FDDI AIST Design Aptitude

Sample Paper – 4

Duration: 60 Minutes **Maximum Marks: 50**

Instructions

- This paper contains **50** Multiple Choice Questions (Single Correct Answer), modelled on the Design Aptitude portion of **FDDI AIST** entrance.
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct. Choose carefully.
- Syllabus: Colour theory, design elements & principles, spatial visualisation, Indian and world art/design history, and footwear/textile materials.
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.

Q1. Pastel colours are produced by adding large amounts of _____ to a hue, significantly reducing its saturation while increasing its lightness.

(A) White

(B) Black

(C) Grey

(D) A complementary colour

Q2. Chiaroscuro, a technique prominent in Renaissance painting, refers to:

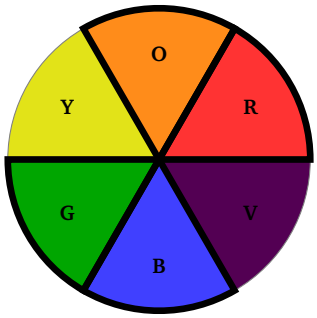
(A) The application of pure, unmixed colour in small dabs to create optical colour mixing

(B) The use of strong contrast between areas of bright light and deep shadow to model the illusion of three-dimensional form on a flat surface

(C) A method of applying paint in thick, heavy impasto strokes to create visible texture

(D) The layering of transparent glazes to build luminous depth of colour

Q3. The simplified RYB colour wheel below has six equal segments. Four segments (indicated by **thick borders**) are highlighted at roughly equal angular intervals around the wheel. What type of colour harmony do these four highlighted hues represent?



(A) Analogous colour harmony

(B) Triadic colour harmony

(C) Tetradic (double-complementary) colour harmony

(D) Split-complementary colour harmony

Q4. In colour psychology and branding design, the colour **blue** is most consistently associated with:

(A) Passion, excitement, and urgency

(B) Creativity, optimism, and warmth

(C) Nature, growth, and sustainability

(D) Trust, calm, reliability, and professionalism

Q5. The **Pantone Matching System (PMS)** is a proprietary colour-reproduction system primarily used to:

(A) Ensure precise, consistent colour matching across different materials, substrates, and production environments in printing and manufacturing

(B) Generate digital colour palettes for on-screen web and mobile interfaces

(C) Describe the psychological and emotional qualities of colour in interior design

(D) Standardise the mixing of paint pigments for fine-art studio practice

Q6. Two simplified colour wheels are shown below. In **Diagram I**, three adjacent segments are outlined with thick borders; in **Diagram II**, three segments separated by equal angular gaps are outlined with thick borders. Which diagram illustrates an **analogous** colour harmony?

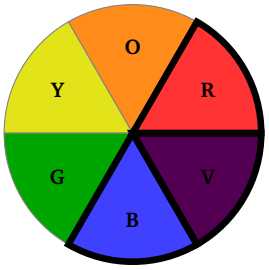


Diagram I

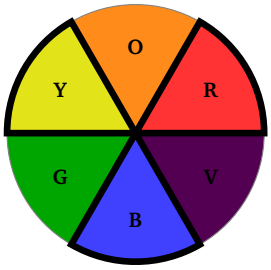


Diagram II

(A) Diagram II

(B) Diagram I

(C) Both Diagram I and Diagram II

(D) Neither diagram

Q7. Natural dyes such as indigo, henna, and turmeric are grouped together because:

(A) They all produce identical shades of yellow-orange colour

(B) They are all soluble in synthetic petroleum-based solvents

(C) They are all derived from botanical or mineral sources — plants, roots, bark, or earth pigments — rather than from synthetic chemical processes

(D) They were all independently discovered in Europe during the Industrial Revolution

Q8. When the three traditional primary pigments — **red**, **blue**, and **yellow** — are mixed together in equal proportions, the theoretical result is:

(A) A bright, luminous white

(B) A pure, saturated grey

(C) A vivid secondary green

(D) A dark brown or near-black, because the pigments together absorb most of the visible light spectrum

Q9. The **Bezold effect** is the colour phenomenon in which:

(A) A colour appears different depending on whether it is viewed under warm incandescent or cool fluorescent lighting

(B) Substituting just one colour in a repeating pattern causes the perceived colour of the entire pattern to shift, due to the pervasive influence of that changed hue on its neighbours

(C) Simultaneous contrast makes a grey patch appear greenish when surrounded by red

(D) Very small colour differences become invisible to the human eye at long viewing distances

Q10. After staring at a bright **green** patch for thirty seconds and then shifting one's gaze to a plain white wall, the viewer briefly perceives a coloured after-image. What colour is that after-image, and why?

(A) Red, because the green-sensitive photoreceptors (cones) have fatigued, leaving the red and blue channels to generate their complementary signal

(B) Blue, because white light has less blue in it than green

(C) Yellow, because green and yellow are adjacent on the spectrum

(D) Orange, because orange is the approximate complement of green on the Munsell colour wheel

Q11. The **Gestalt law of common fate** states that:

(A) Elements that are physically close to one another tend to be perceived as belonging to the same group

(B) Objects that share a similar shape, size, or colour are perceived as a unified set

(C) Elements that appear to move or point in the same direction are perceived as belonging together as a unified group

(D) Simpler, more regular shapes are preferred over complex ones by the perceptual system

Q12. In design, **variety** is introduced primarily to:

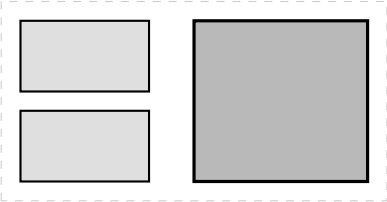
(A) Create a sense of calm and meditative stillness in a composition

(B) Align every element to a single underlying grid structure

(C) Reduce the number of visual elements and simplify the layout

(D) Prevent visual monotony and create interest; it works in productive tension with unity, ensuring compositions are neither chaotic nor boring

Q13. The layout below contains three rectangular elements — two small, similar ones on the left and one larger, visually distinct one on the right. The arrangement naturally draws the eye and feels balanced yet dynamic. Which design principle does this grouping of **three** objects best illustrate?



(A) The principle of proximity

(B) The rule of odds (odd numbers of elements produce more natural, visually pleasing compositions)

(C) The Gestalt law of similarity

(D) The principle of bilateral symmetry

Q14. In design, **proportion** specifically refers to:

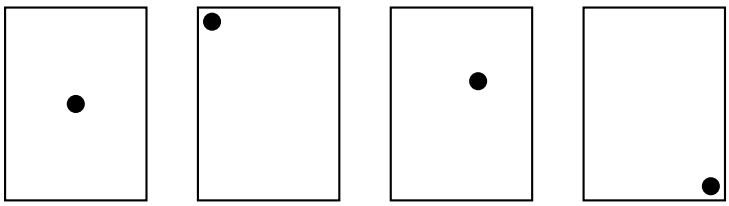
(A) The comparative ratio between the dimensions of different parts of a composition — for example, the width of a column to its height, or the size of a figure relative to its environment

(B) The repetition of a visual element at regular intervals to create rhythm

(C) The visual weight of an element relative to its position on the page

(D) The degree to which all elements in a composition share a consistent style or theme

Q15. The four page-layout thumbnails below each show a **filled dot** indicating the position of a dominant visual element. Which layout positions the key focal element at a **golden-ratio (Fibonacci) composition point** — approximately 0.618 of the width from the left edge and 0.618 of the height from the bottom?



(A) Layout I

(B) Layout II

(C) Layout III

(D) Layout IV

Q16. In composition theory, **design tension** is achieved when:

(A) All elements are perfectly centred and equidistant from the page margins

(B) A single dominant focal point draws the eye with no competing elements

(C) Repeated motifs create a soothing, predictable visual rhythm

(D) Opposing directional forces, competing focal points, or conflicting visual rhythms create a dynamic sense of unresolved conflict or energy within a composition

Q17. A **grid system** in graphic design and typography:

(A) Limits a design to a maximum of three typefaces to maintain visual consistency

(B) Provides a structural framework of columns, rows, and gutters that guides the consistent placement, alignment, and proportional sizing of all design elements across a page or screen

(C) Defines the colour palette and typographic scale used throughout a brand identity

(D) Specifies the minimum white space (leading) between lines of body text

Q18. The principle of **hierarchy of scale** holds that:

(A) When multiple elements of different sizes compete within a composition, the largest tends to appear most dominant and is perceived as the most important element

(B) Repeating a shape at decreasing scales creates an impression of infinite depth

(C) The human eye always enters a composition from the upper-left corner regardless of element sizes

(D) Smaller elements must always be placed closer to the viewer to read as important

Q19. A solid sphere is cut by a flat plane at **any angle** and at **any position** (as long as the plane intersects the interior). What is always true of the resulting cross-sectional shape?

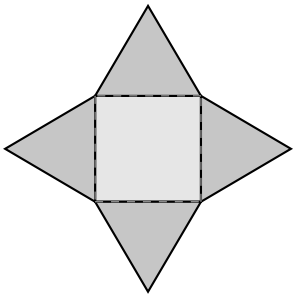
(A) It is always a square whose side length depends on the radius of the sphere

(B) It is always an ellipse, never a perfect circle

(C) It can be a circle, an ellipse, or a rectangle depending on the angle of the cut

(D) It is always a circle, whose diameter depends on where the plane passes through the sphere

Q20. The flat net shown below consists of one central square with four congruent isosceles triangles attached to each of its sides. When every fold-line is folded upward and the free edges are joined, which three-dimensional solid does this net form?



(A) A triangular prism

(B) A rectangular cuboid (box)

(C) A square pyramid

(D) A cone

Q21. A flat net consists of exactly **six unit squares** arranged in a **plus/cross** shape: four squares in a single vertical column; one square extending to the **left** from the second square from the bottom of that column; and one square extending to the **right** from the same second square. When folded along all shared edges, this net forms:

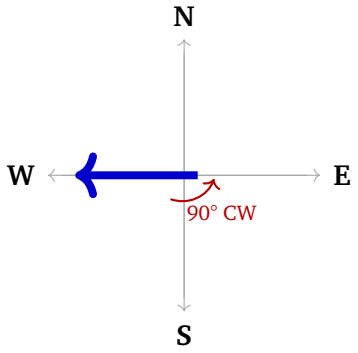
(A) A valid closed cube (this is one of the eleven distinct cube nets)

(B) An open-topped rectangular box (one face is always missing)

(C) A triangular prism

(D) A regular tetrahedron

Q22. The compass rose below shows a **bold arrow** currently pointing **West**. After the arrow is rotated **90° clockwise**, in which direction does it point?



