
- D. The Arts and Crafts movement valued handmade craftsmanship over mass production.

(One or more options may be correct.)

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Q28. Which of the following statements is / are CORRECT?

- A. If each letter is shifted one step forward (A to B, B to C), then MOON becomes NPPN.
- B. In a straight row of 10 people, the person 4th from the left is also 7th from the right.
- C. If North is in front of you, then East is on your left.
- D. The minute hand of a clock turns through 6 degrees in one minute.

(One or more options may be correct.)



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- (D) The minute hand of a clock turns through 6 degrees in one minute.

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Q29. Which of the following statements about sustainability is / are CORRECT?

- A. Biodegradable materials break down naturally over time.
- B. Single-use plastic bags are good for the environment.
- C. Rainwater harvesting helps conserve water.
- D. Public transport lowers per-person carbon emissions compared with single-occupancy cars.

(One or more options may be correct.)

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Section 3: Multiple Choice Questions (MCQ)

Q30. In pigment colors, if Green is Blue, Yellow is Green, Blue is White and Red is Yellow, what is the complementary color of White and Green?



- (A) Orange
- (B) Purple
- (C) Red
- (D) Green

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Q31. Which Indian architect designed the Indian Institute of Management (IIM) Bangalore campus and the Kanchanjunga Apartments in Mumbai?

- (A) Charles Correa
- (B) Balkrishna Doshi
- (C) Raj Rewal
- (D) Hafeez Contractor

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Q32. In typography, the imaginary line on which most letters appear to rest is called the:

- (A) x-height
- (B) baseline
- (C) ascender
- (D) kerning

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Q33. The famous bronze 'Dancing Girl' figurine belongs to which ancient Indian civilisation?

- (A) Gupta



- (B) Maurya
- (C) Indus Valley (Harappan)
- (D) Chola

[View Solution](#)

Q34. Which colour model do most computer and mobile phone displays use to create colour on screen?

- (A) CMYK
- (B) RYB
- (C) Pantone
- (D) RGB

[View Solution](#)

Q35. A designer needs a graphic that stays perfectly sharp at any size, from a business card to a billboard. Which file format is best suited?

- (A) SVG
- (B) JPEG
- (C) BMP
- (D) GIF

[View Solution](#)

Q36. Find the next term in the series: 2, 5, 10, 17, 26, ?

- (A) 33
- (B) 37
- (C) 35
- (D) 36



[View Solution](#)

Q37. Which art movement, led by artists such as Piet Mondrian, is known for using only straight lines, right angles and primary colours?

- (A) Surrealism
- (B) Impressionism
- (C) De Stijl
- (D) Cubism

[View Solution](#)

Q38. The golden ratio, often used in art and design for pleasing proportions, is approximately equal to:

- (A) 1.414
- (B) 2.718
- (C) 3.142
- (D) 1.618

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Q39. In a certain code, FLOWER is written as EKNVDQ. How is GARDEN written in the same code?

- (A) FZQCDM
- (B) HBSEFO
- (C) FZQCEM
- (D) FYQCDM

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Q40. Which of these is a subtractive primary colour used in colour printing?

- (A) Green
- (B) Magenta
- (C) Blue
- (D) Red

[View Solution](#)

Q41. The Bauhaus school helped popularise which famous design principle?

- (A) Form follows fashion
- (B) Less colour, more texture
- (C) Form follows function
- (D) Ornament above all

[View Solution](#)

Q42. A large cube is made of 27 identical small cubes arranged 3 by 3 by 3. If all outer faces of the large cube are painted, how many small cubes have no paint at all?

- (A) 8
- (B) 6
- (C) 0
- (D) 1

[View Solution](#)

Q43. Warli painting, known for simple white geometric figures on an earthy background, originates from which Indian state?

- (A) Maharashtra



- (B) Rajasthan
- (C) Kerala
- (D) West Bengal

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Q44. Read the following design context:

The city of Mumbai is facing a severe shortage of parking spaces. The problem is acute in south Mumbai where land is expensive and undeveloped land almost non-existent. A panel of experts consisting of city and town planners, transportation engineers and designers, economists, historians and policy makers has studied the problem carefully and has recommended a set of measures:

- I. Start a free public bicycle program in which people are encouraged to use public transport for longer distances and shared common bicycles for shorter distances.
- II. Allow people to download a mobile App which will allow vehicle owners to book parking spots up to one week in advance.
- III. Ban vehicles with even registration numbers on the even days of the month, and odd registration numbers on odd days of the month.
- IV. Make parking prohibitively expensive.
- V. Build more multi-storied and underground parking complexes.
- VI. Declare the whole of south Mumbai as a heritage district to prevent any further construction and limit vehicle entry by imposing toll.
- VII. Design self-parking vehicles.
- VIII. Create a car pooling mobile App that will connect people to share cars and reduce the number of cars on the road.
- IX. Make the roads more pedestrian-friendly.



X. Institute a parking pricing mechanism which dynamically adjusts the cost of parking based on demand and supply.

Identify FOUR recommendations that will make the most impact in solving the parking problem.

- (A) I, IV, VII & X
- (B) II, III, V & IX
- (C) I, IV, VII & VIII
- (D) I, III, V & X

[View Solution](#)

Q45. In a family, P is the brother of Q. Q is the father of R. How is P related to R?

- (A) Father
- (B) Uncle
- (C) Brother
- (D) Grandfather

[View Solution](#)

Q46. Which of the following is a raster (pixel-based) image format?

- (A) SVG
- (B) EPS
- (C) JPEG
- (D) AI

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Q47. The city of Jaipur, famous for its pink buildings and planned grid layout, was founded and planned in the 18th century by:



- (A) Maharaja Sawai Jai Singh II
- (B) Raja Man Singh
- (C) Maharana Pratap
- (D) Maharaja Ranjit Singh

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Q48. On a colour wheel, complementary colours are pairs that lie:

- (A) next to each other
- (B) opposite each other
- (C) at the centre
- (D) at random positions

[View Solution](#)

Q49. A photograph is 3000 pixels wide. At 300 pixels per inch, what is the largest print width that keeps good quality?

- (A) 3 inches
- (B) 30 inches
- (C) 300 inches
- (D) 10 inches

[View Solution](#)

Q50. Which brand's identity is built around a simple silhouette of a bitten fruit, a classic example of a minimal logo?

- (A) Apple
- (B) Nike
- (C) Adidas



(D) McDonald's

[View Solution](#)

Q51. Pointing to a photograph, a man said, 'She is the daughter of my grandfather's only son.' How is the girl in the photograph related to the man?

(A) Daughter

(B) Sister

(C) Mother

(D) Aunt

[View Solution](#)

Q52. Which of the following is a traditional Indian tie-and-dye textile technique?

(A) Kalamkari

(B) Batik

(C) Bandhani

(D) Brocade

[View Solution](#)

Q53. A cylinder is cut by a flat plane that is parallel to its circular base. What is the shape of the exposed cross-section?

(A) Rectangle

(B) Triangle

(C) Ellipse

(D) Circle



[View Solution](#)

Q54. On an analog clock showing exactly 3:00, what is the angle between the hour hand and the minute hand?

- (A) 90 degrees
- (B) 180 degrees
- (C) 120 degrees
- (D) 60 degrees

[View Solution](#)

Q55. The study of designing products and workspaces to fit the human body comfortably and safely is called:

- (A) Aesthetics
- (B) Ergonomics
- (C) Semantics
- (D) Acoustics

[View Solution](#)

Q56. In which type of drawing do the three main axes of an object make equal angles of 120 degrees with one another, a method often used for design sketches?

- (A) One-point perspective
- (B) Orthographic front view
- (C) Isometric projection
- (D) Plan view

[View Solution](#)



Q57. Which of these monuments in Agra is a UNESCO World Heritage Site built mainly of red sandstone by the Mughals?

