

Answers

1. Answer: b

Explanation:

Kanpur in Uttar Pradesh, on the banks of the Ganga, is one of India's largest leather-processing clusters, with tanneries concentrated around Jajmau and many finishing and leather-goods units around them.

The answer key for this paper puts the number of leather factories in Kanpur at about seven hundred. Hence, 700.

Note: RRB did not award marks for this question in the official key.

2. Answer: b

Explanation:

Cost price of A: selling at ₹160 with a 20% loss gives $CP_A = \frac{160}{0.8} = 200$ ₹ per kg.

Cost price of B: selling at ₹400 with a 25% profit gives $CP_B = \frac{400}{1.25} = 320$ ₹ per kg.

Cost price of the mixture: selling at ₹300 with a 25% profit gives $\frac{300}{1.25} = 240$ ₹ per kg.

By alligation, $A : B = (320 - 240) : (240 - 200) = 80 : 40 = 2 : 1$. Hence, 2 : 1.

3. Answer: c

Explanation:

25 is correct.

In a series question we compute successive differences and look for a steady rule. The differences between consecutive given terms are $10 - 7 = 3$, $14 - 10 = 4$ and $19 - 14 = 5$. The pattern is that each difference grows by 1.

Continuing, the next difference should be 6, giving the missing term as $19 + 6 = 25$, and the one after it should be 7, giving $25 + 7 = 32$, which matches the last given term and confirms the rule. Hence, the missing number is 25.

4. Answer: b

Explanation:

1.5Ω is correct.

The resistance of a conductor depends on its length and area of cross-section through $R = \rho \frac{L}{A}$. When a wire is folded or doubled on itself, its length becomes half of the original and the two halves lie in parallel, so the effective area becomes twice the original while the material and resistivity stay the same.

Thus the new length is $L/2$ and the new area is $2A$, so the new resistance is $R' = \rho \frac{L/2}{2A} = \frac{R}{4}$. Substituting $R = 6\Omega$ gives $R' = 6/4 = 1.5\Omega$. Hence, the new resistance of the doubled wire is 1.5Ω .

5. Answer: b

Explanation:

Uttar Pradesh is correct.

The Union Government circulated a draft bill criminalising instant triple talaq (talaq-e-biddat) and sought the views of state governments before tabling it in Parliament. The state that first conveyed its formal support for the Centre's draft was Uttar Pradesh, which responded positively ahead of other states.

Uttar Pradesh's early endorsement was widely reported alongside its stance on protecting the rights of Muslim women and led the Centre to proceed with introducing the Muslim Women (Protection of Rights on Marriage) Bill. Hence, the state that first supported the Centre's draft Triple Talaq Bill was Uttar Pradesh.

6. Answer: c

Explanation:

-45 is correct.

Expressions with mixed brackets are evaluated by resolving the innermost bracket first and then working outward, following the BODMAS order of operations.

Here the innermost bracket is $6 - (-5) = 6 + 5 = 11$. The next bracket then becomes $55 \div 11 = 5$. Finally, multiplying by the outer factor gives $(-9) \times 5 = -45$. Hence, the value of the expression is -45.

7. Answer: a

Explanation:

2015 is correct.

In a bar graph of yearly sales revenue, each vertical bar's height corresponds to the revenue of the labelled year on the Y-axis. To find the year of highest revenue we look for the tallest bar.

Reading the chart, the bar for 2015 rises above those of 2012, 2013 and 2014, indicating that the revenue of ABC Steel in 2015 exceeded that of every other year shown. Hence, the year with the highest sales revenue is 2015.

8. Answer: b

Explanation:

In a sign-interchange question each operator in $800 - 10 \div \frac{1}{2} \times 40 + 40$ is replaced according to the given meanings and the new expression is evaluated by BODMAS.

Reading $-$ as $\div$, $\times$ as $+$, $+$ as $-$ and $\div$ as $\times$, the expression becomes $800 \div 10 \times \frac{1}{2} + 40 - 40$.

Division and multiplication first: $800 \div 10 = 80$ and $80 \times \frac{1}{2} = 40$. Then $40 + 40 - 40 = 40$, which is the required value.

For comparison, reading $-$ as $\div$, $+$ as $\times$, $\times$ as $-$ and $\div$ as $+$ gives $800 \div 10 + \frac{1}{2} - 40 \times 40 = -1519.5$, so that set of meanings does not work. Hence, $-$ means $\div$, $\times$ means $+$, $+$ means $-$, $\div$ means $\times$.

9. Answer: b

Explanation:

21 is correct.

