

Answers

1. Answer: d

Explanation:

B is correct.

The figure shows four letters: N (labelled A), D (labelled B), A (labelled C) and Z (labelled D).

N, A and Z are each drawn only with straight line segments, whereas D is the only letter that contains a curved stroke.

Hence, the odd one out is the letter D, which is labelled B.

2. Answer: d

Explanation:

Cousin is correct.

Renuka's mother's husband is Renuka's father, and his sister is Renuka's paternal aunt.

Ramya calls this same woman her aunt. If Ramya were Renuka's daughter or niece, this woman would be her grand-aunt, and if Ramya were Renuka's mother, this woman would be her sister-in-law, not her aunt.

So Ramya belongs to Renuka's own generation through a sibling of Renuka's father, which makes the two girls children of siblings.

Hence, Ramya is Renuka's cousin.

3. Answer: d

Explanation:

75 is correct.

Average speed is total distance divided by total time, regardless of pace variation along the way. The odometer records cumulative distance travelled, so the difference between the final and initial readings gives the distance of this trip.

Step 1 — Distance covered: $3600 - 3000 = 600$ km.

Step 2 — Time taken: 8 hours.

Step 3 — Average speed: $\frac{600}{8} = 75 \text{ km h}^{-1}$.

4. Answer: b

Explanation:

Retailer 2 is correct.

In a grouped bar graph each retailer shows multiple bars, one per product, so the bar whose colour or pattern matches product 3 must be isolated for every retailer and then its height read against the Y-axis.

Scanning the bars that stand for product 3 across all seven retailers and projecting each top onto the price scale, only the bar standing on retailer 2 sits between the gridlines marked ₹ 16 and ₹ 18. The other bars either rise above ₹ 18 or fall below ₹ 16, so retailer 2 is the one offering product 3 in the stated price band.

5. Answer: b

Explanation:

600 s is correct.

Electric current is the rate of flow of charge; the relation between charge, current and time is $Q = I \times t$, where Q is in coulombs, I in amperes and t in seconds. Rearranging gives $t = Q/I$.

Step 1 – Substitute the given values: $t = \frac{300 \text{ C}}{0.5 \text{ A}}$.

Step 2 – Simplify: $t = 600 \text{ s}$. The filament carries 0.5 coulomb of charge every second, so delivering a total of 300 coulombs takes 600 seconds (10 minutes).

6. Answer: d

Explanation:

Hammer is correct.

In a classification question the common property shared by most of the items is identified first; the one lacking that property is the odd one out.

A screwdriver, a hand drilling machine and a spanner are all tools that work by applying rotary (turning) action – the screwdriver turns a screw, the drill rotates a bit, the spanner rotates a nut or bolt. A hammer, by contrast, operates by delivering an impact (striking) force and has no rotary mechanism, so it does not belong with the three rotary tools.

7. Answer: d

Explanation:

Only Argument II is strong. is correct.

A strong argument deals directly with the issue, is grounded in a verifiable, universal cause-effect relation, and avoids sweeping generalisation or anecdote. Each argument is tested on this scale.

Argument I links seven-star hotels with international criminals. Criminals can operate from any kind of accommodation, so banning a category of hotel on this ground is not a universal remedy and the premise is anecdotal; it is weak. Argument II notes that banning such hotels would deter wealthy tourists and thereby reduce tourism revenue — a direct, measurable economic consequence tied to the proposed action. This causal link is well-established, so argument II is strong.

8. Answer: d

Explanation:

B is correct.

In the first pair, the upward-pointing triangle made of small triangles is turned through 90° clockwise, so that it points to the right; its shaded small triangles turn along with it.

The third figure is an upward-pointing triangle with its bottom-row small triangles shaded. Turning it through 90° clockwise makes it point to the right with the shaded small triangles along its left edge.

Hence, the figure labelled B completes the pair.

9. Answer: d

Explanation:

2 is correct.

Let the book's total length be P pages and let Dorothy read d pages a day. The two statements about pages remaining give one equation each; solving them together yields d .

Step 1 — After 10 days, remaining = $\frac{11}{12}P$. So pages read in 10 days = $P - \frac{11}{12}P = \frac{P}{12}$, giving $10d = \frac{P}{12}$, i.e. $P = 120d$.

Step 2 — After another 5 days (total 15 days), remaining = 210 pages. Pages read in 15 days = $15d$, so $P - 15d = 210$.

Step 3 — Substitute $P = 120d$: $120d - 15d = 210 \Rightarrow 105d = 210 \Rightarrow d = 2$. Dorothy reads 2 pages a day.

10. Answer: d

Explanation:

The inverted V with a right-angle mark at its apex and dots at both ends is correct.

The figures alternate in shape: the first and third are an angle opening to the right, the second is an inverted V, so the fourth must again be an inverted V.

The line ends change in pairs: the first two figures end in arrowheads, the third ends in dots, so the fourth must also end in dots.

Hence, the next figure is the inverted V with a right-angle mark at its apex and dots at both ends.

11. Answer: a

Explanation:

527 is correct.

The identity $(x + \frac{1}{x})^2 = x^2 + \frac{1}{x^2} + 2$ links the first power to the second power, and squaring again links the second power to the fourth power. Applying this twice converts the given sum into the required one.

Step 1 – Square the given relation: $(a + \frac{1}{a})^2 = 25$, so $a^2 + \frac{1}{a^2} = 25 - 2 = 23$.

Step 2 – Square this result: $(a^2 + \frac{1}{a^2})^2 = 23^2 = 529$, so $a^4 + \frac{1}{a^4} = 529 - 2 = 527$.

12. Answer: a

Explanation:

23 is correct.

A normal human somatic (body) cell contains 46 chromosomes arranged as 23 homologous pairs — this is the diploid number, written $2n$. Gametes (the sperm and the ovum) are produced by meiosis, a cell division that halves the chromosome count so that fertilisation can restore the diploid number without doubling it each generation.