(A) East

(B) North

(C) South

(D) West (no change)

Q23. A **regular octahedron** is a Platonic solid bounded entirely by equilateral triangular faces. How many faces, vertices, and edges does a regular octahedron have?

(A) 6 faces, 8 vertices, and 12 edges

(B) 4 faces, 4 vertices, and 6 edges

(C) 12 faces, 20 vertices, and 30 edges

(D) 8 faces, 6 vertices, and 12 edges

Q24. In **first-angle (European) orthographic projection**, the relative positions of the projected views on the drawing sheet are:

(A) The top view is placed *below* the front view; the right-side view is placed to the *left* of the front view

(B) The top view is placed *above* the front view; the right-side view is placed to the *right* of the front view

(C) The top view is placed *below* the front view; the right-side view is placed to the *right* of the front view

(D) All views are arranged in a circular pattern around a central front view

Q25. When the **curved lateral surface** of a right circular cylinder (radius r, height h) is completely unrolled and laid flat, it forms:

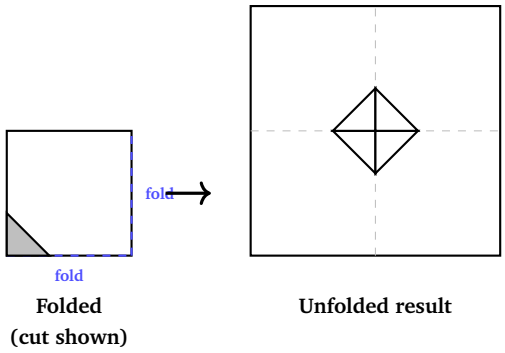
(A) A circle with radius equal to the slant height of the cylinder

(B) A square whose side equals the cylinder's height

(C) A rectangle, whose width equals the circumference of the circular base $(2\pi r)$ and whose height equals the height of the cylinder

(D) An ellipse whose major axis equals $2\pi r$ and minor axis equals h

Q26. A square sheet of paper is folded twice: first **horizontally** (top half onto bottom half), then **vertically** (left half onto right half). A triangular notch is cut from the **corner where both fold lines meet** (the lower-left corner of the folded quarter, as illustrated). When the paper is **completely unfolded**, how many triangular cut-outs are visible?



(A) 1

(B) 4

(C) 2

(D) 8

Q27. In a **two-point perspective** drawing of a building, which statement correctly describes the behaviour of **vertical edges**?

(A) They converge to a single vanishing point directly above the horizon line

(B) They lean inward symmetrically toward a central vanishing point on the horizon

(C) They are drawn as horizontal lines parallel to the ground plane

(D) They remain truly vertical — drawn parallel to the picture plane's vertical axis — while all horizontal edges recede to one of two vanishing points on the horizon line

Q28. **Hatching**, as a drawing technique, involves:

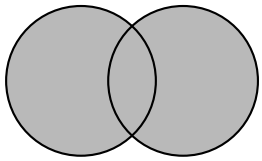
(A) Applying wash of diluted ink or watercolour to create flat tonal areas

(B) Drawing sets of closely spaced parallel lines to represent areas of tone, shadow, or texture in a two-dimensional illustration or technical drawing

(C) Scratching through a layer of ink or wax to reveal the white surface beneath

(D) Blending powdered graphite or charcoal with a finger or stomp to create smooth tonal gradients

Q29. The diagram below shows two filled circles of equal size. One circle **partially overlaps and covers** part of the other. What visual depth cue does this arrangement demonstrate?



(A) Interposition (overlapping) — the partially covered circle appears to be farther from the viewer

(B) Linear perspective — the circles appear to recede along a vanishing-point axis

(C) Atmospheric perspective — the distant circle appears lighter and less saturated

(D) Texture gradient — the circles become more densely packed toward the horizon

Q30. A **calligraphic line** in design and typography is characterised by:

(A) A perfectly uniform stroke width maintained throughout the entire length of the line

(B) A broken, discontinuous stroke that creates a dashed or dotted appearance

(C) Varying width — transitions between thick and thin strokes — produced by changes in pen angle, speed, or pressure, giving the line an expressive, fluid, handwriting-like quality

(D) A perfectly geometric, ruled line produced with a straightedge or T-square

Q31. In pictorial composition, the **foreground** is defined as:

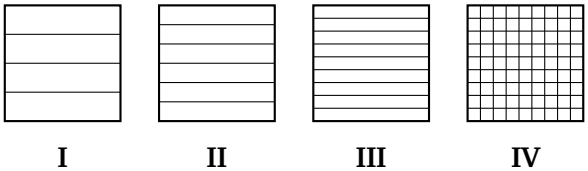
(A) The zone occupying the exact centre of the picture plane, equidistant from all four edges

(B) The uppermost band of the composition, typically occupied by the sky or distant horizon

(C) The middle distance zone between the viewer and the background, containing supporting narrative elements

(D) The zone containing objects nearest to the viewer; it appears at the bottom of the picture plane with the greatest detail, largest apparent size, and strongest tonal contrast

Q32. The four square tiles below each display a different density of line hatching. Which tile represents the **darkest** tonal value?



I II III IV

(A) Tile IV

(B) Tile I

(C) Tile II

(D) Tile III

Q33. The **spiral** is a recurring motif in both natural and built forms. In design, a spiral line most powerfully suggests:

(A) Rigidity, structural stability, and static equilibrium

(B) Continuous growth, expansion, cyclic movement, and dynamic energy — qualities apparent in the nautilus shell, galaxies, DNA double helix, and the Ionic volute

(C) Horizontal rest and the peaceful passage of time

(D) Sharp angular tension and aggressive visual conflict

Q34. **Constructivism**, which emerged in Russia around 1913–1920 (associated with Tatlin, Rodchenko, and El Lissitzky), is best characterised by:

(A) A return to classical figurative painting, celebrating individual genius and spiritual transcendence

(B) An art and design practice that served social and political purposes through geometric abstraction, primary colours, industrial materials, and techniques drawn from engineering and mass production

(C) The use of dreamlike, irrational imagery derived from the unconscious mind

(D) Highly decorative organic ornamentation based on plant forms and flowing curves

Q35. **Gothic architecture**, which flourished in Europe from the 12th to 16th centuries, is most distinctively identified by:

(A) Heavy semicircular arches, thick masonry walls, and small windows typical of Romanesque buildings

(B) Flat rooftops, reinforced concrete frames, and horizontal strip windows characteristic of International Modernism

(C) Pointed arches, ribbed vaulting, flying buttresses, and large stained-glass windows that fill thin wall surfaces with coloured light

(D) Bulbous onion domes, minarets, and elaborate tile-work mosaic typical of Islamic architecture

Q36. **Thanjavur (Tanjore) paintings**, a classical South Indian painting style originating in Tamil Nadu, are renowned for:

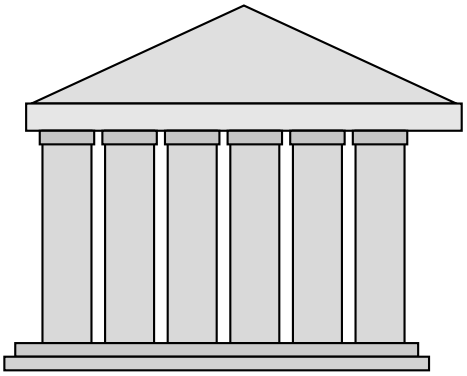
(A) Their use of thin watercolour washes, fine calligraphic line work, and paper as the primary support

(B) Their bold geometric abstraction and restricted palette of earth tones inspired by tribal folk art

(C) Their realistic figurative depiction of everyday village life using natural indigo and ochre pigments on cloth

(D) Their opulent use of gold foil inlay, semi-precious stone embellishment, and rich jewel-like colours to depict Hindu deities and scenes from mythology

Q37. The simplified architectural silhouette below shows a row of columns supporting a horizontal entablature topped by a triangular pediment. The columns have plain, unadorned capitals and no base. What architectural style does this structure represent?



(A) Classical Greek architecture — Doric order (e.g. the Parthenon, Athens)

(B) Gothic architecture (e.g. Notre-Dame Cathedral, Paris)

(C) Baroque architecture (e.g. St. Peter's Basilica, Rome)

(D) Art Deco architecture (e.g. Chrysler Building, New York)

Q38. **Rangoli** (known as *Kolam* in Tamil Nadu and *Muggu* in Andhra Pradesh) is:

(A) A form of wall fresco painting depicting epic battle scenes, practised exclusively in Rajasthan

(B) A style of textile embroidery using metallic zari thread on silk, associated with royal courts

(C) A geometric and symmetrical folk art drawn on thresholds, courtyards, and doorsteps using rice flour, coloured powder, or flower petals, traditionally created for auspicious occasions

(D) A classical Indian sculpture tradition in bronze, associated with the Chola dynasty

Q39. The **Indus Valley Civilisation** (c. 3300–1300 BCE), the Bronze Age urban culture of the Indian subcontinent, is archaeologically notable for:

(A) Its enormous stone temples, colossal royal statuary, and hieroglyphic inscriptions comparable to ancient Egypt

(B) Its advanced town planning, standardised baked-brick construction, sophisticated drainage systems, and distinctive carved soapstone seals, while producing no known monumental royal portraiture or large religious sculpture

(C) Its extensive use of fired-clay terracotta panels depicting mythological scenes covering entire building façades

(D) Its development of the earliest known iron-smelting technology and iron-pillar construction

Q40. **Satin weave** produces a smooth, lustrous fabric surface because:

(A) The warp and weft threads interlace at every single crossing point, creating a firm, balanced surface

(B) Alternate weft threads are intentionally left uncut on the fabric face to form a looped pile

(C) The fabric is treated with a heat-reactive resin that flattens all surface fibres simultaneously

(D) Warp threads float over many consecutive weft threads (with very few interlacement points per unit area), minimising yarn crossing, reducing surface friction, and creating a shiny, reflective face

Q41. **Suede** leather is produced from:

(A) The inner (flesh) side of the hide, which is buffed or abraded to raise a soft, napped, velvety surface; it is more porous and less water-resistant than full-grain leather, which uses the outer grain side

(B) The outer grain side of the hide, finished with a high-gloss lacquer coating to resist moisture

(C) A woven synthetic microfibre fabric chemically treated to mimic natural leather

(D) Compressed layers of recycled leather offcuts bonded together with adhesive resin

Q42. **Linen** is a natural textile fibre derived from:

(A) The seed pods of the cotton plant (*Gossypium*)

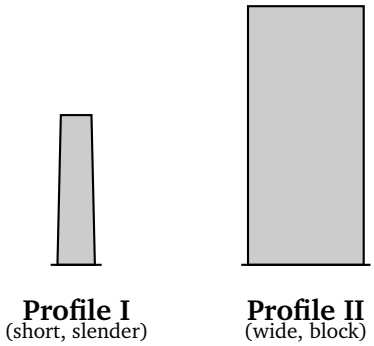
(B) The stalks of the flax plant (*Linum usitatissimum*); it is stronger and more durable than cotton, has a natural lustre, and is valued for cool, crisp-feeling garments

(C) The cocoon filament of the silkworm (*Bombyx mori*)

(D) The bark fibre of the jute plant (*Corchorus*), used primarily for sacking and carpet backing

Q43. The two footwear heel profiles shown in cross-section below differ in

height and width. A **kitten heel** is typically defined as a short (3–5 cm), slender, slightly tapered heel. Which profile represents a **kitten heel**?