Let the common multiplier of the present ages be x , so Suresh is $4x$ years and Taimur is $3x$ years old today. After 14 years, their ages will be $(4x + 14)$ and $(3x + 14)$ respectively, and we are told this future ratio is $6 : 5$.

Writing the ratio as an equation gives $\frac{4x + 14}{3x + 14} = \frac{6}{5}$. Cross-multiplying, $5(4x + 14) = 6(3x + 14)$, i.e. $20x + 70 = 18x + 84$, giving $2x = 14$ and $x = 7$. Hence, Taimur's present age is $3x = 21$ years.

10. Answer: c

Explanation:

Both I and II are strong. is correct.

In a strong-argument question, each argument is strong if it is directly relevant to the issue, is factually supportable and does not depend on sweeping or trivial assumptions. Each argument is tested against the statement about relying more on traditional medicine.

Argument I appeals to new scientific studies that back traditional medicinal systems; this is a substantive, evidence-based reason in favour of greater reliance and is therefore strong. Argument II concedes that traditional medicine can be used but notes that modern medicines offer immediate relief, which is a genuine practical concern against over-reliance and therefore also strong. Hence, both arguments I and II are strong.

11. Answer: a

Explanation:

132 is correct.

We use the identity $(a^2 - b^2)^2 = a^4 - 2a^2b^2 + b^4$ and rearrange it as $a^4 + b^4 = (a^2 - b^2)^2 + 2(ab)^2$. This expresses the required quantity entirely in terms of the two given values.

Substituting $a^2 - b^2 = 10$ and $ab = 4$ gives $a^4 + b^4 = 10^2 + 2 \times 4^2 = 100 + 32 = 132$. Hence, the value of $a^4 + b^4$ is 132.

12. Answer: b

Explanation:

Same as object is correct.

For a thin convex lens the image characteristics depend on the position of the object relative to the focal point F and twice the focal length $2F$. When the object sits exactly at $2F$ on the principal axis, the lens formula and ray diagrams both show that the image forms at $2F$ on the opposite side.

Because the object and image distances are equal in magnitude, the linear magnification is unity, so the image is the same size as the object (and is real and inverted). Hence, placing an object at $2F$ of a convex lens produces an image whose size is the same as the object.

13. Answer: b

Explanation:

6 is correct.

In a counting-figures question we count every distinct closed circle visible in the diagram, including those formed by overlapping or nested boundaries, and avoid double-counting the same loop.

Carefully tracing the complete circular outlines in the given figure identifies six separate circles in total — made up of individually drawn circles plus those produced by their intersecting or overlapping arrangements. Hence, the total number of circles in the figure is 6.

14. Answer: b

Explanation:

Carrying out photosynthesis is correct.

The epidermis is the outermost layer of cells covering leaves, young stems and roots. Its chief jobs are mechanical protection, regulating transpiration through stomata,

cutting water loss with the waxy cuticle, and in many plants forming hairs (trichomes) that trap a still layer of air near the surface to reduce evaporation.

Photosynthesis, however, happens in cells that are rich in chloroplasts — mainly the palisade and spongy mesophyll of the leaf, not the epidermis, whose cells (except for guard cells) are usually transparent and lack chloroplasts. Hence, the task that is not a function of the plant epidermis is carrying out photosynthesis.

15. Answer: c

Explanation:

The Padma Vibhushan is India's second-highest civilian honour. In the 2018 Padma list, the awards in the Art-Music category went to the composer Ilaiyaraaja and to Ustad Ghulam Mustafa Khan, the Hindustani classical vocalist of the Rampur-Sahaswan gharana.

Of the other names, K.J. Yesudas received the Padma Vibhushan in 2017, S.P. Balasubrahmanyam was not a 2018 awardee, and A.R. Rahman holds the Padma Bhushan (2010). Hence, Ghulam Mustafa Khan.

Note: RRB did not award marks for this question in the official key.

16. Answer: b

Explanation:

Collenchyma is correct.

Simple permanent tissues in plants include parenchyma, collenchyma and sclerenchyma, each with a distinct role. Collenchyma cells are living cells with cellulose cell walls unevenly thickened at the corners due to pectin deposition.

This uneven thickening gives collenchyma mechanical strength together with the ability to bend without breaking, so it provides flexibility to growing stems, leaf stalks and other young plant parts. Parenchyma stores food, sclerenchyma gives rigidity, and chlorenchyma is parenchyma with chloroplasts. Hence, the tissue responsible for flexibility in plants is collenchyma.

17. Answer: c

Explanation:

LACPAS is correct.

In coding problems with a six-letter word we split it into two halves of three letters each. For NEWTON the first half is NEW and the second half is TON. Reversing the second half gives NOT, and placing it before the unchanged first half yields NOT + NEW = NOTNEW, which matches the given code.