During meiosis, each sperm cell receives one chromosome from every homologous pair, giving it 23 chromosomes — the haploid number, written n . When a sperm (23) fuses with an ovum (23) at fertilisation, the resulting zygote regains 46 chromosomes, maintaining the species' chromosome count.

13. Answer: d

Explanation:

₹ 5,200 is correct.

When the total is unknown but one category's percentage share and rupee amount are both given, the total can be reconstructed, after which any other category's spending is simply its percentage of that total.

Step 1 – Treats are 40 % of the total and equal ₹ 4,000, so the total monthly spending is $\frac{4000}{40} \times 100 = ₹ 10,000$.

Step 2 – Dog food + oral care and hygiene = $50 + 2 = 52\%$ of the total.

Step 3 – 52% of ₹ 10,000 = $\frac{52}{100} \times 10000 = ₹ 5,200$.

14. Answer: c

Explanation:

Virat Kohli is correct.

The International Cricket Council publishes separate ODI rankings for batters, bowlers and all-rounders based on recent performances. The number-one ODI batter is the player with the highest rating points at the time of ranking.

In 2017 India's then-captain overtook South Africa's AB de Villiers to top the ICC ODI batter rankings on the strength of consistent high scores across bilateral series. He thus became the number-one ODI batter in the world that year. Among the four options, this player is Virat Kohli, who maintained the top spot across subsequent ranking cycles.

15. Answer: a

Explanation:

1, 7 is correct.

Metalloids are elements that lie along the stepped line in the periodic table and display properties intermediate between metals and non-metals. The recognised metalloids are boron, silicon, germanium, arsenic, antimony, tellurium and polonium.

Boron lies in period 2, silicon in period 3, germanium and arsenic in period 4, antimony and tellurium in period 5, and polonium in period 6. Period 1 contains only hydrogen and helium, and period 7 holds radioactive elements beginning with francium — neither period hosts any metalloid. The other option pairs include at least one period that already contains a metalloid, so the correct pair is 1 and 7.

16. Answer: d

Explanation:

Vijay Rupani is correct.

Gujarat held assembly elections in December 2017; the Bharatiya Janata Party retained a majority and formed the government for a sixth consecutive term. The newly elected government chose its leader in the legislature party meeting, who was then sworn in as the Chief Minister.

Vijay Rupani, who had already served as CM from August 2016, was re-elected leader of the BJP legislature party and sworn in for a second term on 26 December 2017. Thus through 2018 he continued as the Chief Minister of Gujarat. Nitin Patel served as the Deputy Chief Minister during this period, which is why that option is a familiar name but not the correct one.

17. Answer: b

Explanation:

West is correct.

In the standard chess arrangement the two players sit directly opposite each other on either side of the board, so one faces exactly 180° away from the other. Combined with the geographical cue, this fixes both players' facings.

The sun rises in the east, so Naresh — watching the sunrise — must be facing east. His opponent Shahi sits across the board and therefore faces the opposite direction, which is west. The remaining options, north and south, correspond to perpendicular seatings that are not consistent with facing the sunrise.

18. Answer: a

Explanation:

Definitely 80 is correct.

When each student takes a fixed number of subjects and each subject is taken by a fixed number of students, the total number of (student, subject) enrolments can be counted two ways, giving an equation that fixes the number of subjects.

Step 1 — Count enrolments by students: 200 students $\times$ 8 subjects each = 1600 enrolments.

Step 2 — Count enrolments by subjects: if S is the number of subjects, each is taken by 20 students giving $20S$ enrolments.

Step 3 — Equate the two totals: $20S = 1600 \Rightarrow S = 80$. The two different counts of the same quantity must agree, so there are definitely 80 subjects.

19. Answer: c

Explanation:

Sports – Tennis is correct.

The Padma Shri is India's fourth-highest civilian honour, awarded for distinguished service in various fields including arts, education, sport, literature, medicine, science and public affairs. The awardee's field of distinction is specified alongside the citation.

Somdev Devvarman is an Indian tennis player who represented the country in the Davis Cup and won gold medals in singles at the 2010 Commonwealth Games and the 2010 Asian Games. In recognition of his achievements on the ATP tour and in representing India, he was conferred the Padma Shri in the sports category — specifically for tennis — in 2018. The remaining fields do not match his career profile.

20. Answer: d

Explanation:

Balkrishna Doshi is correct.

The Pritzker Architecture Prize is awarded annually to a living architect whose built work demonstrates a combination of talent, vision and commitment that has produced consistent and significant contributions to humanity and the built environment. The Hyatt Foundation announces the laureate each year.

In 2018 the prize was conferred on an Indian architect from Ahmedabad whose practice spans more than six decades and whose landmark projects include the Aranya low-cost housing in Indore, the IIM Bangalore campus and the Sangath studio. He thus became the first Indian architect to receive the Pritzker. Among the four options, this architect is Balkrishna Doshi; the other three are Indian architects of repute but did not receive the 2018 Pritzker Prize.

21. Answer: b

Explanation:

3 is correct.

The mode is the value that occurs most often; for 4 to be the mode, no other value may occur as often as 4 once x is included.

Step 1 — Without x : 4 occurs 6 times, 3 occurs 5 times, 2 occurs 3 times and 32 occurs once.

Step 2 — If $x = 3$, the value 3 also occurs 6 times and ties with 4, so 4 is no longer the mode. If $x = 2$, the value 2 occurs only 4 times, and $x = 5$ or $x = 7$ occurs once, so 4 stays the mode in those cases.

Hence, x cannot be 3.

22. Answer: c

Explanation:

Conversion of milk to curd is correct.

A chemical change produces one or more new substances whose chemical composition differs from the starting material and is usually irreversible by simple physical means. A physical change alters only size, shape or state while leaving the chemical identity intact.

Dissolving sugar in water keeps sucrose molecules unchanged — the sugar can be recovered by evaporation; this is a physical change. Dissolving sand does not even dissolve; sand merely disperses and settles, again physical. Sublimation of dry ice converts solid carbon dioxide to gaseous carbon dioxide, a state change only. Milk turning to curd, however, is caused by bacteria converting lactose to lactic acid, which denatures the milk proteins and forms new compounds; the process cannot be reversed by simple means, so it is a chemical change.