(A) Profile II represents a kitten heel

(B) Both Profile I and Profile II represent kitten heels

(C) Profile I represents a kitten heel

(D) Neither profile represents a kitten heel

Q44. A **platform sole** in footwear design is defined as:

(A) A very thin, flexible midsole inserted inside the shoe to provide arch support

(B) A heel construction in which a narrow stiletto spike extends from the back of the shoe

(C) A rigid internal shank that runs along the length of the insole to prevent twisting

(D) A thick, rigid outer sole that extends under the entire foot from heel to toe, uniformly raising the wearer's overall height without creating the steep incline associated with a high spike or stiletto heel

Q45. Identify the missing term in the following number sequence:

$$1, \quad 4, \quad 9, \quad 16, \quad _____$$

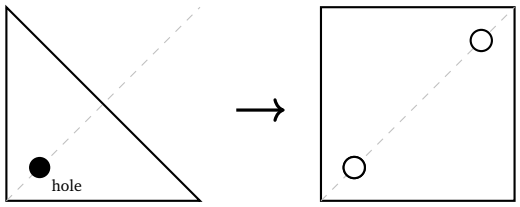
(A) 25

(B) 20

(C) 18

(D) 32

Q46. A square sheet of paper is folded exactly **once** along a **diagonal** (one corner brought to meet the opposite corner). A circular hole is punched through **both layers** at a point near one of the acute corners of the resulting folded triangle (as shown). When the paper is **completely unfolded**, how many holes are visible?



Folded (hole punched) **Unfolded**

(A) One hole

(B) Two holes

(C) Four holes

(D) Eight holes

Q47. Complete the visual analogy:

Triangle : Triangular Pyramid :: Square : _____

A triangle is the base face of a triangular pyramid (tetrahedron); a square is the base face of which three-dimensional solid?

(A) Sphere

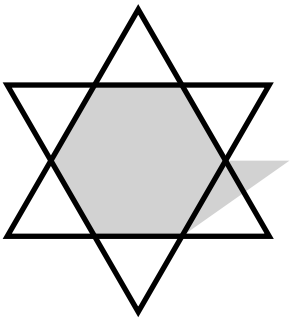
(B) Cylinder

(C) Cube

(D) Cone

Q48. The figure below shows a **hexagram** (Star of David) formed by two overlapping equilateral triangles of equal size — one pointing upward and

one pointing downward. What is the shape of the **central region** where the two triangles overlap?



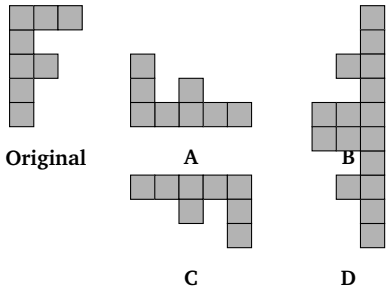
(A) An equilateral triangle

(B) A rhombus (diamond shape)

(C) A rectangle

(D) A regular hexagon

Q49. The figure labelled "**Original**" shows a capital letter **F** drawn on a unit grid. Four rotated or transformed versions are labelled **A** through **D**. Which option correctly shows the **F after a 90° clockwise rotation**?



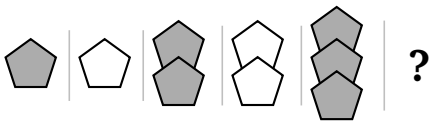
(A) Option A

(B) Option B

(C) Option C

(D) Option D

Q50. The sequence below shows groups of pentagons following a pattern: the number of pentagons per group increases by one after every two groups, and the fill alternates between solid (filled) and outline (unfilled). What comes **next** in the sequence?



(A) Four filled pentagons

(B) Three outline (unfilled) pentagons

(C) Four outline (unfilled) pentagons

(D) Three filled pentagons

Detailed Solutions

Q1.

Solution

Concept — Colour modifiers (tints and pastels): In colour theory, a *tint* is created by mixing a hue with white, which reduces saturation and raises lightness. Pastel colours are simply very pronounced tints — so much white has been added that the resulting colour is soft, pale, and desaturated.

Step 1 — Identify what reduces saturation and raises lightness simultaneously: Adding white to a hue dilutes its chromatic intensity while pushing it toward maximum lightness. No other modifier achieves both effects at once.

Step 2 — Confirm with examples: Baby pink (red + white), sky blue (blue + white), and mint (green + white) are all pastels — all formed by adding large amounts of white.

Why other options are wrong:

- Option B: Adding black creates a *shade* — darker and less luminous, the opposite of pastel.
- Option C: Adding grey creates a *tone* — more muted but not the pale, high-lightness quality of pastels.
- Option D: Adding a complementary colour produces a muddy, near-grey mix, not a pastel.

Final Answer: Pastels are produced by adding large amounts of white. $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q1

Q2.

Solution

Concept — Chiaroscuro in Renaissance painting: *Chiaroscuro* (Italian: chiaro = light, scuro = dark) is a technique perfected by Leonardo da Vinci, Caravaggio, and Rembrandt in which the dramatic contrast between strongly lit areas and deep shadow is used to model three-dimensional volume on a flat surface.

Step 1 — Break down the term: The word itself encodes the definition — light against dark. The technique is not about colour mixing but about tonal contrast.

Step 2 — Identify the defining artistic outcome: Chiaroscuro creates the illusion of solid, rounded form through the juxtaposition of bright highlights and

dark shadows — a defining feature of High Renaissance and Baroque figurative painting.

Why other options are wrong:

- Option A: Describes *pointillism* or *divisionism* (Seurat, Signac), not chiaroscuro.
- Option C: Describes the *impasto* technique — thick paint application for texture.
- Option D: Describes *glazing* — a transparent layering technique for luminous colour depth, unrelated to tonal contrast modelling.

Final Answer: Chiaroscuro is the use of strong light-dark contrast to model three-dimensional form. $\Rightarrow$ B

Answer: (B) Go Back to Q2

Q3.

Solution

Concept — Tetradic (double-complementary) colour harmony: A tetradic scheme uses four colours that form two complementary pairs — geometrically a rectangle or square on the colour wheel. It offers the richest variety of any colour harmony but requires careful balancing to avoid visual overload.

Step 1 — Identify the highlighted segments: The thick-bordered segments are Red, Orange, Green, and Blue. Red and Green are complementary; Orange and Blue are complementary — giving two complementary pairs.

Step 2 — Match to the correct harmony name: Two complementary pairs = tetradic (also called double-complementary) harmony. The four colours form a rectangular arrangement on the wheel.

Why other options are wrong:

- Option A: Analogous uses 3–4 *adjacent* (neighbouring) colours, not two complementary pairs.
- Option B: Triadic uses exactly 3 colours spaced 120° apart.
- Option D: Split-complementary uses 3 colours — a base colour plus the two colours flanking its direct complement.

Final Answer: Two complementary pairs = tetradic harmony. $\Rightarrow$ C

Answer: (C) Go Back to Q3

Q4.

Solution

Concept — Colour psychology of blue in branding: Colour psychology research consistently shows that blue is the most widely preferred colour globally, and in branding contexts it is most strongly linked to feelings of trust, stability, calm, and professionalism. Major financial institutions (banks), tech corporations, and healthcare brands frequently adopt blue as their primary brand colour.

Step 1 — Recall blue's psychological associations: Survey after survey shows blue ranks highest for trust and reliability. Brands such as IBM, Samsung, PayPal, and Ford use blue deliberately to communicate dependability.

Step 2 — Eliminate competing options: Passion/urgency (red), creativity/warmth (yellow/orange), and nature/growth (green) all have distinct psychological associations that research attributes to different hues.

Why other options are wrong:

- Option A: Passion, excitement, urgency — the domain of red, not blue.
- Option B: Creativity, optimism, warmth — associated with yellow and orange.
- Option C: Nature, growth, sustainability — the territory of green.

Final Answer: Blue consistently communicates trust, calm, reliability, and professionalism. $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q4

Q5.

Solution

Concept — The Pantone Matching System (PMS): PMS is a standardised colour-identification system developed by Lawrence Herbert at Pantone Inc. in 1963. Each colour has a unique number and a precisely formulated ink recipe, enabling printers worldwide to reproduce the exact same shade regardless of the printing machine or substrate used.

Step 1 — Understand the core problem PMS solves: Without a universal system, the same "red" specified by a designer in New York could print differently in Tokyo or Mumbai because of variations in inks, paper, and machines. PMS eliminates this inconsistency.

Step 2 — Confirm scope: PMS is used for physical production (printing, fabric

dyeing, plastics) — not for digital screen design, art critique, or studio mixing.

Why other options are wrong:

- Option B: Screen colour for web/mobile uses RGB hex codes or CSS color values, not PMS.
- Option C: Describing psychological/emotional colour qualities is the domain of colour psychology, not PMS.
- Option D: Fine-art studio pigment mixing uses different standards (e.g., artist-grade pigment codes), not PMS.

Final Answer: PMS ensures precise, consistent colour matching across production environments. $\Rightarrow$ A

Answer: (A) Go Back to Q5

Q6.

Solution

Concept — Analogous vs. triadic colour harmony: An *analogous* scheme uses colours that are adjacent (neighbouring) on the colour wheel — they share a common hue and create a harmonious, low-contrast effect. A *triadic* scheme uses three colours equally spaced 120° apart, offering higher contrast and vibrancy.

Step 1 — Read Diagram I: Three adjacent segments (Blue, Violet, Red) are highlighted — these sit next to each other on the wheel, forming an analogous grouping.

Step 2 — Read Diagram II: Three segments 120° apart (Red, Yellow, Blue) are highlighted — these are equally spaced, forming a triadic grouping.