- (A) Qutub Minar
- (B) Charminar
- (C) Hawa Mahal
- (D) Agra Fort

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Part B: Drawing and Design
Aptitude (Pen and Paper)

Q58. [Drawing - 50 Marks]

Imagine the courtyard of a house during a wedding celebration. Strings of marigold hang overhead, women sit in a circle on mats, sweets and trays are passed around, children run between the guests, and a rangoli covers the floor near the entrance. Music and chatter fill the air. Draw this festive courtyard scene, giving prominence to a mehendi artist bent over a guest's outstretched hand, drawing a fine henna pattern while others wait their turn.

Note: Make pencil sketches only. Do not use colour.

Evaluation criteria: observation; composition; perspective and proportion; quality of lines; attention to detail.

[View Model Approach](#)

Q59. [Design Aptitude - 50 Marks]

In a crowded hostel or shared room, students fight over the few wall sockets to charge phones and power banks, and cables tangle across the floor. Design a shared charging station that lets several students



charge devices safely and keeps cables tidy. Show your station in two states: closed and packed away with cables tucked in, and open and in use with several phones charging at once.

Note: Make pencil sketches only. Do not use colour. Explain your design only through visuals and short labels; do not write separate explanations.

[View Model Approach](#)



Detailed Solutions

Q1.

Q. A wooden cube of side 4 cm is painted on all its outer faces and then cut into 1 cm cubes. How many of the small cubes have exactly one painted face?

Solution

Concept - Painted-cube face rule: Small cubes with exactly one painted face come from the middle of each big face, away from every edge.

Step 1 - Count per face: Each face contributes $(n - 2)^2 = (4 - 2)^2 = 4$ such cubes.

Step 2 - All faces: A cube has 6 faces: $6 \times 4 = 24$.

Tip: Handy keys: one-face = $6(n - 2)^2$, two-face = $12(n - 2)$, zero-face = $(n - 2)^3$.

Answer: 24 [Go Back to Q1](#)

Q2.

Q. A logo covers 15% of a rectangular poster. If the poster has an area of 4800 cm^2 , what is the area of the logo in square centimetres?

Solution

Concept - Percentage of a quantity: A percentage of the area is that fraction multiplied by the total area.



Step 1 - Write the fraction: $15\% = 0.15$.

Step 2 - Multiply: $0.15 \times 4800 = 720 \text{ cm}^2$.

Tip: 10% of 4800 is 480 and 5% is 240; $480 + 240 = 720$ is a quick mental check.

Answer: 720 [Go Back to Q2](#)

Q3.

Q. A book has its pages numbered from 1 to 120. How many times does the digit 1 appear across all these page numbers?

Solution

Concept - Counting a digit by place value: Count the chosen digit separately in the units, tens and hundreds places, then add.

Step 1 - Units place: Numbers ending in 1 up to 120:

1, 11, 21, ..., 111, which is 12 numbers, so 12 ones.

Step 2 - Tens place: Tens digit 1 occurs in 10-19 and 110-119: $10 + 10 = 20$ ones.

Step 3 - Hundreds place: Numbers 100 to 120 all have a 1 in the hundreds place: that is 21 ones.

Step 4 - Add: $12 + 20 + 21 = 53$.

Tip: Always split by place value; trying to eyeball the count almost always misses the hundreds block.

Answer: 53 [Go Back to Q3](#)

Q4.



Q. A widescreen graphic keeps a length to width ratio of 16 : 9. If its width is 27 cm, what is its length in centimetres?

Solution

Concept - Direct proportion from a ratio: Length and width stay in the fixed ratio, so scale the width up by $\frac{16}{9}$.

Step 1 - One part: Width is 9 parts = 27 cm, so one part = $27 \div 9 = 3$ cm.

Step 2 - Length: Length is 16 parts = $16 \times 3 = 48$ cm.

Tip: 16 : 9 is the standard widescreen shape; remember $9 \rightarrow 27$ means each part is 3.

Answer: 48 [Go Back to Q4](#)

Q5.

Q. A photograph is to be printed 8 inches wide at a resolution of 240 pixels per inch. How many pixels wide must the image file be?

Solution

Concept - Pixels = inches x resolution: Print width times the pixels-per-inch value gives the pixel dimension needed.

Step 1 - Multiply: $8 \text{ in} \times 240 \text{ px/in.}$

Step 2 - Compute: $8 \times 240 = 1920$ pixels.

Tip: To reverse it, divide pixels by resolution: $1920 \div 240 = 8$ inches of good print.



Answer: 1920 [Go Back to Q5](#)

Q6.

Q. A designer quotes a fee of 6000 rupees and then offers the client a 12% discount on it. What is the amount the client finally pays, in rupees?

Solution

Concept - Reducing by a percentage: The final amount is the base multiplied by $(1 - \text{discount rate})$.

Step 1 - Write the factor: $1 - 0.12 = 0.88$.

Step 2 - Multiply: $6000 \times 0.88 = 5280$ rupees.

Tip: Or take 12% of 6000 = 720 and subtract: $6000 - 720 = 5280$.

Answer: 5280 [Go Back to Q6](#)

Q7.

Q. A digital clock reads hours and minutes. The sum of the digits it displays at 12:00 is 3 ($1+2+0+0$). At 12:01 it is 4 ($1+2+0+1$) and so on. What is the sum of all the digits it displays from 12:00 to 12:59?

Solution

Concept - Counting digit sums by position: Split the sum into the two fixed hour digits and the two changing minute digits, then add across all 60 minutes.



Step 1 - Hour digits: The digits 1 and 2 show in every one of the 60 readings: $(1 + 2) \times 60 = 180$.

Step 2 - Minute tens digit: The tens digit runs 0 to 5, each value appearing 10 times: $10 \times (0 + 1 + 2 + 3 + 4 + 5) = 10 \times 15 = 150$.

Step 3 - Minute units digit: The units digit runs 0 to 9 six times over: $6 \times (0 + 1 + \dots + 9) = 6 \times 45 = 270$.

Step 4 - Total: $180 + 150 + 270 = 600$.

Tip: For digit-sum problems, handle each column separately rather than adding 60 numbers one by one.

Answer: 600 [Go Back to Q7](#)

Q8.

Q. Find the next number in the sequence 3, 6, 11, 18, 27, ...

Solution

Concept - Second-difference (square) pattern: The gaps between terms grow by a fixed step, which points to a rule based on n^2 .

Step 1 - List the gaps: Differences are 3, 5, 7, 9, so the next gap is 11.

Step 2 - Next term: $27 + 11 = 38$ (the rule is $n^2 + 2$, giving $6^2 + 2 = 38$).

Tip: When first differences form an arithmetic run, the term rule involves n^2 .

Answer: 38 [Go Back to Q8](#)



Q9.

Q. A rectangular floor measures 6 m by 4.5 m and is to be covered fully with square tiles of side 0.3 m. How many tiles are needed?

Solution

Concept - Area divided by tile area: The number of tiles is the floor area divided by the area of one tile.

Step 1 - Areas: Floor = $6 \times 4.5 = 27 \text{ m}^2$; one tile = $0.3 \times 0.3 = 0.09 \text{ m}^2$.

Step 2 - Divide: $27 \div 0.09 = 300$ tiles.

Tip: Keep both areas in the same unit; mixing metres and centimetres is the usual slip here.

Answer: 300 [Go Back to Q9](#)

Q10.

Q. A building 45 m tall is to be shown as a scale model at a scale of 1 : 150. What is the height of the model in centimetres?

Solution

Concept - Scale as a ratio of lengths: A scale of 1 : 150 means every real length is divided by 150 in the model.

Step 1 - Convert to centimetres: 45 m = 4500 cm.

Step 2 - Divide by the scale: $4500 \div 150 = 30$ cm.

Tip: Convert to a single unit before dividing; a scale factor has no units of its own.



Answer: 30 [Go Back to Q10](#)

Q11.

Q. A painter mixes white and black in the ratio 5 : 3 to make 40 litres of grey. To darken it, the white is kept the same while more black is added so the ratio becomes 5 : 7. How many litres of black must be added?