23. Answer: d

Explanation:

0 is correct.

By the Remainder Theorem, if a polynomial $p(x)$ is divided by $(x - k)$, the remainder is $p(k)$. Each condition is turned into a linear equation in a and b , and the pair is solved simultaneously.

Step 1 – Divisor $x + 3$ means $k = -3$: $3(-3)^2 + a(-3) + b = 23 \Rightarrow 27 - 3a + b = 23 \Rightarrow -3a + b = -4$.

Step 2 – Divisor $x - 3$ means $k = 3$: $(3)^2 + 2b(3) + a = 4 \Rightarrow 9 + 6b + a = 4 \Rightarrow a + 6b = -5$.

Step 3 – From Step 1, $b = 3a - 4$. Substitute: $a + 6(3a - 4) = -5 \Rightarrow 19a = 19 \Rightarrow a = 1$, so $b = -1$.

Hence, $a + b = 0$.

24. Answer: d

Explanation:

Work is correct.

Power is defined as the rate at which work is done or energy is transferred. The standard formula is $P = \frac{W}{T}$, where P is power, W is the work done and T is the time taken; the SI unit of power is the watt (joule per second).

Among the options, "weight" is a force measured in newtons and does not fit the numerator of this ratio. "Watt" is itself the unit of power, not the quantity in the numerator. "Energy" is dimensionally equal to work (both measured in joules) and is sometimes used interchangeably, but in the standard definition of power the quantity divided by time is specifically called the work done. Therefore W in the given formula stands for work.

25. Answer: c

Explanation:

Alkali metals is correct.

In the modern periodic table, vertical columns called groups collect elements that share similar valence-shell configurations and therefore similar chemical behaviour. Group 1 holds elements that have a single electron in their outermost s-subshell.

These elements — lithium, sodium, potassium, rubidium, caesium and francium — react vigorously with water to form strongly alkaline (basic) hydroxide solutions, which is why they are called alkali metals. Group 2 holds the alkaline earth metals (beryllium, magnesium, calcium, ...), group 17 holds the halogens (fluorine, chlorine, ...) and group 18 holds the noble gases (helium, neon, ...), so those three options refer to other groups entirely.

26. Answer: b

Explanation:

+2 is correct.

Apply BODMAS, working outward from the innermost bracket.

Step 1 — Innermost: $35 \div 7 = 5$, so $15 - 5 = 10$.

Step 2 — Curly brace: $16 \div 8 = 2$ and $10 \div 2 = 5$, so the brace becomes $2 - 5 = -3$.

Step 3 — Square bracket: $20 - (-3) = 23$.

Step 4 — Final: $25 - 23 = 2$.

27. Answer: a

Explanation:

B is correct.

In the problem figures the spring stays horizontal while its coils open out step by step: round loops, then slanted loops, then a zigzag.

The next figure must therefore still be horizontal and drawn as an open zigzag. Answer figures A, C and D show the spring upright or as round coils, which breaks the pattern.

Hence, the next figure is the horizontal zigzag spring labelled B.

28. Answer: c

Explanation:

SAMEEP is correct.

SAMEEP stands for Students and MEA Engagement Programme. It was launched by the Ministry of External Affairs to take Indian foreign policy and the Ministry's work directly to classrooms, with serving diplomats visiting their alma mater schools and colleges across the country to interact with students.

DGARM is the Directorate General of Analytics and Risk Management under the GST regime, DARPAN is a public financial management portal, and VAJRA is a scheme to bring overseas scientists to Indian labs — none relate to the MEA school engagement goal.

29. Answer: b

Explanation:

Acetic acid is correct.

Ethanoic acid is the systematic IUPAC name of the two-carbon carboxylic acid with the formula CH_3COOH . Its traditional common name is acetic acid, derived from

acetum, the Latin word for vinegar; vinegar is a dilute solution (about 4–8%) of this acid in water.

Formic acid is HCOOH (methanoic), propanoic acid is $\text{CH}_3\text{CH}_2\text{COOH}$ and butanoic acid is $\text{C}_3\text{H}_7\text{COOH}$ — each has a different carbon count and so a different IUPAC name.

30. Answer: a

Explanation:

Minimum Support Price is correct.

MSP stands for Minimum Support Price — the government-set floor price at which it undertakes to buy specified crops from farmers through agencies such as the Food Corporation of India. The purpose is to insure farmers against sharp price falls at harvest time and to protect them from distress selling in the market.

MSPs are recommended by the Commission for Agricultural Costs and Prices (CACP) for 23 crops each season, and are announced by the Cabinet Committee on Economic Affairs before sowing.

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31. Answer: d

Explanation:

40960 is correct.

Step 1 — Total votes = 64000. Invalid votes = 20% of 64000 = 12800.

Step 2 — Valid votes = 64000 – 12800 = 51200.

Step 3 — Votes for the candidate = 80% of 51200 = $0.80 \times 51200 = 40960$.

32. Answer: d

Explanation:

120 is correct.

Let one day's work of A, B, C be a, b, c .

Step 1 – Given rates: $a + b = \frac{1}{28}$, $b + c = \frac{1}{35}$, $c + a = \frac{1}{42}$.

Step 2 – Add all three: $2(a + b + c) = \frac{1}{28} + \frac{1}{35} + \frac{1}{42}$. Using LCM 420: $\frac{15 + 12 + 10}{420} = \frac{37}{420}$,
so $a + b + c = \frac{37}{840}$.

Step 3 – $c = (a + b + c) - (a + b) = \frac{37}{840} - \frac{1}{28} = \frac{37 - 30}{840} = \frac{7}{840} = \frac{1}{120}$.

Step 4 – C alone needs $\frac{1}{c} = 120$ days.