Why other options are wrong:

- Option A: Diagram II illustrates a triadic scheme, not analogous.
- Option C: Not both — Diagram I is analogous and Diagram II is triadic; they show different harmonies.
- Option D: Both diagrams illustrate real, named harmonies.

Final Answer: Diagram I (adjacent segments) = analogous harmony. $\Rightarrow$ B

Answer: (B) Go Back to Q6

Q7.

Solution

Concept — Natural vs. synthetic dyes: Natural dyes are coloring substances obtained from plants (roots, bark, leaves, berries), minerals (earth pigments, ochre), or animal sources (cochineal, lac). Indigo comes from the *Indigofera* plant; henna from *Lawsonia inermis* leaves; turmeric from the rhizome of *Curcuma longa* — all botanical sources.

Step 1 — Confirm botanical origin of each: Indigo (plant), henna (plant leaf), turmeric (plant root). All three are derived from natural botanical matter through simple extraction processes, not chemical synthesis.

Step 2 — Rule out synthetic origin: Natural dyes predate chemical synthesis by millennia. Synthetic aniline dyes were only developed from the mid-19th century onward.

Why other options are wrong:

- Option A: Indigo is blue-purple; henna is orange-red; turmeric is yellow — they do not produce the same shade.
- Option B: Natural dyes are not soluble in synthetic petroleum solvents; they use water or mordant solutions.
- Option D: All three have ancient non-European origins spanning Asia and Africa.

Final Answer: Indigo, henna, and turmeric are all derived from botanical/natural sources. $\Rightarrow$ C

Answer: (C) Go Back to Q7

Q8.

Solution

Concept — Subtractive colour mixing (pigments): Pigment mixing is *subtractive*: each pigment absorbs (subtracts) certain wavelengths of light. When all three primary pigments (red, yellow, blue) are combined, they collectively absorb most of the visible spectrum, reflecting very little light and producing a dark, muddy brown or near-black.

Step 1 — Apply subtractive mixing logic: Red pigment absorbs green-blue wavelengths; yellow absorbs blue-violet; blue absorbs red-orange. Together they absorb nearly all wavelengths.

Step 2 — Predict the result: With most light absorbed, the mixture appears dark — typically a dark brown or near-black. It cannot produce white (which requires reflecting all wavelengths) or a bright colour.

Why other options are wrong:

- Option A: White results from *additive* mixing of red, green, and blue light — not from mixing pigments.
- Option B: Pure grey cannot result from pigment mixing; neutral grey requires balancing carefully with black and white.
- Option C: Green is a secondary formed from yellow + blue only, not from all three primaries.

Final Answer: Mixing all three primary pigments absorbs most light, producing dark brown/near-black. $\Rightarrow$ D

Answer: (D) Go Back to Q8

Q9.

Solution

Concept — The Bezold effect: Named after the 19th-century German meteorologist Wilhelm von Bezold, the Bezold effect describes how replacing a single colour in a repeating pattern causes the viewer to perceive a global shift in the apparent colour of the entire composition, because the new hue interacts with and influences the appearance of all its surrounding colours simultaneously.

Step 1 — Identify the key mechanism: The effect is *pervasive* — changing one colour propagates a colour-perception change across the whole pattern, not just locally around the changed area.

Step 2 — Distinguish from similar phenomena: Metamerism (colour shifts under different light sources), simultaneous contrast (local colour shift), and irradiation (brightness spreading) are distinct phenomena. The Bezold effect is unique in that a single replacement alters perception globally.

Why other options are wrong:

- Option A: Illuminant-dependent colour shifts describe metamerism.
- Option C: A grey patch appearing greenish in a red surround is simultaneous contrast (opponent-process).
- Option D: Colour differences becoming invisible at distance relates to visual acuity and spatial resolution limits.

Final Answer: The Bezold effect = substituting one colour shifts the perceived colour of the entire pattern. $\Rightarrow$ B

Answer: (B) Go Back to Q9

Q10.

Solution

Concept — Colour after-images and opponent-process theory: After prolonged fixation on a strongly saturated colour, the cone cells sensitive to that colour become fatigued (adapt). When gaze shifts to a neutral white surface, those fatigued cones send a weaker signal, and the complementary opponent channel dominates, producing a complementary after-image.

Step 1 — Identify the complementary of green: On both the RYB and opponent-process colour models, the complementary of green is red (green and red are opponent pairs in human vision).

Step 2 — Apply the fatigue mechanism: Green-sensitive cones (M-cones) are fatigued by the green stimulus. When looking at white, M-cones fire weakly; L-cones (red-sensitive) and S-cones (blue-sensitive) respond normally to white but L-cone response dominates the opponent channel, producing a reddish after-image.

Why other options are wrong:

- Option B: Blue is not the complement of green; cyan-blue is the complement of red, not green.
- Option C: Yellow (adjacent to green) is not its complement; yellow is the complement of violet.
- Option D: Orange is the complement of blue, not of green.

Final Answer: After staring at green, the after-image is red (complementary opponent channel). $\Rightarrow$ A

Answer: (A) Go Back to Q10

Q11.

Solution

Concept — Gestalt laws of perceptual organisation: The Gestalt psychologists identified several laws governing how humans group visual elements. The law of *common fate* specifically addresses motion or shared directional trajectory: elements moving or pointing in the same direction are perceptually grouped, regardless of their distance or similarity in other attributes.

Step 1 — Identify the key variable in common fate: The grouping cue is shared *direction of motion or orientation*, not proximity, similarity, or simplicity.

Step 2 — Apply to real-world examples: A flock of birds flying in the same direction, or a row of arrows all pointing right, are perceived as a unified group — classic examples of common fate.

Why other options are wrong:

- Option A: Elements perceived as grouped because they are physically close = law of *proximity*.
- Option B: Shared visual properties (shape, size, colour) = law of *similarity*.
- Option D: Preference for simpler, regular forms = law of *Prägnanz* (good figure / simplicity).

Final Answer: Common fate = elements moving/pointing in the same direction are perceived as a group. ⇒ C

Answer: (C) Go Back to Q11

Q12.

Solution

Concept — Variety as a design principle: Variety is the deliberate introduction of differences — in form, colour, size, texture, or rhythm — to prevent monotony and maintain viewer interest. It is always considered alongside unity: too much variety produces chaos; too little produces tedium. Great design achieves dynamic equilibrium between the two.

Step 1 — Identify variety's primary function: Variety breaks predictable repetition, stimulates the eye, and keeps a composition from becoming static or boring.

Step 2 — Confirm the relationship with unity: Variety and unity are complementary forces. Variety alone is anarchy; variety restrained by unity produces a harmonious, interesting design.

Why other options are wrong:

- Option A: Calm and stillness are achieved through *unity*, repetition, and restraint — the opposite of variety.
- Option B: Aligning everything to a grid is a function of grid systems, promoting unity/consistency rather than variety.
- Option C: Reducing elements and simplifying the layout is the goal of *simplicity* or *economy*, not variety.

Final Answer: Variety prevents visual monotony and creates interest, balanced by unity. $\Rightarrow$ D

Answer: (D) Go Back to Q12

Q13.

Solution

Concept — The rule of odds in composition: The rule of odds holds that groups containing an *odd* number of elements (3, 5, 7, ...) tend to look more natural, dynamic, and visually pleasing than even-numbered groups. An even pair creates symmetrical tension and demands resolution; an odd number around a natural centre is perceived as complete and balanced without rigidity.

Step 1 — Count the elements in the diagram: Two small rectangles + one large rectangle = three objects total. Three is the smallest and most common odd grouping.

Step 2 — Match to the correct principle: The question emphasises the *number* (three) and the resulting natural, dynamic feel — the hallmarks of the rule of odds.

Why other options are wrong:

- Option A: Proximity is about spatial *closeness* grouping elements together, not about the count of elements being odd.
- Option C: Similarity groups elements that share visual properties; the diagram deliberately uses dissimilar elements (different sizes and fills) to demonstrate variety within a three-object group.
- Option D: Bilateral symmetry would require mirror-image balance; three dissimilar objects arranged asymmetrically are explicitly asymmetric.

Final Answer: Three elements (odd number) illustrate the rule of odds. $\Rightarrow$ B

Answer: (B) Go Back to Q13

Q14.

Solution

Concept — Proportion in design: Proportion refers to the comparative size relationships between elements in a composition — the ratio of one dimension to another, or the size of one part relative to the whole. It is fundamental to all visual arts and architecture, from the golden ratio to the classical orders of column design.

Step 1 — Identify the key word: "Comparative ratio between dimensions" — proportion is inherently relational and mathematical. It asks: how does A relate in size to B?

Step 2 — Distinguish from related terms: Rhythm deals with repetition and tempo; visual weight concerns optical mass/balance; unity concerns stylistic consistency. None of these is proportion.

Why other options are wrong:

- Option B: Repetition at regular intervals = *rhythm*, not proportion.
- Option C: Visual weight relative to position = *balance/emphasis*, not proportion.
- Option D: Consistent style/theme across elements = *unity*, not proportion.

Final Answer: Proportion = comparative ratio between dimensions of composition parts. $\Rightarrow$ A

Answer: (A) Go Back to Q14

Q15.

Solution

Concept — Golden-ratio composition point: The golden ratio ($\phi \approx 1.618$) divides a line so that the longer segment divided by the shorter equals the whole divided by the longer ($\approx 1.618 : 1$). A golden-ratio composition point in a rectangle is located approximately 0.618 of the width from the left edge and 0.618 of the height from the bottom (or 0.382 from the top).

Step 1 — Locate the golden-ratio point: With a page width W and height H, the point is at $(0.618W,\ 0.618H)$ from the lower-left. In Layout III the dot sits at approximately these proportions from the lower-left corner.

Step 2 — Eliminate the other layouts: Layout I has the dot dead-centre $(0.5W, 0.5H)$ — not the golden ratio. Layout II places it near the top-left corner.

Layout IV places it in the bottom-right corner. Neither approximates 0.618.

Why other options are wrong:

- Option A: Dead centre $(0.5,\ 0.5)$ is a classical symmetrical placement, not golden-ratio.
- Option B: Top-left corner is an arbitrary corner position, not a mathematically defined golden point.
- Option D: Bottom-right corner is opposite to a natural eye-entry point; not a golden-ratio position.

Final Answer: Layout III places the focal element at the golden-ratio composition point. $\Rightarrow$ C

Answer: (C) Go Back to Q15

Q16.

Solution

Concept — Design tension: Tension in composition is the visual sensation of unresolved energy, conflict, or potential movement created when opposing forces coexist without resolving into equilibrium. It is the formal equivalent of suspense — the eye cannot settle, and the composition remains dynamically charged.