Solution

Concept - Hold one part fixed, adjust the other: White does not change, so find the white volume first, then the black needed for the new ratio.

Step 1 - Starting amounts: White = $\frac{5}{8} \times 40 = 25$ L; black = $\frac{3}{8} \times 40 = 15$ L.

Step 2 - New black amount: For 5 : 7 with white = 25, black must be $\frac{7}{5} \times 25 = 35$ L.

Step 3 - Black to add: $35 - 15 = 20$ litres.

Tip: Anchor the new ratio to the part that stays constant, then read off the change.

Answer: 20 [Go Back to Q11](#)

Q12.

Q. What is the measure, in degrees, of each interior angle of a regular octagon?



Solution

Concept - Interior angle of a regular polygon: Each interior angle = $\frac{(n - 2) \times 180}{n}$ for a regular n -gon.

Step 1 - Angle sum: For $n = 8$: $(8 - 2) \times 180 = 1080$ degrees.

Step 2 - One angle: $1080 \div 8 = 135$ degrees.

Tip: A regular octagon (like a stop sign) has 135 degree corners; the exterior angle is 45 degrees.

Answer: 135 [Go Back to Q12](#)

Q13.

Q. An image measures 1200 pixels wide by 800 pixels tall. It is resized so that its width becomes 300 pixels while keeping the same shape. What is the new height in pixels?

Solution

Concept - Keeping aspect ratio on resize: Both dimensions scale by the same factor, so the height shrinks in the same proportion as the width.

Step 1 - Scale factor: $300 \div 1200 = \frac{1}{4}$.

Step 2 - New height: $800 \times \frac{1}{4} = 200$ pixels.

Tip: Locking aspect ratio means one factor applies to both sides; changing them by different amounts distorts the image.

Answer: 200 [Go Back to Q13](#)

Q14.



Q. A circular wheel has a radius of 35 cm. Taking $\pi = \frac{22}{7}$, how many centimetres does it roll forward in one full turn?

Solution

Concept - Distance in one turn = circumference: One full rotation moves the wheel forward by its circumference $= 2\pi r$.

Step 1 - Substitute: $2 \times \frac{22}{7} \times 35$.

Step 2 - Simplify: $35 \div 7 = 5$, then $2 \times 22 \times 5 = 220$ cm.

Tip: Rolling distance uses circumference, not area; radius 35 pairs neatly with $\pi = \frac{22}{7}$.

Answer: 220 [Go Back to Q14](#)

Q15.

Q. In a town, there are four kinds of persons: Mizrabs, Frets, Dictions, and Scripts.

Rules:

- Each kind plays exactly 2 instruments.
- Each instrument is played by exactly 2 kinds.
- Some Mizrabs play Tabla.
- Some Frets play Sitar.
- The kind that plays Harmonium does not play Sarod.
- The kind that plays Tabla does not play Sitar.
- Mizrabs and Dictions do not play the same instruments.
- Frets and Scripts do not play the same instruments.



- Dictions do not play Harmonium.

Which of the following is / are TRUE?

- A. Frets do not play Tabla
 - B. Scripts play Tabla
 - C. Mizrabs play Harmonium
 - D. Dictions play Sitar
- (A) Frets do not play Tabla
 (B) Scripts play Tabla
 (C) Mizrabs play Harmonium
 (D) Dictions play Sitar

Solution

Concept - Logic grid, fixing pairings: There are four instruments (Tabla, Sitar, Harmonium, Sarod), each played by exactly two kinds, and each kind plays exactly two instruments.

Step 1 - Anchor the clues: Mizrabs play Tabla; since Tabla and Sitar are never played together, Mizrabs do not play Sitar. Frets play Sitar.

Step 2 - Fill the grid: Working the "do not share" rules, Mizrabs pair Tabla with Harmonium, Frets pair Sitar with Sarod, Dictions (no Harmonium) take Sitar and Tabla is full, so Dictions play Sitar and Sarod, and Scripts take Tabla and Harmonium.

Step 3 - Test A: Frets play Sitar and Sarod, not Tabla, so "Frets do not play Tabla" is true.

Step 4 - Test B, C, D: Scripts play Tabla (true), Mizrabs play



Harmonium (true), Dictions play Sitar (true). The only false claim is not listed here.

Tip: In these puzzles, start from the "some X play Y" facts, then let the exclusion rules force the rest.

Answer: A, B, D [Go Back to Q15](#)

Q16.

Q. Which of the following statements about typography are CORRECT?

- A. A serif typeface has no small strokes at the ends of letters, and Helvetica is a serif typeface.
 - B. Kerning is the adjustment of space between two specific letters.
 - C. Leading is the vertical space between lines of text.
 - D. The x-height of a typeface is the height of its capital letter X.
- (A) A serif typeface has no small strokes at the ends of letters, and Helvetica is a serif typeface.
- (B) Kerning is the adjustment of space between two specific letters.
- (C) Leading is the vertical space between lines of text.
- (D) The x-height of a typeface is the height of its capital letter X.

Solution

Concept - Basic typography vocabulary: Terms like serif, kerning, leading and x-height each describe a precise feature of type.

Step 1 - Check A: A serif is exactly the small stroke at a letter's



end, and Helvetica is a sans-serif face. The statement is doubly wrong. Wrong.

Step 2 - Check B: Kerning is the fine spacing between two particular letters. Correct.

Step 3 - Check C: Leading is the vertical gap between baselines of successive lines. Correct.

Step 4 - Check D: The x-height is the height of the lowercase letter x, not the capital X. Wrong.

Tip: Kerning is letter-to-letter, leading is line-to-line; keep the pairings straight.

Answer: B, C [Go Back to Q16](#)

Q17.

Q. Which of the following statements about colour models is / are CORRECT?

A. In the RGB model, full red, green and blue light together make black.

B. CMYK is the colour model used mainly by computer and phone screens.

C. In CMYK printing, the K stands for the key (black) plate.

D. Cyan, magenta and yellow are the additive primary colours.

(A) In the RGB model, full red, green and blue light together make black.

(B) CMYK is the colour model used mainly by computer and phone screens.



- (C) In CMYK printing, the K stands for the key (black) plate.
 (D) Cyan, magenta and yellow are the additive primary colours.

Solution

Concept - RGB vs CMYK: Screens add coloured light (RGB) towards white; printing layers inks (CMYK) that subtract light towards black.

Step 1 - Check A: Full red, green and blue light combine to white, not black. Wrong.

Step 2 - Check B: CMYK is for print; screens use RGB. Wrong.

Step 3 - Check C: In CMYK the K is the key plate, which carries black. Correct.

Step 4 - Check D: Cyan, magenta and yellow are the subtractive primaries; the additive primaries are red, green and blue. Wrong.

Tip: Only one statement here is true, so read every option before locking your answer.

Answer: C [Go Back to Q17](#)

Q18.

Q. Which of the following statements is / are CORRECT?

- A. Raymond Loewy designed the Sydney Opera House.
 B. Dieter Rams, linked to Braun, put forward ten principles of good design.
 C. The Eames Lounge Chair was designed by Philippe Starck.



D. M. F. Husain was a celebrated Indian painter.

- (A) Raymond Loewy designed the Sydney Opera House.
- (B) Dieter Rams, linked to Braun, put forward ten principles of good design.
- (C) The Eames Lounge Chair was designed by Philippe Starck.
- (D) M. F. Husain was a celebrated Indian painter.

Solution

Concept - Designers and their work: Matching a creator to the right object or field is core design GK.

Step 1 - Check A: The Sydney Opera House was designed by Jorn Utzon, not Raymond Loewy. Wrong.

Step 2 - Check B: Dieter Rams, chief designer at Braun, is famous for his ten principles of good design. Correct.

Step 3 - Check C: The Eames Lounge Chair was designed by Charles and Ray Eames, not Philippe Starck. Wrong.

Step 4 - Check D: M. F. Husain was one of India's most celebrated modern painters. Correct.

Tip: Pair each famous object with its maker in advance; distractors here just swap well-known names.