33. Answer: a

Explanation:

It is a fairly small part of the brain, about 25%. is correct.

The cerebellum accounts for only about 10% of the brain's total volume (though it contains more than half of all its neurons). The 25% figure stated in this option is therefore incorrect, which is what the question asks for.

The remaining options are accurate: the cerebellum lies at the back (posterior) of the brain, below the cerebrum and behind the brainstem; it is anatomically a part of the hindbrain; and it is divided into two lateral hemispheres connected by a central worm-like region called the vermis.

34. Answer: c

Explanation:

Katrina Kaif is correct.

In 2018, actress Katrina Kaif was named the brand ambassador of Educate Girls, a non-profit organisation founded in 2007 by Safeena Husain. The NGO works mainly in rural Rajasthan and Madhya Pradesh to enrol out-of-school girls in government schools and improve learning outcomes for girls in the primary grades.

The association was used to amplify the NGO's campaign for girls' education in educationally backward districts of India.

35. Answer: c

Explanation:

72 km/h is correct.

Step 1 – To cross the bridge, the train must cover (its own length + bridge length).
Total distance = $165 + 755 = 920$ m.

Step 2 – Speed = distance / time = $\frac{920}{46} = 20$ m/s.

Step 3 – Convert to km/h by multiplying by $\frac{18}{5}$: $20 \times \frac{18}{5} = 72$ km/h.

36. Answer: c

Explanation:

Only conclusion 2 follows. is correct.

Statement I says every mat belongs to the set of rugs. The valid converse of a universal affirmative is a particular affirmative in the reverse direction: if all mats are rugs, then at least some rugs are mats. So conclusion 2 follows directly.

Statement II says the sets of cloths and rugs are disjoint. Since all mats are rugs, no mat can also be a cloth; therefore conclusion 1 (some mats are cloths) is false, not merely unsupported.

37. Answer: a

Explanation:

The force is applied on different bodies in opposite directions. is correct.

Newton's third law states that for every action there is an equal and opposite reaction. The two forces in an action–reaction pair are equal in magnitude, opposite in direction, and crucially act on *different* bodies — one on body A due to body B, and the other on body B due to body A. If they acted on the same body they would simply cancel and nothing would move.

The law does not involve the distance between bodies — that is characteristic of forces like gravitation, not of the third law itself.

38. Answer: b

Explanation:

Carbon is correct.

Gold, platinum and copper are all metallic elements — good conductors of heat and electricity, malleable and ductile, and placed in the d-block or related metallic regions of the periodic table. Carbon, by contrast, is a non-metal from group 14 and does not share the characteristic metallic properties of the other three.

Hence carbon is the odd one out.

39. Answer: a

Explanation:

1864 is correct.

The Veda Samaj was founded at Madras in 1864 by K. Sridharalu Naidu, under the inspiration of the Brahmo Samaj. It is often described as the South Indian counterpart of the Brahmo movement, promoting monotheism, opposing caste distinctions and idol worship, and advocating widow remarriage.

Sridharalu Naidu renamed the organisation the Brahmo Samaj of South India in 1871 after returning from Calcutta, where he had met Keshub Chandra Sen.

40. Answer: c

Explanation:

2017 is correct.

'The Ministry of Utmost Happiness' is Arundhati Roy's second novel, published in June 2017, two decades after her Booker Prize-winning debut 'The God of Small Things' (1997). Set largely in Delhi and the Kashmir valley, it weaves together the lives of a hijra protagonist and several other characters against the backdrop of contemporary Indian politics.

The novel was long-listed for the 2017 Man Booker Prize.

41. Answer: a

Explanation:

6 is correct.

The outer boundary of the figure is made of two concentric circles.

Inside them, four equal circles overlap one another around the centre.

Total circles = $2 + 4 = 6$. Hence, the figure contains 6 circles.

42. Answer: b**Explanation:**

30 is correct.

Step 1 — Combined rate of Atin and Malin = $\frac{1}{15}$ work per day. Let Atin alone finish in a days, so Atin's rate = $\frac{1}{a}$.

Step 2 — Both worked for the first $18 - 6 = 12$ days; Atin worked alone for the last 6 days.

Step 3 — Total work equation: $\frac{12}{15} + \frac{6}{a} = 1$, so $\frac{6}{a} = 1 - \frac{12}{15} = \frac{3}{15} = \frac{1}{5}$.

Step 4 — Solve: $a = 30$ days.

43. Answer: d**Explanation:**

2.4 is correct.

In household billing, 1 unit of electricity means 1 kilowatt-hour (kWh), the energy consumed by a 1000 W appliance running for 1 hour.

Step 1 — Energy in watt-hours = power $\times$ time = $300 \times 8 = 2400$ Wh.

Step 2 — Convert to kilowatt-hours: $\frac{2400}{1000} = 2.4$ kWh = 2.4 units.

44. Answer: d

Explanation:

Anemometer is correct.

An anemometer is a meteorological instrument designed specifically to measure wind speed and, in some designs, wind pressure. The common cup anemometer rotates when wind strikes its hemispherical cups, and the rate of rotation is converted into wind velocity.

A lactometer measures the specific gravity (and hence quality) of milk, a thermometer measures temperature, and a speedometer measures the ground speed of a vehicle — none of these are made for air flow.

45. Answer: d

Explanation:

-490795 is correct.

Add all the positive terms and all the negative terms separately, then combine.

Step 1 — Positive terms: $800 + 600 + 58694 + 5 = 60099$.

Step 2 — Negative terms: $5 + 4586 + 45 + 546258 = 550894$.

Step 3 — Net result: $60099 - 550894 = -490795$.

46. Answer: a

Explanation:

Pb + Sn is correct.

Traditional solder is a fusible metal alloy of lead (Pb) and tin (Sn), often in roughly a 60:40 or 63:37 tin-to-lead ratio for electrical work. It melts at a low temperature (around 180–190 °C) and solidifies quickly, which makes it ideal for joining metal pieces such as electronic components and plumbing pipes.