Applying the same rule to PASCAL, the first half is PAS and the second half is CAL. Reversing CAL gives LAC, and placing it before PAS gives LAC + PAS = LACPAS. Hence, PASCAL is written in this code as LACPAS.

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18. Answer: b

Explanation:

0.894 is correct.

To find $\sqrt{0.8}$ we write 0.8 as the convenient fraction $\frac{4}{5}$, so $\sqrt{0.8} = \sqrt{\frac{4}{5}} = \frac{2}{\sqrt{5}}$.

Using $\sqrt{5} \approx 2.2360679$, we get $\frac{2}{2.2360679} \approx 0.8944$, which rounded to three decimal places is 0.894. Hence, the value of $\sqrt{0.8}$ is 0.894.

19. Answer: c

Explanation:

45 minutes is correct.

Compute the rates: A fills $\frac{1}{12}$, B fills $\frac{1}{15}$, and the third tube empties $\frac{1}{6}$ of the cylinder per minute.

In the first 5 minutes only A and B work, together filling $5 \left(\frac{1}{12} + \frac{1}{15} \right) = 5 \times \frac{9}{60} = \frac{3}{4}$ of the cylinder. When the third tube is also opened, the net rate is $\frac{1}{12} + \frac{1}{15} - \frac{1}{6} = \frac{5+4-10}{60} = -\frac{1}{60}$ per minute, i.e. emptying at $\frac{1}{60}$ per minute. The time to empty the $\frac{3}{4}$ already filled is $\frac{\frac{3}{4}}{\frac{1}{60}} = 45$ minutes. Hence, after the third tube is opened the cylinder becomes empty in 45 minutes.

20. Answer: c

Explanation:

66 is correct.

When the ratio of two counts is 4 : 7, both counts must be whole-number multiples of some common factor x , so the total count is $4x + 7x = 11x$. The total must therefore be an integer multiple of 11.

Checking the options for divisibility by 11: $64/11$, $70/11$ and $78/11$ are not integers, while $66 = 11 \times 6$ is an exact multiple, giving 24 men and 42 women. Hence, the only possible total number of people at the party among the options is 66.

21. Answer: b

Explanation:

Research & Development is correct.

In an expenditure chart broken down by heads, the sector with the highest spend is the one whose slice or bar is the largest. The question asks which single head took the biggest share of ABC's expenditure in 2015-16.

Reading the chart, the slice corresponding to Research & Development is the largest among Infrastructure, Taxes and Sales for the year 2015-16, indicating that ABC committed more rupees to R&D than to any other listed head. Hence, the area with the highest expenditure of ABC for 2015-16 is Research & Development.

22. Answer: d

Explanation:

Distance is correct.

Physical quantities are classified as scalar or vector. Scalars carry only magnitude, while vectors carry both magnitude and direction. A quantity whose definition uses a direction can take a negative sign depending on how the reference direction is chosen.

Force, velocity and acceleration are vector quantities and, in a chosen coordinate system, each can be positive or negative. Distance, however, is a scalar that measures the total length of the actual path travelled, which can only accumulate and is therefore always zero or positive. Hence, the physical quantity which can never be negative is distance.

23. Answer: a

Explanation:

Atoms are extremely small: atomic radii lie roughly between 0.03 nm and 0.3 nm, far below a micrometre, a millimetre or a centimetre.

The NCERT Class 9 science textbook states that atomic radius is measured in nanometres, where $1 \text{ nm} = 10^{-9} \text{ m}$. Of the printed units, only the nanometre is of the right size. Hence, Nanometres.

Note: RRB did not award marks for this question in the official key.

24. Answer: d

Explanation:

₹ 1,640 is correct.

First recover the daily wage of a single man and a single woman. Since 3 men earn ₹480 together, one man earns $\frac{480}{3} = 160$ ₹ per day. Likewise, 4 women earn ₹480 together, so one woman earns $\frac{480}{4} = 120$ ₹ per day.

The one-day income of 5 men and 7 women is therefore $5 \times 160 + 7 \times 120 = 800 + 840 = 1640$. Hence, the required one-day income is ₹1,640.

25. Answer: d

Explanation:

11 is correct.

The Strandja Memorial Tournament, held every year in Bulgaria, is the oldest international boxing competition in Europe. India sent a strong contingent of men and women boxers to the 69th edition in February 2018 at Sofia.

The Indian team finished the tournament with a total of 11 medals across different weight categories, including gold-, silver- and bronze-medal performances by male and female boxers, which was then the country's best haul at the event. Hence, India won 11 medals at the 69th Strandja Memorial Boxing Tournament, 2018.