Answer: B, D [Go Back to Q18](#)

Q19.

Q. Which of the following are traditional Indian art or craft forms?

A. Madhubani painting of Bihar



- B. Pattachitra of Odisha
C. Phulkari embroidery of Punjab
D. Blue Pottery of Jaipur
- (A) Madhubani painting of Bihar
(B) Pattachitra of Odisha
(C) Phulkari embroidery of Punjab
(D) Blue Pottery of Jaipur

Solution

Concept - Indian regional crafts: India has many folk art and craft traditions tied to specific regions.

Step 1 - Check A: Madhubani (Mithila) painting comes from Bihar. Correct.

Step 2 - Check B: Pattachitra is a cloth-based scroll painting tradition of Odisha (and Bengal). Correct.

Step 3 - Check C: Phulkari is the bright floral embroidery of Punjab. Correct.

Step 4 - Check D: Blue Pottery is a well-known glazed craft of Jaipur, Rajasthan. Correct.

Tip: Sometimes every option is correct; do not force a "trap" that is not there.

Answer: A, B, C, D [Go Back to Q19](#)

Q20.



Q. Which of the following statements about materials and making is / are CORRECT?

A. Thermosetting plastics can be melted and reshaped again and again.

B. For the same volume, aluminium is heavier than steel.

C. Injection moulding is a common process for producing plastic parts.

D. Ordinary glass is made mainly from silica sand.

(A) Thermosetting plastics can be melted and reshaped again and again.

(B) For the same volume, aluminium is heavier than steel.

(C) Injection moulding is a common process for producing plastic parts.

(D) Ordinary glass is made mainly from silica sand.

Solution

Concept - Materials and processes: Different materials behave differently, and each shaping process suits certain materials.

Step 1 - Check A: Thermosetting plastics set permanently and cannot be remelted; only thermoplastics can. Wrong.

Step 2 - Check B: Aluminium is much lighter than steel for the same volume. Wrong.

Step 3 - Check C: Injection moulding pushes molten plastic into a mould and is very common. Correct.

Step 4 - Check D: Glass is made chiefly by melting silica sand with



soda and lime. Correct.

Tip: Thermoplastic remelts, thermoset does not; that single fact settles many material questions.

Answer: C, D [Go Back to Q20](#)

Q21.

Q. Which of the following statements about the environment is / are CORRECT?

A. The three Rs of waste management are Reduce, Reuse and Recycle.

B. CFC gases are completely harmless to the ozone layer.

C. Solar and wind are renewable sources of energy.

D. Burning coal releases no carbon dioxide.

(A) The three Rs of waste management are Reduce, Reuse and Recycle.

(B) CFC gases are completely harmless to the ozone layer.

(C) Solar and wind are renewable sources of energy.

(D) Burning coal releases no carbon dioxide.

Solution

Concept - Environmental awareness: Basic facts about waste, energy and pollution are tested in the awareness section.

Step 1 - Check A: Reduce, Reuse and Recycle are indeed the three Rs. Correct.

Step 2 - Check B: CFCs damage the ozone layer; they are not



harmless. Wrong.

Step 3 - Check C: Solar and wind renew naturally and are renewable sources. Correct.

Step 4 - Check D: Burning coal releases large amounts of carbon dioxide. Wrong.

Tip: Statements with absolute words like "completely harmless" or "no" are often the false ones.

Answer: A, C [Go Back to Q21](#)

Q22.

Q. Which of the following statements about cameras and photography is / are CORRECT?

- A. A higher f-number means a wider aperture opening.
 - B. A tripod is used to raise the ISO of a camera automatically.
 - C. A shutter speed of $1/1000$ s lets in more light than $1/30$ s.
 - D. A wide-angle lens has a shorter focal length than a telephoto lens.
-
- (A) A higher f-number means a wider aperture opening.
 - (B) A tripod is used to raise the ISO of a camera automatically.
 - (C) A shutter speed of $1/1000$ s lets in more light than $1/30$ s.
 - (D) A wide-angle lens has a shorter focal length than a telephoto lens.

Solution

Concept - Camera basics: Aperture, shutter speed, ISO and focal



length each control a different part of an image.

Step 1 - Check A: A higher f-number is a smaller opening, not wider. Wrong.

Step 2 - Check B: A tripod only steadies the camera; it does nothing to ISO. Wrong.

Step 3 - Check C: A faster shutter ($1/1000$ s) is open for less time, so it lets in less light. Wrong.

Step 4 - Check D: Wide-angle lenses have short focal lengths; telephoto lenses have long ones. Correct.

Tip: Only one option is true here; a fast shutter and a high f-number both reduce light.

Answer: D [Go Back to Q22](#)

Q23.

Q. Which of the following statements about Indian architecture is / are CORRECT?

- A. The Taj Mahal was built by Emperor Ashoka.
 - B. The Sun Temple at Konark is designed in the form of a giant chariot.
 - C. Charles Correa was an Indian architect.
 - D. The master plan of Chandigarh was led by Le Corbusier.
- (A) The Taj Mahal was built by Emperor Ashoka.
- (B) The Sun Temple at Konark is designed in the form of a giant chariot.
- (C) Charles Correa was an Indian architect.



(D) The master plan of Chandigarh was led by Le Corbusier.

Solution

Concept - Indian architecture and architects: From Mughal monuments to modern city planning, matching structures to their makers is common GK.

Step 1 - Check A: The Taj Mahal was built by the Mughal emperor Shah Jahan, not Ashoka. Wrong.

Step 2 - Check B: The Konark Sun Temple is shaped like the chariot of the Sun god, with stone wheels and horses. Correct.

Step 3 - Check C: Charles Correa was a leading Indian architect. Correct.

Step 4 - Check D: Chandigarh's plan was led by the French-Swiss architect Le Corbusier. Correct.

Tip: Ashoka belongs to the ancient Mauryan era, centuries before the Mughal Taj Mahal.

Answer: B, C, D [Go Back to Q23](#)

Q24.

Q. Which of the following statements about image file formats is / are CORRECT?

- A. JPEG uses lossy compression.
- B. PNG files cannot store transparency.
- C. SVG is a raster (pixel-based) format.



D. GIF supports simple animation.

(A) JPEG uses lossy compression.

(B) PNG files cannot store transparency.

(C) SVG is a raster (pixel-based) format.

(D) GIF supports simple animation.

Solution

Concept - Raster and vector formats: Each format handles compression, transparency and animation differently.

Step 1 - Check A: JPEG throws away some data to shrink files, so it is lossy. Correct.

Step 2 - Check B: PNG does support transparency through an alpha channel. Wrong.

Step 3 - Check C: SVG is a vector format made of shapes and paths, not pixels. Wrong.

Step 4 - Check D: GIF supports frame-by-frame animation. Correct.

Tip: JPEG = lossy photos, PNG = lossless with transparency, SVG = vector, GIF = animation.

Answer: A, D [Go Back to Q24](#)

Q25.

Q. Which of the following statements about solid shapes is / are CORRECT?

A. A cube has 8 faces.



B. A regular tetrahedron has 4 triangular faces.

C. A cylinder has three flat faces.

D. A sphere has 6 vertices.

(A) A cube has 8 faces.

(B) A regular tetrahedron has 4 triangular faces.

(C) A cylinder has three flat faces.

(D) A sphere has 6 vertices.

Solution

Concept - Faces, edges and vertices of solids: Counting the surfaces and corners of basic 3D shapes is a spatial-reasoning skill.

Step 1 - Check A: A cube has 6 faces, not 8. Wrong.

Step 2 - Check B: A regular tetrahedron is bounded by 4 triangular faces. Correct.

Step 3 - Check C: A cylinder has 2 flat circular faces and 1 curved surface, so only two flat faces. Wrong.

Step 4 - Check D: A sphere has no vertices at all. Wrong.

Tip: A cube has 6 faces, 8 vertices and 12 edges; do not swap the face and vertex counts.

Answer: B [Go Back to Q25](#)

Q26.