Step 1 — Identify the sources of tension: Opposing directional vectors (diagonal vs. horizontal), competing focal points, and clashing rhythms all create psychological discomfort that reads as energy and dynamism.

Step 2 — Distinguish from harmony/balance: Compositions that are perfectly centred, single-focused, or rhythmically predictable feel resolved and calm — the opposite of tension.

Why other options are wrong:

- Option A: Perfect centring and equidistant margins create classical balance and symmetry — harmony, not tension.
- Option B: A single dominant focal point with no competition creates clear hierarchy — calm dominance, not tension.
- Option C: Repeated, predictable motifs create rhythmic unity and visual ease — the opposite of tension.

Final Answer: Opposing forces, competing focal points, or conflicting rhythms generate design tension. $\Rightarrow$ D

Answer: (D) Go Back to Q16

Q17.

Solution

Concept — Grid systems in graphic design: A grid is the invisible structural skeleton of a page layout. Developed systematically by Swiss graphic designers in the 1950s–60s (Müller-Brockmann, Ruder), grids divide the page into columns, rows, and gutters, giving designers a rational system for placing, aligning, and sizing every element consistently across multi-page documents or screens.

Step 1 — Identify what a grid specifically provides: It is a *structural framework* — columns, rows, and gutters — not a colour rule, typeface limit, or spacing specification.

Step 2 — Confirm the grid's primary benefit: Consistency, alignment, and proportional sizing across pages or screens — enabling coherent multi-page documents, responsive web layouts, and modular editorial design.

Why other options are wrong:

- Option A: Limiting typeface count is a typographic convention (usually "use no more than 2–3 typefaces"), not the definition of a grid.
- Option C: Colour palette and typographic scale are defined by a brand style guide, not the grid per se.
- Option D: Line spacing (leading) is a typographic specification in a type style guide, not a function of a grid.

Final Answer: A grid system = structural framework of columns, rows, and gutters for consistent layout. $\Rightarrow$ B

Answer: (B) Go Back to Q17

Q18.

Solution

Concept — Hierarchy of scale: Scale hierarchy is the design principle that size communicates importance. In any composition where elements differ in size, the viewer instinctively interprets the larger element as more significant, primary, or dominant. This is exploited in typography (headlines vs. body text), poster design, and architectural façade composition.

Step 1 — Identify the core claim: "Largest = most dominant = most important." This is the literal definition of scale hierarchy.

Step 2 — Apply to practice: A large headline immediately reads as more important than small body text below it. A large figure in a painting commands more attention than smaller ones. The principle is universal.

Why other options are wrong:

- Option B: Repeating a shape at decreasing scales creates an impression of depth or infinity — this describes a *scale sequence* or *diminution* perspective cue, not hierarchy of scale as a principle.
- Option C: The eye entering from the upper-left is a reading-culture convention (in LTR languages), not a universal law of scale.
- Option D: Smaller elements do not need to be closer to read as important; size alone determines dominance regardless of position.

Final Answer: The largest element appears most dominant and most important — hierarchy of scale. $\Rightarrow$ A

Answer: (A) Go Back to Q18

Q19.

Solution

Concept — Cross-sections of a sphere: A sphere is the set of all points equidistant from a centre point. Any plane that intersects the interior of a sphere cuts it along a curve that is the intersection of a plane and a sphere — which is always a *circle*. The radius of that circle depends on the distance of the plane from the sphere's centre.

Step 1 — Apply the geometry: Whether the cut is through the centre (giving a great circle of radius r) or off-centre (giving a smaller circle), the cross-section is always a circle. The plane's angle relative to the sphere is irrelevant — all planar cross-sections of spheres are circles.

Step 2 — Contrast with other solids: A cylinder can give a circle, ellipse, or rectangle. A cone can give a circle, ellipse, parabola, or hyperbola. Only a sphere always yields a circle.

Why other options are wrong:

- Option A: A square cross-section is impossible from a sphere; squares are characteristic of cubes.

- Option B: An ellipse would require an asymmetric solid (like a cylinder or cone); a sphere's symmetry always produces a circle.
- Option C: Rectangles are impossible from a sphere; the choice of "circle, ellipse, or rectangle" is false — only circles are possible.

Final Answer: A plane cutting a sphere always produces a circular cross-section. $\Rightarrow$ D

Answer: (D) Go Back to Q19

Q20.

Solution

Concept — Identifying 3-D solids from flat nets: A net is the unfolded surface of a three-dimensional solid laid flat. To identify the solid, count the faces and note their shapes. The net shown has one square (the base) with four congruent isosceles triangles attached to each side — exactly the faces of a square pyramid (1 square base + 4 triangular lateral faces = 5 faces total).

Step 1 — Count and identify faces: 1 square + 4 triangles = 5 faces. When folded, the four triangles rise from the square's edges and meet at a common apex, forming the lateral surface of a square pyramid.

Step 2 — Confirm by Euler's formula: A square pyramid has $F = 5$ faces, $E = 8$ edges, $V = 5$ vertices. Euler: $5 - 8 + 5 = 2$ ✓.

Why other options are wrong:

- Option A: A triangular prism has 5 faces (2 triangles + 3 rectangles) — the net would include rectangles, not all triangles.
- Option B: A rectangular cuboid (box) has 6 rectangular faces — the net would contain only rectangles.
- Option D: A cone cannot be represented as a polygon net; its lateral surface is a curved sector.

Final Answer: One square + four triangles fold into a square pyramid. $\Rightarrow$ C

Answer: (C) Go Back to Q20

Q21.

Solution

Concept — Cube nets: A cube has six square faces, so any valid cube net must consist of exactly six unit squares. There are exactly 11 distinct cube nets. The described arrangement — four squares in a vertical column with one square extending left and one extending right from the second-from-bottom square — creates the classic **plus/cross** shape, which is one of the 11 valid cube nets.

Step 1 — Visualise the net: Label the column squares (bottom to top) A, B, C, D, and the flanking squares E (left of B) and F (right of B). Place B as the bottom face: A folds up to the front face; C folds backward to the back face; D continues from C to become the top face; E folds to the left face; F folds to the right face. All six faces are present and none overlap when folded.

Step 2 — Confirm validity: A net is valid if (a) it has exactly 6 squares and (b) when folded it produces a closed cube with no gaps. This arrangement satisfies both criteria — it is listed as one of the 11 valid cube nets.

Why other options are wrong:

- Option B: "An open-topped box" would result from a net with only 5 squares; 6 squares always produce a fully closed cube if arranged correctly.
- Option C: A triangular prism has 5 faces including rectangles; a net of 6 squares cannot fold into a prism.
- Option D: A regular tetrahedron has 4 equilateral triangular faces; a net of 6 squares cannot form a tetrahedron.

Final Answer: The described six-square net folds into a valid closed cube. $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q21

Q22.

Solution

Concept — Compass direction after rotation: On a compass, the four cardinal directions progress clockwise as: North (0) $\rightarrow$ East (90) $\rightarrow$ South (180) $\rightarrow$ West (270) $\rightarrow$ North (360). A 90 clockwise rotation advances a direction by one step in that sequence.

Step 1 — Identify the starting direction: The bold arrow points West.

Step 2 — Apply the 90° CW rotation: Rotating 90° clockwise from West: following the CW sequence, West $\xrightarrow{90\text{ CW}}$ North. (Geometrically: a west-pointing vector

$(-1, 0)$ rotated 90° CW becomes $(0, 1)$ = North.)

Why other options are wrong:

- Option A: East is 180° CW from West, not 90° CW.
- Option C: South is 90° CW from East, or equivalently 270° CCW from West — not 90° CW from West.
- Option D: The arrow moves; West only remains after a 360° full rotation or no rotation at all.

Final Answer: West + 90° CW = North. ⇒ B

Answer: (B) Go Back to Q22

Q23.

Solution

Concept — Properties of Platonic solids (regular octahedron): The five Platonic solids have fixed, well-known counts of faces (F), vertices (V), and edges (E), all satisfying Euler's polyhedron formula $F - E + V = 2$. A regular octahedron is bounded by 8 equilateral triangular faces.

Step 1 — Recall or derive the counts:

- Faces: 8 equilateral triangles.
- Vertices: 6 (visualise two square pyramids joined at their square bases — 4 equatorial vertices + 1 top + 1 bottom = 6).
- Edges: 12 (4 top edges + 4 bottom edges + 4 equatorial edges = 12).

Step 2 — Verify with Euler's formula: $8 - 12 + 6 = 2$ ✓.

Why other options are wrong:

- Option A: $F = 6$, $V = 8$, $E = 12$ describes a *cube* (dual of the octahedron).
- Option B: $F = 4$, $V = 4$, $E = 6$ describes a *regular tetrahedron*.
- Option C: $F = 12$, $V = 20$, $E = 30$ describes a *regular icosahedron*.

Final Answer: A regular octahedron has 8 faces, 6 vertices, and 12 edges. ⇒ D

Answer: (D) Go Back to Q23

Q24.

Solution

Concept — First-angle (European) orthographic projection: In first-angle projection (the standard in Europe and much of Asia), the object is imagined to project its image *through* itself onto the projection planes. This places each view on the side *opposite* to where you would expect from the American (third-angle) convention.

Step 1 — Apply first-angle placement rules:

- Top view (plan): the object is viewed from above; its projection falls on the plane *below* the front view.
- Right-side view: viewed from the right; its projection falls on the plane to the *left* of the front view.

Step 2 — Contrast with third-angle (American): In third-angle, the top view goes *above* and the right-side view goes to the *right* — the reverse of first-angle.

Why other options are wrong:

- Option B: Top above, right-side to the right = third-angle (American) projection.
- Option C: Top below but right-side to the right = a hybrid that matches neither standard.
- Option D: A circular arrangement is not used in any standard engineering projection system.

Final Answer: First-angle: top view below front; right-side view to the left of front. $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q24

Q25.

Solution

Concept — Development (unrolling) of a cylinder: When the curved lateral surface of a right circular cylinder is cut along a vertical line and unrolled onto a flat plane, the result is a rectangle. The *width* of this rectangle equals the circumference of the circular base (the "unwrapped" curved edge) and the *height* equals the height of the cylinder.

Step 1 — Derive the dimensions: Circumference of base $= 2\pi r$. Height of cylin-

der $= h$. Lateral surface area $= 2\pi r \times h$, which confirms a rectangle of those dimensions.

Step 2 — Confirm the shape: The curved surface has no twist or taper, so when unrolled it lies perfectly flat as a rectangle (or square if $h = 2\pi r$).