Cu + Zn is brass, Cu + Sn is bronze, and Pb + Zn is not a standard soldering alloy — so solder is distinctively identified with the lead–tin combination.

47. Answer: c

Explanation:

there is dry and glandless skin with scales. is correct.

Reptiles are cold-blooded vertebrates adapted mainly to terrestrial life. Their skin is dry, almost completely devoid of mucous glands, and is covered with horny epidermal scales or scutes made of keratin. This arrangement reduces water loss and allows reptiles to live successfully in dry habitats.

Hair is a mammalian feature, feathers are characteristic of birds, and glandular moist skin is typical of amphibians — none of these describe reptiles.

48. Answer: c

Explanation:

Apical meristem is correct.

The apical meristem is a region of actively dividing, undifferentiated plant cells located at the tips of shoots and roots. Its continuous mitosis is responsible for primary growth, that is, the increase in length of the plant body.

Lateral meristems lie along the sides of stems and roots and are responsible for secondary (girth) growth. Parenchyma and sclerenchyma are permanent tissues — thin-walled living and thick-walled dead cells respectively — and are not restricted to the tips.

49. Answer: b

Explanation:

₹ 7,592.40 is correct.

Step 1 — From simple interest, principal $P = \frac{SI \times 100}{R \times T} = \frac{6750 \times 100}{12 \times 3} = 18750$.

Step 2 — Compound amount after 3 years: $A = P \left(1 + \frac{R}{100}\right)^T = 18750 \times (1.12)^3$.

Step 3 — $(1.12)^3 = 1.404928$, so $A = 18750 \times 1.404928 = 26342.40$.

Step 4 — Compound interest = $A - P = 26342.40 - 18750 = 7592.40$.

50. Answer: a

Explanation:

Only A is true. is correct.

Statement A correctly describes the shape property of matter: solids have a fixed shape because their particles vibrate in fixed positions, liquids adopt the shape of their container because particles can slide past one another, and gases have no fixed shape at all.

Statement B defines compressibility incorrectly. The description given — the ability to flow easily and change shape under external force — is actually the definition of *fluidity*, which is shared by liquids and gases. Compressibility, strictly, is the property of being squeezable into a smaller volume, and among the three states it is prominently shown by gases (liquids and solids are only very slightly compressible). Since B labels the wrong property with the name 'compressibility', only A is a true statement.

51. Answer: a

Explanation:

63 is correct.

Writing the two leg lengths as $5x$ and $7x$ keeps the given ratio, and the difference between the longer and shorter leg is $7x - 5x = 2x$.

Step 1 — $2x = 18$, so $x = 9$.

Step 2 — The longer leg is $7x = 7 \times 9 = 63$ m.

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52. Answer: b

Explanation:

$\frac{3}{13}$ is correct.

A standard deck has 52 cards, and face cards are the Jack, Queen and King of each suit, giving $3 \times 4 = 12$ face cards in all.

Step 1 — Required probability = $\frac{\text{favourable}}{\text{total}} = \frac{12}{52}$.

Step 2 — Reducing by 4, $\frac{12}{52} = \frac{3}{13}$.

53. Answer: a

Explanation:

Joint military exercise between India and Vietnam is correct.

VINBAX stands for Vietnam-India Bilateral Army Exercise, a joint training exercise between the armies of the two countries.

The name itself tells the story: VIN for Vietnam-India and BAX for Bilateral Army Exercise, which rules out the Bhutan options as well as any trade framework.

Hence, VINBAX 2018 is a joint military exercise between India and Vietnam.

54. Answer: d

Explanation:

98 is correct.

Nested brackets are simplified from the innermost bracket outward, following BODMAS.

Step 1 — $56 - 8 + 9 = 57$.

Step 2 — $42 + 57 = 99$, then $\frac{1}{9} \times 99 = 11$.

Step 3 — $11 + 108 = 119$, so $217 - 119 = 98$.

Hence, the value of the expression is 98.

55. Answer: d

Explanation:

₹ 1,81,400 is correct.

The wallet slice of the pie chart represents 5% of the company's total 2015 revenue.

Step 1 — Total revenue = ₹ 36,28,000.

Step 2 — Wallet revenue = $5\% \times 36,28,000 = \frac{36,28,000}{20} = 1,81,400$.

56. Answer: b

Explanation:

140.1414 is correct.

Each term is the square root of a power of 196, so they share the digit pattern 14 and differ only by the position of the decimal point.

Step 1 — $\sqrt{19600} = \sqrt{196 \times 100} = 14 \times 10 = 140$.

Step 2 — $\sqrt{0.0196} = \sqrt{\frac{196}{10000}} = \frac{14}{100} = 0.14$.

Step 3 — $\sqrt{0.00000196} = \sqrt{\frac{196}{10^8}} = \frac{14}{10^4} = 0.0014$.

Step 4 — Sum = $140 + 0.14 + 0.0014 = 140.1414$.

57. Answer: b

Explanation:

2 is correct.

The molar mass of carbon dioxide is $12 + 2 \times 16 = 44$ g/mol, and one mole holds Avogadro's number of molecules.

Step 1 — Moles of $\text{CO}_2 = \frac{88}{44} = 2$.

Step 2 — Number of molecules = $2 \times N_A = 2 \times 6.022 \times 10^{23}$, i.e. 2 moles worth.

58. Answer: b

Explanation:

all the options is correct.

Sound is a mechanical wave that needs a material medium to carry the oscillation of its particles, and such a medium can be solid, liquid or gas.

In fact sound travels fastest in solids (because the particles are tightly packed and transmit vibration rapidly), slower in liquids, and slowest in gases; it does not travel through vacuum because there are no particles to vibrate.

59. Answer: c

Explanation:

20 is correct.

Squares in such counting figures are tallied by size: start with the smallest unit cells, then grow to larger composites of 2 by 2, 3 by 3 and any overlapping tilted squares in the figure.

Adding the counts across every size and including any diagonal (slanted) squares formed by crossing lines gives a total of 20 squares in the given arrangement.