Q. Which of the following statements about colour theory is / are CORRECT?



- A. Orange is a secondary colour made by mixing red and yellow.
- B. Green pigment can be mixed from blue and yellow.
- C. Analogous colours sit next to each other on the colour wheel.
- D. Black and white are called hues.

- (A) Orange is a secondary colour made by mixing red and yellow.
- (B) Green pigment can be mixed from blue and yellow.
- (C) Analogous colours sit next to each other on the colour wheel.
- (D) Black and white are called hues.

Solution

Concept - Colour wheel relationships: Primary, secondary, analogous and neutral are the building blocks of colour theory.

Step 1 - Check A: Orange is a secondary colour from red plus yellow. Correct.

Step 2 - Check B: Blue and yellow pigments mix to green. Correct.

Step 3 - Check C: Analogous colours are neighbours on the wheel. Correct.

Step 4 - Check D: Black and white are neutrals, not hues; a hue is a pure colour. Wrong.

Tip: Hue means a colour identity; black, white and grey have no hue.

Answer: A, B, C [Go Back to Q26](#)

Q27.



Q. Which of the following statements about design and art movements is / are CORRECT?

- A. Art Nouveau is known for rigid straight lines and industrial grids.
- B. The De Stijl movement is famous for realistic portrait painting.
- C. Art Deco features bold geometric patterns and rich colours.
- D. The Arts and Crafts movement valued handmade craftsmanship over mass production.

- (A) Art Nouveau is known for rigid straight lines and industrial grids.
- (B) The De Stijl movement is famous for realistic portrait painting.
- (C) Art Deco features bold geometric patterns and rich colours.
- (D) The Arts and Crafts movement valued handmade craftsmanship over mass production.

Solution

Concept - Style signatures of movements: Each movement has a recognisable look and value system.

Step 1 - Check A: Art Nouveau is defined by flowing, organic curves, not rigid grids. Wrong.

Step 2 - Check B: De Stijl (Mondrian and others) used flat geometric abstraction and primary colours, not realistic portraits. Wrong.

Step 3 - Check C: Art Deco is known for bold geometry, symmetry and rich colour. Correct.



Step 4 - Check D: The Arts and Crafts movement championed handmade quality against factory mass production. Correct.

Tip: Art Nouveau curves; Art Deco is geometric; keep those two apart.

Answer: C, D [Go Back to Q27](#)

Q28.

Q. Which of the following statements is / are CORRECT?

A. If each letter is shifted one step forward (A to B, B to C), then MOON becomes NPPN.

B. In a straight row of 10 people, the person 4th from the left is also 7th from the right.

C. If North is in front of you, then East is on your left.

D. The minute hand of a clock turns through 6 degrees in one minute.

(A) If each letter is shifted one step forward (A to B, B to C), then MOON becomes NPPN.

(B) In a straight row of 10 people, the person 4th from the left is also 7th from the right.

(C) If North is in front of you, then East is on your left.

(D) The minute hand of a clock turns through 6 degrees in one minute.

Solution

Concept - Coding, ranking and directions: Small logic checks on letters, positions, directions and clock angles.



Step 1 - Check A: Shifting MOON forward by one gives N, P, P, O, that is NPPO, not NPPN. Wrong.

Step 2 - Check B: Position from the right = $10 - 4 + 1 = 7$, so 4th from left is 7th from right. Correct.

Step 3 - Check C: Facing North, East is on your right, not your left. Wrong.

Step 4 - Check D: The minute hand covers $360 \div 60 = 6$ degrees each minute. Correct.

Tip: For row ranks use $\text{left} + \text{right} = \text{total} + 1$.

Answer: B, D [Go Back to Q28](#)

Q29.

Q. Which of the following statements about sustainability is / are CORRECT?

- A. Biodegradable materials break down naturally over time.
- B. Single-use plastic bags are good for the environment.
- C. Rainwater harvesting helps conserve water.
- D. Public transport lowers per-person carbon emissions compared with single-occupancy cars.

- (A) Biodegradable materials break down naturally over time.
- (B) Single-use plastic bags are good for the environment.
- (C) Rainwater harvesting helps conserve water.
- (D) Public transport lowers per-person carbon emissions compared with single-occupancy cars.



Solution

Concept - Sustainable choices: Awareness questions reward the environmentally sound option.

Step 1 - Check A: Biodegradable materials are broken down by natural processes. Correct.

Step 2 - Check B: Single-use plastic bags harm the environment and add to waste. Wrong.

Step 3 - Check C: Rainwater harvesting stores rain and conserves water. Correct.

Step 4 - Check D: Sharing a bus or train spreads emissions over many people, lowering the per-person figure. Correct.

Tip: The eco-friendly reading is almost always the correct statement in awareness items.

Answer: A, C, D [Go Back to Q29](#)

Q30.

Q. In pigment colors, if Green is Blue, Yellow is Green, Blue is White and Red is Yellow, what is the complementary color of White and Green?

- (A) Orange
- (B) Purple
- (C) Red
- (D) Green

Solution



Concept - Colour coding and complements: First translate the coded colour names back to real pigments, then use the pigment colour wheel to find the complement.

Step 1 - Decode the words: Here the spoken word "White" stands for real Blue, and "Green" stands for real Yellow.

Step 2 - Combine the pigments: Real Blue mixed with real Yellow pigment gives Green.

Step 3 - Take the complement: On the pigment (RYB) wheel, the colour opposite Green is Red.

Tip: In substitution puzzles, always convert to the real names first, then apply the colour rule.

Answer: C [Go Back to Q30](#)

Q31.

Q. Which Indian architect designed the Indian Institute of Management (IIM) Bangalore campus and the Kanchanjunga Apartments in Mumbai?

- (A) Charles Correa
- (B) Balkrishna Doshi
- (C) Raj Rewal
- (D) Hafeez Contractor

Solution

Concept - Modern Indian architects: Landmark projects are often linked to a single well-known architect.



Step 1 - Recall the works: Both IIM Bangalore and the Kanchanjunga Apartments were designed by Charles Correa.

Step 2 - Rule out others: Doshi designed IIM Bangalore's rival works like CEPT; Rewal designed the Asian Games Village; Contractor is known for later high-rises.

Tip: Correa is strongly associated with climate-responsive, open-to-sky Indian design.

Answer: A [Go Back to Q31](#)

Q32.

Q. In typography, the imaginary line on which most letters appear to rest is called the:

- (A) x-height
- (B) baseline
- (C) ascender
- (D) kerning

Solution

Concept - Type anatomy: Type sits on and around a set of guide lines.

Step 1 - Define the baseline: The baseline is the line most letters sit on.

Step 2 - Rule out others: x-height measures lowercase height, an ascender rises above it, and kerning is letter spacing.

Tip: Letters like g and y drop their tails below the baseline; that



part is the descender.

Answer: B [Go Back to Q32](#)

Q33.

Q. The famous bronze 'Dancing Girl' figurine belongs to which ancient Indian civilisation?

- (A) Gupta
- (B) Maurya
- (C) Indus Valley (Harappan)
- (D) Chola

Solution

Concept - Ancient Indian art: Early metal casting in India dates back thousands of years.

Step 1 - Place the object: The Dancing Girl is a small bronze from Mohenjo-daro, part of the Indus Valley (Harappan) civilisation.

Step 2 - Rule out others: Gupta, Maurya and Chola art come much later in Indian history.

Tip: The Harappan bronze shows the lost-wax casting method was known very early in India.

Answer: C [Go Back to Q33](#)

Q34.

Q. Which colour model do most computer and mobile phone displays use to create colour on screen?



- (A) CMYK
 - (B) RYB
 - (C) Pantone
 - (D) RGB
-

Solution

Concept - Screen colour: Displays emit light rather than reflect it.

Step 1 - Identify the model: Screens mix red, green and blue light, so they use RGB.

Step 2 - Rule out others: CMYK is for printing, RYB is the traditional artists' wheel, and Pantone is a spot-colour matching system.