Why other options are wrong:

- Option A: A circle is the unrolled form of a cone's base, not a cylinder's lateral surface.
- Option B: A square is only a special case when $h = 2\pi r$; the general case is always a rectangle, not necessarily a square.
- Option D: An ellipse does not arise from unrolling a cylinder; ellipses appear as the cross-section of an oblique cut through a cylinder.

Final Answer: Unrolling the cylinder's lateral surface gives a rectangle of width $2\pi r$ and height h. $\Rightarrow$ C

Answer: (C) Go Back to Q25

Q26.

Solution

Concept — Paper folding and symmetry of cut-outs: Each fold doubles the layers of paper. Two folds create four layers. Any cut through all four layers produces a cut-out that is mirrored both horizontally and vertically (through both fold lines), yielding four identical cut-outs when fully unfolded.

Step 1 — Count layers after two folds: Fold 1 (horizontal) = 2 layers. Fold 2 (vertical) = 4 layers. A cut through the four-layer folded quarter creates 4 mirror-image cut-outs.

Step 2 — Locate the cut-outs: The triangular notch is at the corner formed by both fold lines — the centre of the original sheet. When unfolded, the four triangular holes appear symmetrically about the centre, one in each quadrant, as shown in the unfolded diagram.

Why other options are wrong:

- Option A: 1 cut-out would result if no folds were made before cutting.
- Option C: 2 cut-outs would result from only one fold (not two).
- Option D: 8 cut-outs would require three folds (three doublings: $2^3 = 8$), not two folds.

Final Answer: Two folds create four layers; one cut produces four triangular cut-outs. ⇒ B

Answer: (B) Go Back to Q26

Q27.

Solution

Concept — Two-point perspective and vertical edges: In two-point perspective, a scene is viewed at an angle so that two sets of horizontal parallel lines recede to two vanishing points (VP-left and VP-right) on the horizon line. However, all *vertical* edges of objects (walls, columns, corners) remain parallel to the vertical axis of the picture plane — they do not converge to any vanishing point.

Step 1 — Understand the geometry: Two-point perspective captures oblique (angled) views of rectilinear objects. The two sets of horizontal edges converge left and right. Vertical edges are parallel to the viewer's standing axis and to the picture plane, so they remain vertical in the drawing.

Step 2 — Distinguish from three-point perspective: In three-point perspective, vertical edges also converge to a third vanishing point above or below the horizon, making tall buildings appear to taper. Two-point perspective does NOT do this.

Why other options are wrong:

- Option A: Vertical edges converging upward = three-point perspective worm's-eye view, not two-point.
- Option B: Symmetrical inward lean = a fisheye/curvilinear perspective distortion, not standard two-point.
- Option C: Vertical edges drawn as horizontal lines is geometrically nonsensical for any standard perspective.

Final Answer: In two-point perspective, vertical edges remain truly vertical. ⇒ D

Answer: (D) Go Back to Q27

Q28.

Solution

Concept — Hatching as a tonal technique: Hatching is one of the oldest drawing techniques for rendering tone and shadow. A single set of closely spaced parallel lines = hatching; two or more intersecting sets of lines = cross-hatching. The density and angle of the lines control the apparent darkness of the tone.

Step 1 — Confirm the definition: Closely spaced parallel lines drawn in one direction = hatching. This technique is widely used in engraving, pen-and-ink drawing, and technical illustration.

Step 2 — Distinguish from related techniques: Wash (diluted ink or watercolour), sgraffito (scratching through), and blending (powdered medium) are entirely different methods.

Why other options are wrong:

- Option A: Applying diluted ink or watercolour wash = *wash technique* (or aquatint in printmaking).
- Option C: Scratching through a layer to reveal the surface below = *sgraffito* or *scratchboard* technique.
- Option D: Blending powdered graphite or charcoal = *sfumato* or *stumping* technique.

Final Answer: Hatching = closely spaced parallel lines representing tone or shadow. $\Rightarrow$ B

Answer: (B) Go Back to Q28

Q29.

Solution

Concept — Monocular depth cues (interposition / overlapping): Interposition (also called occlusion or overlapping) is a powerful monocular depth cue: when one object partially covers another, the partially hidden object is perceived as farther away. This cue is used extensively in pictorial composition, perspective drawing, and design to establish spatial layering without shading or size variation.

Step 1 — Read the diagram: One circle partially covers the other. The circle whose outline is interrupted (partially hidden) appears to be behind the one in front — this is interposition.

Step 2 — Identify the cue: No convergence of lines (no linear perspective), no

reduced detail or colour intensity (no atmospheric perspective), and no compression of texture elements (no texture gradient). The only depth cue present is the overlap.

Why other options are wrong:

- Option B: Linear perspective requires converging lines vanishing to a horizon point — not present in this diagram.
- Option C: Atmospheric perspective shows distant objects as lighter, hazier, and less saturated — not depicted here.
- Option D: Texture gradient shows surface textures becoming denser toward a distant horizon — two overlapping circles do not demonstrate this.

Final Answer: Overlapping circles demonstrate interposition as a depth cue. $\Rightarrow$ A

Answer: (A) Go Back to Q29

Q30.

Solution

Concept — Calligraphic line quality: A calligraphic line is produced by a broad-nibbed or brush pen held at a fixed angle. As the pen moves in different directions, the stroke width changes — yielding characteristic thick downstrokes and thin cross-strokes. This variability in stroke width is the defining property of calligraphic line and distinguishes it from mechanical lines of uniform width.

Step 1 — Identify the key characteristic: Variable width — thick-to-thin transitions — produced by changing pen angle, speed, or pressure. This is the essence of calligraphic quality.

Step 2 — Apply to typography: Serif typefaces such as Garamond, Times New Roman, and Bodoni explicitly emulate calligraphic thick-thin variation derived from broad-nib pen writing.

Why other options are wrong:

- Option A: A perfectly uniform stroke width = *monolinear* line (e.g., Futura, Helvetica sans-serif type), the opposite of calligraphic.
- Option B: A broken, discontinuous stroke = *dashed* or *dotted* line — a line quality unrelated to calligraphy.
- Option D: A ruled, geometric line = a mechanical or technical line produced with instruments, not expressive calligraphy.

Final Answer: Calligraphic lines have varying thick-to-thin stroke width — expressive and handwriting-like. ⇒ C

Answer: (C) Go Back to Q30

Q31.

Solution

Concept — Foreground, middle ground, and background in composition: Traditional landscape and narrative picture composition divides the picture plane into three spatial zones. The *foreground* is the zone nearest the viewer — it appears at the bottom of the picture plane with the largest objects, finest detail, strongest tonal contrast, and most saturated colour.

Step 1 — Define the three zones: Foreground (nearest, bottom of picture, largest/most detailed), middle ground (intermediate zone), background (farthest, top of picture, smallest/least detailed, often sky).

Step 2 — Match to the question: The question asks for the foreground specifically. "Nearest to the viewer, bottom of the picture plane, greatest detail, largest apparent size, strongest tonal contrast" — this perfectly describes the foreground.

Why other options are wrong:

- Option A: Dead centre of the picture plane has no specific spatial zone name; the foreground is defined by proximity to viewer, not centrality.
- Option B: The uppermost band occupied by sky = the *background* (or sky zone).
- Option C: Supporting narrative elements at an intermediate distance = the *middle ground*.

Final Answer: The foreground = nearest zone, bottom of picture, largest detail, strongest contrast. ⇒ D

Answer: (D) Go Back to Q31

Q32.

Solution

Concept — Hatching density and tonal value: In line art and printmaking, tonal value (lightness or darkness) is controlled by the density of hatching lines. Widely spaced lines leave more white paper visible (lighter tone); closely spaced lines reduce white area (darker tone). Cross-hatching — two or more overlapping sets of lines — darkens the tone further by reducing white area from multiple directions.

Step 1 — Rank the tiles by density: Tile I = widely spaced horizontal lines (lightest). Tile II = moderately spaced lines. Tile III = closely spaced lines. Tile IV = dense cross-hatching (horizontal + vertical lines) = darkest.

Step 2 — Confirm: Cross-hatching in Tile IV fills the most surface area with ink, reflecting the least amount of white light and thus appearing darkest.

Why other options are wrong:

- Option B: Tile I has widely spaced lines = the *lightest*, not darkest, tile.
- Option C: Tile II is moderately dark — lighter than Tile III and much lighter than Tile IV.
- Option D: Tile III is closely hatched but only with parallel lines in one direction; cross-hatching in Tile IV is darker.

Final Answer: Tile IV (dense cross-hatching) represents the darkest tonal value. $\Rightarrow$ A

Answer: (A) Go Back to Q32

Q33.

Solution

Concept — Expressive qualities of the spiral line: The spiral is one of nature's most universal forms — found in the nautilus shell (logarithmic spiral), galaxies, the DNA double helix, phyllotaxis (plant growth), and ocean waves. In design, it carries the symbolic and psychological resonance of its natural origins: perpetual growth, expansion outward from a centre, cyclic return, and continuous forward motion.

Step 1 — Identify the spiral's core visual quality: A spiral begins at a centre and expands outward (or contracts inward) continuously, never closing. This suggests open-ended growth and dynamic progression.

Step 2 — Connect to design applications: The Ionic volute in Classical architecture, the Guggenheim Museum's ramp, the Fibonacci/golden spiral used in layout composition — all exploit the spiral's sense of dynamic, organic movement.

Why other options are wrong:

- Option A: Rigidity and static equilibrium are conveyed by straight horizontal or vertical lines, not spirals.
- Option C: Horizontal rest and calm passage of time = horizontal lines.
- Option D: Sharp angular tension = acute angles, zigzags, and broken lines — not the smooth continuous curve of a spiral.

Final Answer: The spiral suggests continuous growth, expansion, cyclic movement, and dynamic energy. ⇒ B

Answer: (B) Go Back to Q33

Q34.

Solution

Concept — Constructivism as an art and design movement: Russian Constructivism (c. 1913–1935) rejected "art for art's sake" and declared that art must serve the revolution and social construction. Using geometric abstraction, primary colours (red, black, white), industrial materials, and techniques borrowed from engineering and mass printing, Constructivists created propaganda posters, exhibition design, typography, and architecture that explicitly served political and social purposes.

Step 1 — Identify key Constructivist characteristics: Geometric abstraction, primary colours, industrial materials, social/political purpose, mass-production techniques.

Step 2 — Match to key figures: El Lissitzky (Proun compositions), Rodchenko (photography and graphic design), Tatlin (Monument to the Third International) — all worked within this framework.

Why other options are wrong:

- Option A: Return to classical figurative painting = Neoclassicism; the Constructivists were explicitly anti-classical and anti-figurative.
- Option C: Dreamlike, irrational imagery from the unconscious = *Surrealism* (Dalí, Magritte).
- Option D: Decorative organic ornamentation based on plant forms = *Art*

Nouveau.