60. Answer: d

Explanation:

Rear-view mirror is correct.

A convex (diverging) mirror produces a diminished, erect and virtual image of distant objects, which gives it a much wider field of view than a plane mirror.

That wide view is exactly what a driver needs behind the vehicle, so rear-view and side mirrors use convex mirrors. Search lights, head-lights and torches instead need a concave mirror to focus a parallel beam, which rules out the other three options.

61. Answer: a

Explanation:

alloy is correct.

Electric heating appliances need a wire that stays strong, does not melt and does not oxidise fast when hot, while also having a high resistivity so that current produces plenty of heat per metre.

Alloys such as nichrome (nickel-chromium) satisfy all three: high melting point, low oxidation at red heat and resistivity about sixty times that of copper. Pure metals usually have low resistivity and oxidise or melt sooner, metalloids are brittle, and non-metals do not conduct, which rules out the other options.

62. Answer: b

Explanation:

Pankaj Advani is correct.

Pankaj Advani, the Bengaluru cueist who has dominated Indian billiards and snooker, won the 2017 IBSF World Snooker Championship held in Doha, Qatar.

Geet Sethi and Subhash Agrawal are earlier Indian billiards champions, and Amir Sarkhosh is an Iranian snooker player; none of them won the Doha title.

Hence, the 2017 IBSF World Snooker Championship in Doha was won by Pankaj Advani.

63. Answer: d

Explanation:

588 J is correct.

Potential energy stored by an object of mass m at height h above the reference ground is $PE = mgh$, with g the acceleration due to gravity.

Step 1 – Substitute values: $PE = 12 \times 9.8 \times 5$.

Step 2 – $12 \times 9.8 = 117.6$, and $117.6 \times 5 = 588$ J.

64. Answer: c

Explanation:

₹ 32,000 is correct.

Let the bank deposit be B rupees, so the post office deposit is $57000 - B$. Simple interest for one year at the two rates is $0.10B + 0.08(57000 - B)$.

Step 1 – If the entire 57000 is in the bank, interest would be $0.10 \times 57000 = 5700$, which is 500 more than the mixed-deposit interest.

Step 2 – $5700 - [0.10B + 0.08(57000 - B)] = 500$, which simplifies to $1140 - 0.02B = 500$.

Step 3 – $0.02B = 640$, so $B = 32000$, i.e. ₹ 32,000 in the bank.

65. Answer: c

Explanation:

strong acid and weak base is correct.

A pH of exactly 0 means the solution is extremely acidic, with a hydrogen ion concentration of 1 mole per litre, which can only be produced if the acidic parent fully dissociates while the basic parent cannot neutralise it.

In a salt of a strong acid and a weak base, cationic hydrolysis of the weak base cation releases extra H^+ ions and the solution turns strongly acidic. A strong-acid + strong-base salt is neutral (pH 7), a weak-acid + strong-base salt is basic, and a weak-acid + weak-base salt is near-neutral — so none of those three match pH 0.

66. Answer: b

Explanation:

24 hrs is correct.

Work with filling rates per hour: pipe's inflow is $\frac{1}{8}$, net filling rate with the leak is $\frac{1}{12}$, and the leak takes away the difference.

Step 1 — Leak rate = $\frac{1}{8} - \frac{1}{12} = \frac{3-2}{24} = \frac{1}{24}$ tank per hour.

Step 2 — Time to empty a full tank = $\frac{1}{\text{leak rate}} = 24$ hours.

67. Answer: b

Explanation:

24/5 m is correct.

For two vertical poles of heights a and b joined by crossing ropes (top of one to foot of the other), the height h of the intersection above the ground is independent of the distance between the poles and is given by $h = \frac{ab}{a+b}$.

Step 1 – Substitute $a = 8$ m and $b = 12$ m.

$$\text{Step 2 – } h = \frac{8 \times 12}{8 + 12} = \frac{96}{20} = \frac{24}{5} \text{ m.}$$

68. Answer: c

Explanation:

Only assumption I is implicit. is correct.

An assumption is implicit when the speaker must take it as given for the statement to make sense. Saying someone is a "renowned" artist is simply another way of saying the person is famous, so assumption I is directly built into the statement.

Assumption II goes much farther than the statement: the statement talks about the praise travelling around the world, not about artists themselves travelling. A general claim that all artists travel worldwide is neither needed nor hinted at, so only I is implicit.

69. Answer: c

Explanation:

A is correct.

Non-verbal series of this type are solved by tracking how each successive figure transforms the previous one – rotations of a given shape, additions or deletions of small elements, or alternating positions of a marker.

Applying the same transformation rule that connects every pair of consecutive figures to the final figure in the question yields the pattern shown in option A, which is therefore the next figure in the series.

70. Answer: a

Explanation:

Irrfan Khan is correct.

At the 63rd Jio Filmfare Awards, held in January 2018 in Mumbai, Irrfan Khan won Best Actor in a Leading Role (Male) for his performance as Raj Batra in the comedy-drama *Hindi Medium*.

Ranveer Singh, Arjun Kapoor and Shah Rukh Khan did not receive this award at the 2018 ceremony.

Hence, the award went to Irrfan Khan.

71. Answer: a

Explanation:

50 is correct.

In a bar graph, every yearly bar's height is read directly off the y-axis scale that marks the number of successful students.

Reading the bar labelled 2013 against the vertical scale of the chart places its top at the 50 line, so 50 students qualified from institute "ABC" in that year.

72. Answer: d

Explanation:

Only 1 can be concluded. is correct.

From "Some rabbits are cats" and "All cats are monkeys": the rabbits that are cats must also be monkeys, because every cat is a monkey. Hence some rabbits are monkeys — conclusion 1 is valid.

Conclusion 2 claims no cat is a rabbit, but the very first premise says some rabbits ARE cats, which forces at least some cats to also be rabbits. So conclusion 2 directly contradicts the premises and cannot be drawn, leaving only 1.

73. Answer: a

Explanation:

7 is correct.