Tip: Light adds to white (RGB); ink subtracts to black (CMYK).

Answer: D [Go Back to Q34](#)

Q35.

Q. A designer needs a graphic that stays perfectly sharp at any size, from a business card to a billboard. Which file format is best suited?

- (A) SVG
 - (B) JPEG
 - (C) BMP
 - (D) GIF
-

Solution



Concept - Vector vs raster: Vector art is built from shapes and scales without blur.

Step 1 - Pick the format: SVG is a vector format, so it stays crisp at any size.

Step 2 - Rule out others: JPEG, BMP and GIF are raster (pixel) formats that blur or block up when enlarged.

Tip: Logos are usually kept as vectors so they print sharp at every size.

Answer: A [Go Back to Q35](#)

Q36.

Q. Find the next term in the series: 2, 5, 10, 17, 26, ?

- (A) 33
- (B) 37
- (C) 35
- (D) 36

Solution

Concept - Square-based series: A run of odd differences signals an n^2 rule.

Step 1 - Read the gaps: Differences are 3, 5, 7, 9, so the next gap is 11.

Step 2 - Next term: $26 + 11 = 37$ (the rule is $n^2 + 1$, and $6^2 + 1 = 37$).

Tip: Terms of the form $n^2 + 1$ are 2, 5, 10, 17, 26, 37, ...



Answer: B [Go Back to Q36](#)

Q37.

Q. Which art movement, led by artists such as Piet Mondrian, is known for using only straight lines, right angles and primary colours?

- (A) Surrealism
- (B) Impressionism
- (C) De Stijl
- (D) Cubism

Solution

Concept - Twentieth-century art movements: Each movement has a distinct visual signature.

Step 1 - Match the description: Straight lines, right angles and primary colours describe De Stijl (Neo-Plasticism), led by Mondrian.

Step 2 - Rule out others: Surrealism is dreamlike, Impressionism uses loose light-filled brushwork, and Cubism fragments forms.

Tip: Mondrian's red, blue and yellow grids are the classic image of De Stijl.

Answer: C [Go Back to Q37](#)

Q38.

Q. The golden ratio, often used in art and design for pleasing proportions, is approximately equal to:



- (A) 1.414
- (B) 2.718
- (C) 3.142
- (D) 1.618

Solution

Concept - Special constants: A few numbers recur across design and mathematics.

Step 1 - Recall the value: The golden ratio is about 1.618.

Step 2 - Rule out others: 1.414 is $\sqrt{2}$, 2.718 is e , and 3.142 is π .

Tip: The golden ratio is written with the Greek letter phi and appears in many balanced layouts.

Answer: D [Go Back to Q38](#)

Q39.

Q. In a certain code, FLOWER is written as EKNVDQ. How is GARDEN written in the same code?

- (A) FZQCDM
- (B) HBSEFO
- (C) FZQCEM
- (D) FYQCDM

Solution

Concept - Letter-shift coding: Compare each letter of the plain word with its coded letter to find the shift.



Step 1 - Find the rule: F to E, L to K, O to N and so on is a shift of one step backward.

Step 2 - Apply to GARDEN: G to F, A wraps to Z, R to Q, D to C, E to D, N to M, giving FZQCDM.

Tip: When a letter is A, shifting back one wraps around to Z.

Answer: A [Go Back to Q39](#)

Q40.

Q. Which of these is a subtractive primary colour used in colour printing?

- (A) Green
- (B) Magenta
- (C) Blue
- (D) Red

Solution

Concept - Subtractive primaries: Printing inks use cyan, magenta and yellow.

Step 1 - Pick the printing primary: Magenta is one of the CMYK subtractive primaries.

Step 2 - Rule out others: Green, blue and red are additive (light) primaries or their mixes, not print primaries.

Tip: Additive primaries are R, G, B; subtractive primaries are C, M, Y.

Answer: B [Go Back to Q40](#)



Q41.

Q. The Bauhaus school helped popularise which famous design principle?

- (A) Form follows fashion
- (B) Less colour, more texture
- (C) Form follows function
- (D) Ornament above all

Solution

Concept - Design philosophy: Modern design favoured usefulness over decoration.

Step 1 - Identify the phrase: "Form follows function" means an object's shape should serve its use, a idea the Bauhaus embraced.

Step 2 - Rule out others: The rival options describe decoration-first thinking, which modernism rejected.

Tip: The phrase was coined by Louis Sullivan and became a modernist rallying cry.

Answer: C [Go Back to Q41](#)

Q42.

Q. A large cube is made of 27 identical small cubes arranged 3 by 3 by 3. If all outer faces of the large cube are painted, how many small cubes have no paint at all?

- (A) 8
- (B) 6



(C) 0

(D) 1

Solution

Concept - Painted-cube interior: The unpainted cubes form a smaller cube hidden inside.

Step 1 - Count the core: Unpainted cubes number $(n - 2)^3 = (3 - 2)^3 = 1$.

Step 2 - Interpret: Only the single central cube is completely surrounded, so it alone has no paint.

Tip: For a $3 \times 3 \times 3$ cube exactly one cube is hidden in the middle.

Answer: D [Go Back to Q42](#)

Q43.

Q. Warli painting, known for simple white geometric figures on an earthy background, originates from which Indian state?

(A) Maharashtra

(B) Rajasthan

(C) Kerala

(D) West Bengal

Solution

Concept - Indian folk painting: Tribal art forms are tied to particular regions.



Step 1 - Place the form: Warli is a tribal painting tradition from Maharashtra.

Step 2 - Rule out others: Rajasthan has Phad and miniatures, Kerala has mural art, and Bengal has Pattachitra and Kalighat.

Tip: Warli uses only basic shapes, circles, triangles and lines, in white on a mud-brown ground.

Answer: A [Go Back to Q43](#)

Q44.

Q. Read the following design context:

The city of Mumbai is facing a severe shortage of parking spaces. The problem is acute in south Mumbai where land is expensive and undeveloped land almost non-existent. A panel of experts consisting of city and town planners, transportation engineers and designers, economists, historians and policy makers has studied the problem carefully and has recommended a set of measures:

- I. Start a free public bicycle program in which people are encouraged to use public transport for longer distances and shared common bicycles for shorter distances.
- II. Allow people to download a mobile App which will allow vehicle owners to book parking spots up to one week in advance.
- III. Ban vehicles with even registration numbers on the even days of the month, and odd registration numbers on odd days of the month.
- IV. Make parking prohibitively expensive.
- V. Build more multi-storied and underground parking complexes.



VI. Declare the whole of south Mumbai as a heritage district to prevent any further construction and limit vehicle entry by imposing toll.

VII. Design self-parking vehicles.

VIII. Create a car pooling mobile App that will connect people to share cars and reduce the number of cars on the road.

IX. Make the roads more pedestrian-friendly.

X. Institute a parking pricing mechanism which dynamically adjusts the cost of parking based on demand and supply.

Identify FOUR recommendations that will make the most impact in solving the parking problem.

- (A) I, IV, VII & X
- (B) II, III, V & IX
- (C) I, IV, VII & VIII
- (D) I, III, V & X

Solution

Concept - Design context, impact ranking: Judge each measure by how directly and realistically it cuts parking demand or adds supply.

Step 1 - Keep the high-impact measures: I reduces short trips by car, III cuts the number of cars on the road on any given day, V directly adds parking supply, and X uses demand-based pricing to balance usage.

Step 2 - Drop the weaker ones: Making parking merely expensive (IV), self-parking vehicles (VII) and turning the area into a heritage



zone (VI) are slow, costly or side-issues rather than direct fixes.

Step 3 - Choose the set: The strongest combination is I, III, V and X.

Tip: In "best impact" questions, prefer measures that either add supply or cut demand right away.

Answer: D [Go Back to Q44](#)

Q45.

Q. In a family, P is the brother of Q. Q is the father of R. How is P related to R?

- (A) Father
- (B) Uncle
- (C) Brother
- (D) Grandfather

Solution

Concept - Blood relations: Trace the chain of links step by step.