Final Answer: Constructivism served social/political goals through geometric abstraction and industrial production. ⇒ B

Answer: (B) Go Back to Q34

Q35.

Solution

Concept — Gothic architectural features: Gothic architecture (12th–16th century, France and northern Europe) was a structural revolution. Engineers solved the problem of heavy stone walls and small Romanesque windows through three innovations: the *pointed arch* (distributes load to the sides), *ribbed vaulting* (concentrates thrust at ribs), and *flying buttresses* (external arched supports that carry lateral thrust away from the wall). The result: thin walls filled with large stained-glass windows flooding the interior with colour.

Step 1 — Recall the distinctive structural elements: Pointed arches + ribbed vaults + flying buttresses + large stained-glass windows = Gothic. Examples: Notre-Dame de Paris, Chartres Cathedral, Cologne Cathedral.

Step 2 — Confirm historically: The pointed arch allowed taller, more vertical proportions than the Romanesque semicircular arch. Flying buttresses were invented specifically to enable thinner walls and larger windows.

Why other options are wrong:

- Option A: Heavy walls, thick masonry, small windows, semicircular arches = *Romanesque* architecture (pre-Gothic, 10th–12th c.).
- Option B: Flat rooftops, reinforced concrete, horizontal strip windows = *International Modernism* (20th century, Le Corbusier).
- Option D: Bulbous onion domes, minarets, and tile-work mosaic = *Islamic architecture* (Mughal, Persian, Ottoman styles).

Final Answer: Gothic = pointed arches, ribbed vaults, flying buttresses, large stained-glass windows. ⇒ C

Answer: (C) Go Back to Q35

Q36.

Solution

Concept — Thanjavur (Tanjore) painting tradition: Thanjavur painting developed under the patronage of the Maratha rulers of Thanjavur (Tamil Nadu) in the 18th–19th centuries. It is characterised by its opulent surface — figures are built up in relief using chalk and adhesive, then covered with gold foil, and decorated with semi-precious stones. Bright, jewel-like colours depict Hindu deities (Krishna, Rama, Lakshmi) against richly decorated architectural backgrounds.

Step 1 — Identify the hallmark materials: Gold foil inlay + semi-precious stone embellishment + jewel-like colours = Thanjavur's signature look. The gold foil gives an icon-like luminosity that distinguishes it from all other Indian painting traditions.

Step 2 — Confirm subject matter: Hindu deities and mythological scenes are the dominant subjects; portraiture of ordinary village life, battle scenes, or tribal themes are not characteristic.

Why other options are wrong:

- Option A: Thin watercolour washes on paper = Pahari, Rajput, or Mughal miniature painting traditions.
- Option B: Bold geometric abstraction with earth tones = tribal/folk art styles (Warli, Gond), not Tanjore.
- Option C: Village life in natural pigments on cloth = Kalamkari or Pattachitra traditions.

Final Answer: Thanjavur paintings are known for gold foil, semi-precious stones, and jewel-like colours. $\Rightarrow$ D

Answer: (D) Go Back to Q36

Q37.

Solution

Concept — Classical Greek Doric order: The Doric order is the simplest and oldest of the three Greek architectural orders (Doric, Ionic, Corinthian). It is identified by plain, unfluted (or subtly fluted) cylindrical columns with no base, topped by a simple square capital (abacus + echinus). The columns support a horizontal entablature and a triangular pediment. The Parthenon on the Athenian Acropolis is the supreme example.

Step 1 — Read the diagram: Plain rectangular column shafts, simple square capitals, no column bases, horizontal entablature, triangular pediment. All of these match the Doric order exactly.

Step 2 — Confirm by elimination: Gothic has pointed arches and vertical aspiration — no triangular pediment or classical columns. Baroque uses elaborate curved ornament and sculptural decoration. Art Deco uses geometric stepped forms, not classical columns.

Why other options are wrong:

- Option B: Gothic architecture has pointed arches, flying buttresses, and stained glass — not columned temples with triangular pediments.
- Option C: Baroque is characterised by dramatic curves, rich ornamentation, and dynamic mass — far removed from the austere Doric.
- Option D: Art Deco (1920s–1930s) uses geometric abstraction, chrome, and stepped skyscraper forms — no classical temple elements.

Final Answer: Plain columns, square capitals, triangular pediment = Classical Greek Doric architecture. $\Rightarrow$ A

Answer: (A) Go Back to Q37

Q38.

Solution

Concept — Rangoli as Indian folk art: Rangoli is an ancient Indian folk art practised at the threshold of homes, courtyards, and temple entrances. It uses finely ground rice flour (white), powdered stone colours (vibrant hues), or fresh flower petals to create geometric, symmetrical, and often floral patterns. Created on special occasions such as Diwali, Pongal, Onam, and weddings, it is believed to invite good fortune and ward off negative energy.

Step 1 — Identify material and location: Rice flour / coloured powder / flower petals $\rightarrow$ ground surfaces (thresholds, courtyards). This is the defining characteristic that distinguishes Rangoli from painted or woven traditions.

Step 2 — Confirm regional names: Kolam (Tamil Nadu), Muggu (Andhra Pradesh/Telangana), Alpana (Bengal), Rangoli (Maharashtra/North India) — all are regional names for the same tradition.

Why other options are wrong:

- Option A: Wall fresco of battle scenes = Phad painting (Rajasthan) — a

different tradition entirely.

- Option B: Metallic zari embroidery on silk = Zardozi or Kantha embroidery — textile traditions, not floor art.
- Option D: Classical South Indian bronze sculpture = Chola bronzes (lost-wax casting), unrelated to Rangoli.

Final Answer: Rangoli = geometric folk floor art made with rice flour, powder, or petals for auspicious occasions. ⇒ C

Answer: (C) Go Back to Q38

Q39.

Solution

Concept — Indus Valley Civilisation archaeology: The IVC (Harappan) civilisation, flourishing from c. 3300 to 1300 BCE across the Indus and Ghaggar-Hakra river basins, is remarkable for its urban sophistication: grid-planned cities (Mohenjo-daro, Harappa, Dholavira), standardised fired-brick construction with consistent dimensions, enclosed drainage and sewage networks, and carved steatite seals bearing pictographic script and animal motifs. Notably, no monumental royal tombs, colossal statues, or temple complexes comparable to Egypt or Mesopotamia have been found.

Step 1 — Identify the IVC's unique archaeological signature: Town planning + standardised brickwork + sophisticated drainage + steatite seals = IVC. The *absence* of monumental royal sculpture is equally diagnostic.

Step 2 — Note what is missing: No pyramids, no royal statuary, no known deciphered script — the IVC is defined partly by what it conspicuously does *not* have.

Why other options are wrong:

- Option A: Enormous stone temples, colossal statuary, and hieroglyphics = ancient Egypt. The IVC produced none of these.
- Option C: Fired-clay terracotta panels covering entire façades are not associated with IVC; their terracotta was small-scale figurines and seals.
- Option D: The IVC was a Bronze Age, not an Iron Age, culture; iron smelting (Iron Age) began after the IVC's decline.

Final Answer: IVC = advanced town planning, standardised brickwork, drainage systems, soapstone seals; no monumental royal sculpture. ⇒ B

Answer: (B) Go Back to Q39

Q40.

Solution

Concept — Satin weave structure and surface sheen: In weave terminology, a *float* is a length of yarn that passes over multiple threads before interlacing. Satin weave is characterised by long warp floats (the warp passes over 4–7 consecutive weft threads before binding). This drastically reduces the number of interlacement points, minimises surface friction, and allows fibres to lie smooth and parallel — producing the characteristic lustrous, reflective surface.

Step 1 — Understand warp floats: In plain weave, every warp thread crosses every weft thread (1-over-1). In satin weave, each warp thread floats over 4, 5, or more weft threads before binding. Fewer interlacings = smoother, less interrupted surface.

Step 2 — Connect to optical property: A smooth, aligned surface reflects light uniformly = high sheen/lustre. Satin-woven silk or polyester achieves this distinctive mirror-like quality.

Why other options are wrong:

- Option A: Every thread crossing every other = plain weave (the most balanced/firm, but not lustrous).
- Option B: Uncut loops on the face = terry cloth (looped pile fabric), used for towels — not satin.
- Option C: Heat-reactive resin treatment describes finishing processes (e.g., mercerisation or heat-setting), not the weave structure responsible for satin's sheen.

Final Answer: Satin weave's long warp floats reduce interlacement, creating a smooth, lustrous surface. $\Rightarrow$ D

Answer: (D) Go Back to Q40

Q41.

Solution

Concept — Suede leather production: Leather can be made from the outer (grain) side or the inner (flesh) side of an animal hide. Full-grain and corrected-grain leathers use the tough outer surface. Suede is specifically made from the *inner* side — it is split from the hide and then buffed or abraded with abrasive rollers to raise a soft, velvety nap of short fibres. The result is porous, supple, and cashmere-soft to the touch, but more water-absorbent and less durable than

outer-grain leather.

Step 1 — Identify the cut of hide: Inner/flesh side + buffing/abrading = suede. The raised nap is the distinguishing tactile quality.

Step 2 — Distinguish from nubuck: Nubuck is also soft and velvety but is made from the *outer* grain side — the difference is subtle in feel but significant in production. Both differ from patent leather (high gloss) or full-grain leather (visible natural grain).

Why other options are wrong:

- Option B: Outer grain side + high-gloss lacquer = patent leather (or glossy full-grain), not suede.
- Option C: Woven synthetic microfibre treated to mimic leather = *Alcantara* or microsuede — a synthetic imitation, not genuine suede.
- Option D: Compressed recycled leather offcuts = bonded leather or reconstituted leather — an entirely different product.

Final Answer: Suede = inner (flesh) side of hide, buffed to a soft, napped, velvety surface. $\Rightarrow$ A

Answer: (A) Go Back to Q41

Q42.

Solution

Concept — Natural textile fibre sources: Linen is one of the oldest cultivated textiles, with evidence of use dating back over 36,000 years. It is extracted from the bast fibres in the stalks of the flax plant (*Linum usitatissimum*) through a process called *retting* (decomposing the surrounding plant material). Linen fibres are longer, stronger, and more lustrous than cotton, and the fabric is prized for its cool, moisture-wicking, naturally antibacterial properties.

Step 1 — Confirm the plant source: Flax (*Linum usitatissimum*) stalks $\rightarrow$ retting + scutching $\rightarrow$ long bast fibres $\rightarrow$ linen yarn $\rightarrow$ linen fabric.