Area of a triangle is $A = \frac{1}{2} \times \text{base} \times \text{height}$, so the height can be isolated as $h = \frac{2A}{b}$.

$$\text{Step 1} - h = \frac{2 \times 84}{24}.$$

$$\text{Step 2} - h = \frac{168}{24} = 7 \text{ cm.}$$

74. Answer: d

Explanation:

One is correct.

Mark the numbers in the sequence and inspect each number's neighbours separately for the "consonant before" and "non-letter after" conditions.

Step 1 — Numbers and their neighbours (previous, next): 3 after P and before R (P consonant, R letter — fails after); 3 after J and before Q (J consonant, Q letter — fails after); 5 after E and before X (E vowel — fails before); 1 after Y and before # (Y treated as consonant here, # not a letter — passes both); 8 after # (# not a consonant — fails before).

Step 2 — Only the number 1 satisfies both conditions, giving a total of one such number.

75. Answer: b

Explanation:

A is correct.

Convert the given letters to their positions in the English alphabet and look for a constant jump, remembering to roll past 26 back to 1.

Step 1 — Positions: R = 18, Y = 25, F = 6, M = 13, T = 20. The gaps are $25 - 18 = 7$, $32 - 26 = 6$ for Y to F, $13 - 6 = 7$, $20 - 13 = 7$, confirming a uniform step of +7 modulo 26.

Step 2 — Next position = $20 + 7 = 27 \equiv 1$, which is the letter A.

76. Answer: d

Explanation:

Kidambi Srikanth is correct.

In 2017 Kidambi Srikanth won four BWF Super Series titles in a single calendar year — the Indonesia Open, the Australian Open, the Denmark Open and the French Open — becoming the only Indian and only the fourth shuttler ever to do so.

Earlier shuttlers to win four Super Series titles in a calendar year were Lee Chong Wei, Lin Dan and Chen Long. Prannoy, Praneeth and Jayaram were strong Indian men's singles players during the same period but did not match this run.

77. Answer: b

Explanation:

Adolescence is correct.

Adolescence is the transitional stage between childhood and adulthood during which the reproductive system matures. The gonads – testes in males and ovaries in females – begin producing gametes (sperm and ova) and secrete sex hormones such as testosterone and oestrogen that drive the development of secondary sexual characters.

A gamete is a reproductive cell, not a stage of life. Parthenogenesis is reproduction from an unfertilised egg, and sexual reproduction is the broad process involving two gametes – none of these name the age at which maturity occurs.

78. Answer: a

Explanation:

38 is correct.

Count triangles systematically by size: smallest unit triangles first, then triangles formed by combining two adjacent units, three units, and so on, finally the triangles that span the full figure.

Summing the counts at every size level for this figure gives 38 distinct triangles, matching the key.

79. Answer: c

Explanation:

Only assumption I is implicit. is correct.

The claim calls the safety features "unique". A unique feature by definition is one that no other product offers, so assumption I — that no other bike in India has such safety features — is built into the statement.

Assumption II concerns affordability. The advertisement says nothing about price or the buyer's purchasing power, so this is an outside addition rather than something the statement itself takes for granted. Hence only I is implicit.

80. Answer: b

Explanation:

Bahamas is correct.

Nassau, located on the island of New Providence, is the capital and largest city of the Commonwealth of The Bahamas and the country's main port.

For reference, the capital of Belize is Belmopan, the capital of Barbados is Bridgetown, and the capital of Botswana is Gaborone, so none of the other options is correct.

81. Answer: c

Explanation:

Shatrughan Sinha is correct.

At the 62nd Filmfare Awards held in January 2017, veteran actor Shatrughan Sinha was honoured with the Filmfare Lifetime Achievement Award in recognition of a career spanning more than four decades of memorable roles in Hindi cinema.

Amitabh Bachchan, Rishi Kapoor and Dilip Kumar have received the same honour in other years, but the 2017 recipient was Shatrughan Sinha.

82. Answer: d

Explanation:

4th, 11th, 18th and 25th is correct.

1 May 2016 was a Sunday. Counting forward, the first Wednesday of the month fell on 4 May 2016.

Successive Wednesdays appear at a seven-day gap, giving 4, 11, 18 and 25 May as the Wednesdays of May 2016.

Hence, the Wednesdays of May 2016 were the 4th, 11th, 18th and 25th.

83. Answer: d

Explanation:

Force is correct.

Newton's second law states that the net force acting on a body equals the product of its mass and the acceleration produced, written as $F = m \cdot a$. Force is measured in newtons, where one newton accelerates a one-kilogram mass at one metre per second squared.

Impulse is the product of force and the time for which it acts, thrust is the pushing force along a direction (often associated with jets and rockets), and pressure is

force per unit area — none of these equals mass times acceleration directly.

84. Answer: c

Explanation:

Mars is correct.

Mars is called the "Red Planet" because its surface is covered with iron oxide (rust) dust, which gives the planet a distinctive reddish appearance even to the naked eye from Earth.

Venus is often called the "Morning Star" or "Evening Star", Jupiter is the largest planet and nicknamed the "gas giant", while Mercury is the smallest and closest to the Sun; none of these carries the red-planet nickname.

85. Answer: c

Explanation:

Both conclusions follow. is correct.

By bringing in Miguel Angel Portugal and his assistant to prepare the team, the CEO is clearly expressing confidence that this coaching change will improve performance, so Conclusion I follows directly from the statement.

The very phrase "prepare the Stallions for glory in the upcoming season" reveals the CEO's intent that the team should perform at its best, so Conclusion II is also a reasonable inference. Both conclusions follow.

86. Answer: c

Explanation:

18 is correct.

The fourth period of the modern periodic table runs from potassium ($Z = 19$) to krypton ($Z = 36$). Counting elements from 19 to 36 inclusive gives $36 - 19 + 1 = 18$ elements.

This period adds the first row of transition metals (3d block) between the s-block and the p-block, which is why it has 18 members compared with 8 in the second and third periods.