Step 1 - Map the links: P and Q are brothers, and Q is R's father.

Step 2 - Find P and R: P is the brother of R's father, which makes P the uncle of R.

Tip: The brother of a parent is an uncle; the sister of a parent is an aunt.

Answer: B [Go Back to Q45](#)

Q46.



Q. Which of the following is a raster (pixel-based) image format?

- (A) SVG
- (B) EPS
- (C) JPEG
- (D) AI

Solution

Concept - Vector vs raster formats: Raster images store a grid of pixels; vector images store shapes.

Step 1 - Identify the raster one: JPEG stores pixels, so it is a raster format.

Step 2 - Rule out others: SVG, EPS and AI are vector formats built from paths and curves.

Tip: Photographs are usually raster (JPEG, PNG); logos and icons are often vector (SVG, AI).

Answer: C [Go Back to Q46](#)

Q47.

Q. The city of Jaipur, famous for its pink buildings and planned grid layout, was founded and planned in the 18th century by:

- (A) Maharaja Sawai Jai Singh II
- (B) Raja Man Singh
- (C) Maharana Pratap
- (D) Maharaja Ranjit Singh



Solution

Concept - Indian city planning: Jaipur is an early example of a planned Indian city.

Step 1 - Recall the founder: Jaipur was founded in 1727 and planned under Maharaja Sawai Jai Singh II.

Step 2 - Rule out others: Man Singh, Maharana Pratap and Ranjit Singh belong to different regions and eras.

Tip: Jaipur's nine-block grid was laid out with the help of the planner Vidyadhar Bhattacharya.

Answer: A [Go Back to Q47](#)

Q48.

Q. On a colour wheel, complementary colours are pairs that lie:

- (A) next to each other
- (B) opposite each other
- (C) at the centre
- (D) at random positions

Solution

Concept - Complementary colours: Complements give the strongest contrast.

Step 1 - Locate them: Complementary colours sit directly opposite each other on the wheel.

Step 2 - Rule out others: Neighbours are analogous colours, not complements.



Tip: Red-green, blue-orange and yellow-violet are common complementary pairs.

Answer: B [Go Back to Q48](#)

Q49.

Q. A photograph is 3000 pixels wide. At 300 pixels per inch, what is the largest print width that keeps good quality?

- (A) 3 inches
- (B) 30 inches
- (C) 300 inches
- (D) 10 inches

Solution

Concept - Print size = pixels / resolution: Dividing pixel width by the ppi gives the print width in inches.

Step 1 - Divide: $3000 \div 300$.

Step 2 - Compute: $3000 \div 300 = 10$ inches.

Tip: More pixels or lower ppi means a larger print; here 300 ppi is the usual quality mark.

Answer: D [Go Back to Q49](#)

Q50.

Q. Which brand's identity is built around a simple silhouette of a bitten fruit, a classic example of a minimal logo?

- (A) Apple



- (B) Nike
 - (C) Adidas
 - (D) McDonald's
-

Solution

Concept - Logo recognition: Strong logos are simple and instantly recognised.

Step 1 - Match the description: A bitten fruit silhouette is the Apple logo.

Step 2 - Rule out others: Nike uses a swoosh, Adidas three stripes, and McDonald's the golden arches.

Tip: The best logos read clearly even in a single flat colour.

Answer: A [Go Back to Q50](#)

Q51.

Q. Pointing to a photograph, a man said, 'She is the daughter of my grandfather's only son.' How is the girl in the photograph related to the man?

- (A) Daughter
 - (B) Sister
 - (C) Mother
 - (D) Aunt
-

Solution

Concept - Blood relations chain: Resolve the description from the



inside out.

Step 1 - Find the only son: The grandfather's only son is the man's own father.

Step 2 - Find the girl: The daughter of the man's father is the man's sister.

Tip: Replace each phrase with a single relation before naming the final link.

Answer: B [Go Back to Q51](#)

Q52.

Q. Which of the following is a traditional Indian tie-and-dye textile technique?

- (A) Kalamkari
- (B) Batik
- (C) Bandhani
- (D) Brocade

Solution

Concept - Indian textile crafts: Different regions use different dyeing and weaving methods.

Step 1 - Identify tie-and-dye: Bandhani is the tie-and-dye craft of Gujarat and Rajasthan, made by tying tiny knots before dyeing.

Step 2 - Rule out others: Kalamkari is hand-painted or block-printed, batik uses wax resist, and brocade is a woven technique.



Tip: Bandhani cloth shows small dotted patterns left by the tied knots.

Answer: C [Go Back to Q52](#)

Q53.

Q. A cylinder is cut by a flat plane that is parallel to its circular base. What is the shape of the exposed cross-section?

- (A) Rectangle
- (B) Triangle
- (C) Ellipse
- (D) Circle

Solution

Concept - Cross-sections of solids: The cut shape depends on the angle of the slicing plane.

Step 1 - Match plane to base: A cut parallel to the circular base gives the same shape as the base.

Step 2 - Name it: That shape is a circle.

Tip: A slanted cut through a cylinder gives an ellipse; a vertical cut gives a rectangle.

Answer: D [Go Back to Q53](#)

Q54.

Q. On an analog clock showing exactly 3:00, what is the angle between the hour hand and the minute hand?



- (A) 90 degrees
- (B) 180 degrees
- (C) 120 degrees
- (D) 60 degrees

Solution

Concept - Clock angles: Each hour mark is 30 degrees apart, since $360 \div 12 = 30$.

Step 1 - Place the hands: At 3:00 the minute hand points at 12 and the hour hand at 3, which are three hour-marks apart.

Step 2 - Compute: $3 \times 30 = 90$ degrees.

Tip: 3:00 and 9:00 both give a right angle between the hands.

Answer: A [Go Back to Q54](#)

Q55.

Q. The study of designing products and workspaces to fit the human body comfortably and safely is called:

- (A) Aesthetics
- (B) Ergonomics
- (C) Semantics
- (D) Acoustics

Solution

Concept - Design vocabulary: Different words describe different design concerns.



Step 1 - Define the term: Ergonomics is the science of fitting products and spaces to the human body.

Step 2 - Rule out others: Aesthetics is about beauty, semantics about meaning, and acoustics about sound.

Tip: A well-shaped chair or tool handle is a everyday example of good ergonomics.

Answer: B [Go Back to Q55](#)

Q56.

Q. In which type of drawing do the three main axes of an object make equal angles of 120 degrees with one another, a method often used for design sketches?

- (A) One-point perspective
- (B) Orthographic front view
- (C) Isometric projection
- (D) Plan view

Solution

Concept - Pictorial projection: Isometric drawing keeps equal foreshortening on all three axes.

Step 1 - Match the description: Equal 120 degree angles between axes describe isometric projection.

Step 2 - Rule out others: Perspective uses vanishing points, while orthographic and plan views show single flat faces.

Tip: In isometric drawing, lengths along the three axes stay to true



scale.

Answer: C [Go Back to Q56](#)

Q57.

Q. Which of these monuments in Agra is a UNESCO World Heritage Site built mainly of red sandstone by the Mughals?

- (A) Qutub Minar
- (B) Charminar
- (C) Hawa Mahal
- (D) Agra Fort

Solution

Concept - Indian heritage monuments: Matching a monument to its city and material is common GK.

Step 1 - Place the monument: Agra Fort, in Agra, is a red-sandstone Mughal fort and a UNESCO World Heritage Site.

Step 2 - Rule out others: Qutub Minar is in Delhi, Charminar in Hyderabad, and Hawa Mahal in Jaipur.

Tip: Agra holds two World Heritage Sites: the Taj Mahal and Agra Fort.

Answer: D [Go Back to Q57](#)

Q58.

Q (Drawing). Imagine the courtyard of a house during a wedding celebration. Strings of marigold hang overhead, women sit in



a circle on mats, sweets and trays are passed around, children run between the guests, and a rangoli covers the floor near the entrance. Music and chatter fill the air. Draw this festive courtyard scene, giving prominence to a mehendi artist bent over a guest's outstretched hand, drawing a fine henna pattern while others wait their turn.