Step 2 — Distinguish from other plant fibres: Cotton = seed pods; silk = cocoon filament (animal, not plant); jute = bark fibre for rough industrial use.

Why other options are wrong:

- Option A: Cotton comes from seed pods of *Gossypium* plants; it is softer and less strong than linen.

- Option C: Silk comes from the cocoon secreted by the silkworm (*Bombyx mori*) — an animal fibre, not plant-based.
- Option D: Jute (*Corchorus*) is a bast fibre like linen but much coarser; it is used for sacking, hessian, and carpet backing — not fine apparel.

Final Answer: Linen is derived from the stalks of the flax plant (*Linum usitatissimum*). $\Rightarrow$ B

Answer: (B) Go Back to Q42

Q43.

Solution

Concept — Kitten heel identification: A kitten heel is a low, slender heel characterised by its modest height (typically 3–5 cm / 1.5–2 inches) and its slightly tapered, narrow profile. It was popularised in the 1950s by designers such as Audrey Hepburn and Roger Vivier as an elegant, wearable alternative to full stilettos.

Step 1 — Read Profile I: Short (approximately 2–3 cm in the diagram), slender, and slightly tapered from base to top. This matches the kitten heel description: low height, narrow profile, subtle taper.

Step 2 — Read Profile II: Tall (approximately 3.5–4 cm in the diagram), wide, and rectangular (block shape). This matches a *block heel* (or Cuban heel) — a wide, flat-bottomed stable heel, not a kitten heel.

Why other options are wrong:

- Option A: Profile II is a block heel — wide and tall — clearly not a kitten heel.
- Option B: Only Profile I qualifies; Profile II is too wide and boxy to be a kitten heel.
- Option D: Profile I clearly is a short, slender heel matching the kitten heel definition.

Final Answer: Profile I (short, slender, tapered) represents a kitten heel. $\Rightarrow$ C

Answer: (C) Go Back to Q43

Q44.

Solution

Concept — Platform sole in footwear: A platform sole is a type of shoe construction in which the outer sole is uniformly thick across its entire length — from toe to heel. Unlike high-heeled shoes where the heel is elevated while the toe stays near the ground (creating an incline for the foot), a platform shoe raises both the toe and heel by the same amount, keeping the foot relatively level while significantly increasing overall height.

Step 1 — Identify the key distinguishing feature: Uniform thickness from heel to toe = platform. The foot angle remains nearly flat (no steep incline) even when wearing significant height.

Step 2 — Distinguish from other heel constructions: Stiletto/spike heels have a tiny contact point and steep incline. Wedge heels increase continuously from toe to heel. Platform soles are defined by uniform elevation.

Why other options are wrong:

- Option A: A thin, flexible arch-support insert = an *insole* or *orthotic*, not a platform sole.
- Option B: A narrow spike extending from the back = a *stiletto* heel construction.
- Option C: A rigid internal shank preventing twisting = a *shank* — an internal structural component of the shoe, unrelated to the platform.

Final Answer: A platform sole is a thick, uniform outer sole from heel to toe, raising height without steep incline. $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q44

Q45.

Solution

Concept — Perfect square number sequences: A perfect square is the product of an integer multiplied by itself: n^2. The sequence of perfect squares begins $1^2, 2^2, 3^2, 4^2, 5^2, \ldots = 1, 4, 9, 16, 25, \ldots$

Step 1 — Identify the pattern: $1 = 1^2$, $4 = 2^2$, $9 = 3^2$, $16 = 4^2$. Each term is the square of the next consecutive integer.

Step 2 — Find the next term: The next integer is 5. $5^2 = 25$.

Why other options are wrong:

- Option B: 20 is not a perfect square ($4^2 = 16$, $5^2 = 25$; 20 lies between them).
- Option C: 18 is not a perfect square; it is between $4^2 = 16$ and $5^2 = 25$.
- Option D: 32 is not a perfect square; $5^2 = 25$ and $6^2 = 36$; 32 lies between them.

Final Answer: The next perfect square after $4^2 = 16$ is $5^2 = 25$. $\Rightarrow$ A

Answer: (A) Go Back to Q45

Q46.

Solution

Concept — Paper folding symmetry (single diagonal fold): When a square sheet is folded once along a diagonal, two layers of paper are stacked. Any punch through both layers creates two holes — one at the punch location and its mirror image, reflected through the fold line. When unfolded, both holes become visible.

Step 1 — Count the layers: One fold = 2 layers. Punching through 2 layers = 2 holes.

Step 2 — Locate the holes: If the hole is punched at position (a, b) in the folded triangle, it appears at (a, b) on one layer. The diagonal fold line acts as a mirror; the hole also appears at the reflected position (b, a) (or its diagonal mirror equivalent) on the other layer. When unfolded, both holes are visible — confirmed by the unfolded diagram showing two circles.

Why other options are wrong:

- Option A: One hole would result if the paper were not folded before punching.
- Option C: Four holes would result from two folds (creating 4 layers), not one fold.
- Option D: Eight holes would require three folds ($2^3 = 8$ layers).

Final Answer: One diagonal fold = 2 layers = 2 holes when unfolded. $\Rightarrow$ B

Answer: (B) Go Back to Q46

Q47.

Solution

Concept — Dimensional analogies between 2-D and 3-D shapes: The analogy establishes the relationship: a 2-D shape is the cross-sectional or base face of a corresponding 3-D solid. A triangle (2-D) is the base face of a triangular pyramid (tetrahedron, 3-D). By the same logic, a square (2-D) is the base face of a solid whose all six faces are squares — a cube.

Step 1 — Apply the pattern: Triangle $\rightarrow$ Triangular Pyramid (base + triangular faces). Square $\rightarrow$ Cube (all six faces are squares; the top, bottom, and four sides are all square). A cube can be thought of as a "square pyramid" taken to its logical extent — six congruent squares.

Step 2 — Confirm: A cube has a square base and a square top, with four square sides. Every face is a square. The relationship square: cube mirrors triangle: (triangular) pyramid exactly.

Why other options are wrong:

- Option A: A sphere has no flat faces at all and cannot have a square base.
- Option B: A cylinder has circular (not square) top and bottom faces.
- Option D: A cone has a circular (not square) base.

Final Answer: Square : Cube (a square is the base face of a cube). $\Rightarrow$ C

Answer: (C) Go Back to Q47

Q48.

Solution

Concept — Geometry of the hexagram (Star of David): A hexagram is formed by superimposing two congruent equilateral triangles of opposite orientation (one pointing up, one pointing down). The region where both triangles overlap is bounded by six equal sides and six equal angles — a regular hexagon. This central hexagon is a fundamental geometric property of the hexagram.

Step 1 — Identify intersection geometry: Each side of the upward triangle intersects two sides of the downward triangle, creating six intersection points. These six points form a regular hexagon at the centre.

Step 2 — Confirm with calculation: For triangles of circumradius R, the central hexagon has circumradius $R/\sqrt{3} \approx 0.577R$. All six sides of this hexagon are equal in length, confirming it is a regular hexagon (also verifiable by symmetry: the

hexagram has 6-fold rotational symmetry, so the central region must also have 6-fold symmetry = regular hexagon).

Why other options are wrong:

- Option A: An equilateral triangle is one of the *outer points* of the hexagram, not the central overlap region.
- Option B: A rhombus has 4 sides; the central region has 6 sides, so it cannot be a rhombus.
- Option C: A rectangle has 4 right angles; the central hexagon has six 120° angles — not right angles.

Final Answer: The central overlap region of a hexagram is a regular hexagon. $\Rightarrow$ D

Answer: (D) Go Back to Q48

Q49.

Solution

Concept — 90° clockwise rotation of a shape on a grid: A 90° clockwise rotation transforms each point (c, r) (column from left, row from bottom) of a shape on an $W \times H$ grid to the new position $(H - 1 - r,\ c)$ on the rotated $H \times W$ grid. The top of the shape becomes the right side; the right side becomes the bottom; the bottom becomes the left; the left becomes the top.

Step 1 — Apply the transformation to key cells of the F: The original F has its stem (vertical bar) on the left and bars pointing right. After 90° CW: the stem (which ran vertically upward) now lies along the bottom row (horizontal); the top bar (which ran rightward from the top) now goes upward from the left end; the middle bar appears as a single cell at mid-height on the left.

Step 2 — Match to Option A: Option A shows a horizontal bar at the bottom row (the original vertical stem), two cells going upward from the left (the original top bar), and one extra cell at middle-left (the original middle bar) — the correct 90° CW rotated F.

Why other options are wrong:

- Option B: Shows a 180° rotation — the F is upside-down and mirror-flipped, with the stem on the right and bar at the bottom.
- Option C: Shows a 270° CW (= 90° CCW) rotation — the F lies with its stem along the top row and bars pointing downward to the right.

- Option D: Shows a horizontal mirror reflection — the F faces left instead of right, with the same upright orientation but flipped.

Final Answer: Option A correctly shows the F after 90° clockwise rotation. ⇒ A

Answer: (A) Go Back to Q49

Q50.

Solution

Concept — Identifying the pattern in a visual sequence: The sequence organises pentagon groups according to two rules operating simultaneously: (1) the count increases by one every two groups (one group of 1, one group of 1, one group of 2, one group of 2, one group of 3, ...); and (2) the fill alternates between filled and outline with each successive group.

Step 1 — Decode the fill-alternation rule: Group 1 = filled; Group 2 = outline; Group 3 = filled; Group 4 = outline; Group 5 = filled; Group 6 = *outline* (next in the alternating series).

Step 2 — Decode the count rule: Group 5 has 3 filled pentagons. The count stays at 3 for one more group (Group 6) before increasing to 4. So Group 6 = 3 pentagons. Combined: Group 6 = 3 *outline* pentagons.

Why other options are wrong:

- Option A: Four filled pentagons would be Group 7 (count increases to 4) and filled (alternating back), not the immediate next group.
- Option C: Four outline pentagons = Group 8 (count 4, outline), two groups ahead.
- Option D: Three *filled* pentagons was Group 5 (already shown); the fill must alternate to outline for Group 6.

Final Answer: The next group is three outline (unfilled) pentagons. ⇒ B

Answer: (B) Go Back to Q50

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	B	3	C	4	D	5	A
6	B	7	C	8	D	9	B	10	A
11	C	12	D	13	B	14	A	15	C
16	D	17	B	18	A	19	D	20	C
21	A	22	B	23	D	24	A	25	C
26	B	27	D	28	B	29	A	30	C
31	D	32	A	33	B	34	B	35	C
36	D	37	A	38	C	39	B	40	D
41	A	42	B	43	C	44	D	45	A
46	B	47	C	48	D	49	A	50	B