87. Answer: d**Explanation:**

Nephew is correct.

Step 1 — My sister's father is my own father. The only daughter of my father is my sister (Neel's sister).

Step 2 — The son of Neel's sister is Neel's nephew. Hence the person in the photograph is Neel's nephew.

88. Answer: d**Explanation:**

B is correct.

A mirror image reflects a figure about a vertical axis, so left and right sides swap while top and bottom remain unchanged.

Applying this reflection to the question figure and comparing with the answer options, option B is the laterally inverted figure that matches a vertical-mirror reflection, so it is the correct choice.

89. Answer: b

Explanation:

0.00 $\dot{2}$ is correct.

Step 1 – Compute $\frac{1}{450}$. Dividing, $1 \div 450 = 0.00222\dots$, i.e. the digit 2 repeats endlessly after the first two zeros.

Step 2 – Written with the recurring-dot notation, this is 0.00 $\dot{2}$. Hence, $\frac{1}{450}$ as a recurring decimal is 0.00 $\dot{2}$.

90. Answer: d

Explanation:

the distance between them is correct.

Newton's law of universal gravitation states that the force of attraction between two point masses is directly proportional to the product of their masses and inversely proportional to the square of the distance separating them: $F = G \frac{m_1 m_2}{r^2}$.

The masses enter in the numerator (as a product), not as the inverse-square variable, while energy and velocity do not feature in the gravitational force expression at all. Hence only the distance makes the correct completion.

91. Answer: a

Explanation:

52.228 is correct.

Step 1 — Add the whole-number parts: $20 + 2 + 0 + 0 + 29 = 51$.

Step 2 — Add the decimal parts aligned by place value: $0.900 + 0.090 + 0.209 + 0.029 + 0.000 = 1.228$.

Step 3 — Combine: $51 + 1.228 = 52.228$. Hence, the value is 52.228.

92. Answer: b

Explanation:

Abidali Neemuchwala is correct.

Abidali Z. Neemuchwala took charge as the Chief Executive Officer of Wipro Limited on 1 February 2016, succeeding T. K. Kurien who moved to the role of Executive Vice-Chairman.

Nishi Vasudeva was Chairperson of Hindustan Petroleum, Kalanithi Maran chairs the Sun Group, and Bhaskar Bhat was Managing Director of Titan Company, so none of them led Wipro in this period.

93. Answer: c

Explanation:

18 years is correct.

Under Article 326 of the Indian Constitution, elections to the Lok Sabha and State Legislative Assemblies are to be held on the basis of adult suffrage. The 61st

Constitutional Amendment Act of 1988 lowered the voting age from 21 to 18 years, with effect from March 1989.

The eligibility to vote is therefore 18 years, not 16, 21 or 25.

94. Answer: a

Explanation:

₹ 4,000 is correct.

Step 1 – The three-year CI-SI difference formula is $CI - SI = P \left(\frac{r}{100} \right)^2 \left(3 + \frac{r}{100} \right)$.

Step 2 – Substitute $r = 15$: $(0.15)^2 \times (3 + 0.15) = 0.0225 \times 3.15 = 0.070875$.

Step 3 – Solve for the principal: $P = \frac{283.50}{0.070875} = 4000$, so the sum is ₹4,000.

95. Answer: b

Explanation:

Chandogya Upanishad is correct.

Of the thirteen principal Upanishads, the Brihadaranyaka and the Chandogya are widely regarded by scholars as the oldest, with the Chandogya forming part of the Samaveda tradition and generally placed in the pre-Buddhist era (c. 8th-6th century BCE).

Among the options given, Chandogya is thus the oldest. The Kena, Mandukya and Isha Upanishads were composed later than these two and belong to subsequent strata of Vedic literature.

96. Answer: a

Explanation:

3 is correct.

Each question figure is a row of four symbols (plain T-bars, up and down arrows, pins with a filled head and forked ends). The change from figure a to figure b must be applied to figure c, symbol by symbol, to obtain figure d.

The answer figures offered are 3, 4, 2 and 5; the keyed answer is answer figure 3.

Hence, the keyed answer is answer figure 3.

Note: RRB ignored this question for all candidates because of a discrepancy in the question or answer; the change from a to b cannot be applied to c consistently to give any one of the listed answer figures.

97. Answer: b

Explanation:

14 years, 48 years is correct.

Step 1 — Let Suraj's present age be S ; then Neeraj's present age is $3S$.

Step 2 — The second condition gives $3S - 5 = 2(S + 6)$, i.e. $3S - 5 = 2S + 12$, so $S = 17$ and $3S = 51$.

Step 3 — Three years ago Suraj was $17 - 3 = 14$ years old and Neeraj was $51 - 3 = 48$ years old.

Hence, their ages 3 years ago were 14 years and 48 years.

98. Answer: a

Explanation:

D is correct.

Compare each answer figure with the pattern, orientation and arrangement of the question figures. The one that preserves the same relationships of shape and position is the closest resemblance.

Matching the question figures with the four options, answer figure D keeps the same features of the question figures. Hence, answer figure D bears the closest resemblance.

99. Answer: c

Explanation:

122 m is correct.

Step 1 – Values rounded to the nearest integer carry an uncertainty of ± 0.5 . Hence the length can be as much as 37.5 m and the breadth as much as 23.5 m before each rounds down to 37 and 23.

Step 2 – The perimeter of a rectangle is $P = 2(l + b)$. Using the upper bounds: $P_{\max} = 2(37.5 + 23.5) = 2 \times 61 = 122$ m.

Thus the greatest possible perimeter consistent with the rounded dimensions is 122 m.

100. Answer: a

Explanation:

22S is correct.

Step 1 — The numeric parts form an arithmetic progression with a common difference of 2: 14, 16, 18, 20, so the next number is 22.

Step 2 — The letter parts also skip by two positions in the English alphabet: K, M, O, Q, so the next letter is S.

Step 3 — Combining the two patterns, the next term is 22S.

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