Note: Make pencil sketches only. Do not use colour.

Evaluation criteria: observation; composition; perspective and proportion; quality of lines; attention to detail.

Model Approach and Evaluation

Set the courtyard and the seated gathering first, then bring the mehendi artist forward as the focus.

Step 1 - Block the layout: Mark the courtyard floor and surrounding walls receding to one vanishing point so the space reads deep. Place the mehendi artist and the guest's hand in the near foreground, off-centre, as your focal point.

Step 2 - Build the depth: Foreground - the artist, the outstretched hand and waiting guests; middle ground - the circle of seated women and trays; background - the entrance, rangoli and hanging marigold. Overlap figures to fill the courtyard.

Step 3 - Give the artist prominence: Draw the bent posture, the cone in the hand and the detailed henna on the guest's palm with the sharpest, darkest lines. Keep the near guests crisp and let the far circle fade to lighter strokes.

Step 4 - Add texture and finish: Suggest the fine henna pattern,



folds in fabric, the loops of marigold garlands and soft shadows on the floor. Keep figures and the courtyard elements in believable proportion.

Tip: One vanishing point plus foreground-midground-background layering builds depth, and reserving your finest, darkest detail for the hand and henna makes the mehendi artist the clear subject. [Go Back to Q58](#)

Q59.

Q (Design Aptitude). In a crowded hostel or shared room, students fight over the few wall sockets to charge phones and power banks, and cables tangle across the floor. Design a shared charging station that lets several students charge devices safely and keeps cables tidy. Show your station in two states: closed and packed away with cables tucked in, and open and in use with several phones charging at once.

Note: Make pencil sketches only. Do not use colour. Explain your design only through visuals and short labels; do not write separate explanations.

Model Approach and Evaluation

Give a two-part visual answer: the station as an object, then proof it tucks away and charges several devices.

Step 1 - Nail the requirements: Hold the goals in mind - charge several phones at once, keep each device in its own slot, hide tangled cables, and pack away small. Draw only features that serve these.



Step 2 - Show the two required states: On one side draw it closed with cables tucked inside; on the other draw it open with several phones sitting in their slots charging. Keep both at the same scale.

Step 3 - Label features, do not write essays: Short call-outs with leader lines - separate device slots, a cable-winding channel, a single wall plug, a lid that closes over it. One or two words each.

Step 4 - Prove it works: Add an inset of the open-and-close action in two or three steps, and a top view showing how the slots and cable routes keep everything untangled.

Tip: Suitability, ease of use, a unique idea and clean detailing win marks, so let the closed and in-use views plus tight labels explain the whole design without any paragraphs. [Go Back to Q59](#)



Answer Key (Part A)

Section 1 - NAT (Numerical Answer Type)

Q1	Q2	Q3	Q4	Q5	Q6	Q7
24	720	53	48	1920	5280	600

Q8	Q9	Q10	Q11	Q12	Q13	Q14
38	300	30	20	135	200	220

Section 2 - MSQ (Multiple Select - one or more correct)

Q15	Q16	Q17	Q18	Q19
A, B, D	B, C	C	B, D	A, B, C, D

Q20	Q21	Q22	Q23	Q24
C, D	A, C	D	B, C, D	A, D

Q25	Q26	Q27	Q28	Q29
B	A, B, C	C, D	B, D	A, C, D

Section 3 - MCQ (single correct)

Q30	Q31	Q32	Q33	Q34	Q35	Q36
C	A	B	C	D	A	B

Q37	Q38	Q39	Q40	Q41	Q42	Q43
C	D	A	B	C	D	A

Q44	Q45	Q46	Q47	Q48	Q49	Q50
D	B	C	A	B	D	A



Q51	Q52	Q53	Q54	Q55	Q56	Q57
B	C	D	A	B	C	D

Part B (Q58-Q59) is subjective; see the Model Approach for each under Detailed Solutions.

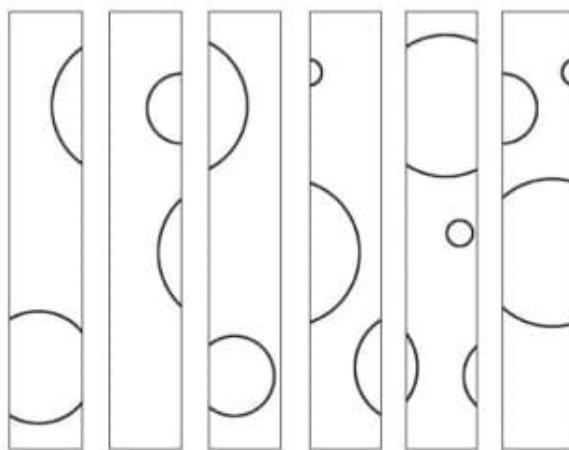


Appendix: Visual Reasoning

Practice from Past UCEED Papers

These are **real questions from past UCEED papers**, included so you can practise on the actual figure style the exam uses. They are visual-reasoning questions, so work each one out yourself - no answer key is given here (this mirrors how such questions feel in the real test). A short **How to approach** note follows each figure.

P1. (Past UCEED) What is the maximum number of complete circles that will be seen, if the strips given below are re-arranged without rotating?

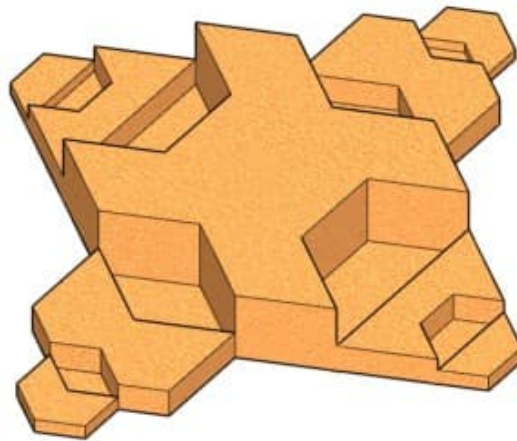


How to approach

Study the figure carefully and note what is fixed and what changes. Break the problem into smaller parts, use any symmetry in the figure, and count or compute each part systematically before combining. A quick rough redraw usually makes the answer clear.

P2. (Past UCEED) A perspective view of a solid is shown below. The solid is symmetrical, and hidden surfaces such as the base are flat. What is the total number of surfaces in the solid?

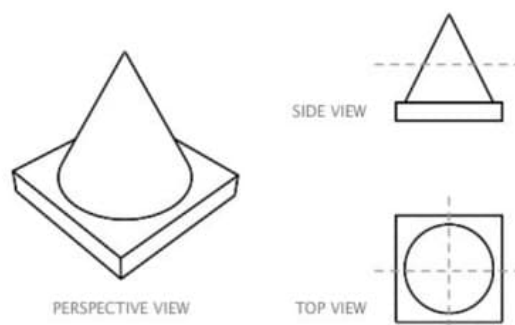




How to approach

Track how the operation changes faces. Start from the number of faces of the original solid, then add the new faces created by the cut/drill/join and subtract any original faces that are removed or split. Visualise the top, front and side views to be sure no hidden face is missed.

- P3. (Past UCEED)** A perspective view of a solid object is shown on the left. The object is cut simultaneously along THREE perpendicular planes as shown on the right. How many surfaces will the resulting pieces have in total (i.e. sum of the surfaces of all pieces)?



How to approach

Track how the operation changes faces. Start from the number of faces of the original solid, then add the new faces created by the



cut/drill/join and subtract any original faces that are removed or split. Visualise the top, front and side views to be sure no hidden face is missed.

P4. (Past UCEED) How many matching pairs of shoes (both left and right shoe) are present in the image below?



How to approach

Look for mirror-image matches: a left piece and its right piece are reflections of each other. Compare the pattern near a fixed reference (such as the strap or a distinctive mark), pair off the ones that mirror each other, and count the complete pairs, leaving out any unmatched singles.