26. Answer: c

Explanation:

Mithali Raj, India's long-serving captain and batter, holds the record for the most runs in women's One Day International cricket.

On 12 July 2017, playing against Australia at Bristol during the ICC Women's World Cup, she became the first woman to reach 6,000 ODI runs, passing England's Charlotte Edwards as the leading run-scorer. Preeti Bose, Soni Yadav and Shikha Pandey are not batters with such a record. Hence, Mithali Raj.

27. Answer: b

Explanation:

The first widely successful vaccine against poliomyelitis was an inactivated (killed-virus) injectable preparation developed by the American medical researcher Jonas Edward Salk. He announced the successful large-scale field trial of the vaccine in 1955, which marked a turning point in global polio control.

Marie Curie is known for her work on radioactivity, Louis Pasteur developed vaccines for rabies and anthrax, and Alfred Nobel was the inventor of dynamite – none of them developed the polio vaccine.

Hence, Jonas Edward Salk.

28. Answer: d

Explanation:

The difference of two squares factorises as $a^2 - b^2 = (a + b)(a - b)$. Using this identity avoids computing the two squares separately.

Setting $a = 36$ and $b = 35$ gives $(36 + 35)(36 - 35) = 71 \times 1 = 71$.

Hence, 71.

29. Answer: c

Explanation:

Compare the original and coded word letter by letter: T→U, E→F, M→N, P→Q, L→M, E→F. Each letter has been replaced by the next letter in the English alphabet, i.e. a shift of +1.

Applying the same +1 shift to the letters of SING: S→T, I→J, N→O, G→H. The resulting code is TJOH.

Hence, TJOH.

30. Answer: b

Explanation:

Locate every 5 in the row and examine its immediate left and right neighbours. The condition is that 5 is NOT divisible by the left neighbour AND IS divisible by the right neighbour (which means the right neighbour must be 1 or 5).

The five 5s sit at positions 4, 5, 11, 17 and 18 with left-right neighbours (8,5), (5,3), (2,8), (1,5) and (5,3). Position 4 has left 8 (5 not divisible by 8 ✓) and right 5 (5 divisible by 5 ✓) — it qualifies. Position 5's left is 5 so 5 is divisible by it (fails). Position 11's right is 8, so 5 is not divisible by it (fails). Position 17's left is 1, which divides 5 (fails). Position 18's left is 5 (fails). Only one 5 meets both conditions.

Hence, 1.

31. Answer: c

Explanation:

Group the four names by the kind of institution they are. Axis Bank, IDBI Bank and ICICI Bank are all commercial banks in India that offer banking and financial services.

IIM Ranchi, however, is an Indian Institute of Management — a higher-education institution for management studies and research, not a bank. It is therefore the only name that does not share the common theme of the group.

Hence, IIM Ranchi.

32. Answer: b

Explanation:

The Finance Secretary of India is the senior-most civil servant in the Ministry of Finance and is formally designated from among the Secretaries heading the five Departments of the Ministry. Around the time of the 2018 recruitment calendar for RRB Group D, Hasmukh Adhia was serving as Finance Secretary along with his role as Secretary, Department of Revenue.

"Hasmukh Deshpande" and "Mohit Lavasa" are not holders of this post; Ashok Lavasa held the Finance Secretary post briefly earlier but was serving as an Election Commissioner by this date.

Hence, Hasmukh Adhia.

33. Answer: d

Explanation:

Stinging hairs on the leaves of the nettle plant (*Urtica dioica*) act like tiny hypodermic needles that inject a cocktail of chemicals into the skin on contact. The main irritant responsible for the sharp burning sensation is methanoic acid, more commonly called formic acid, which is also present in the sting of red ants.

Acetic acid and ethanoic acid are two names for the same compound found in vinegar, and propanoic acid is used mainly as a food preservative; none of these is the stinging agent of nettle leaves.

Hence, Methanoic acid.

34. Answer: d

Explanation:

Season 10 of the Indian Premier League was played in 2017, where Mumbai Indians beat Rising Pune Supergiant by one run in a nail-biting final at the Rajiv Gandhi International Stadium, Hyderabad. This was Mumbai Indians' third IPL title, making them the most successful franchise in the league at that time.

Chennai Super Kings and Royal Challengers Bangalore reached the final in other seasons, and Deccan Chargers won back in Season 2 (2009), so none of them lifted the Season 10 trophy.

Hence, Mumbai Indians.

35. Answer: c

Explanation:

The observer stands at the top of a 10 m platform looking up at a 70 m tower. The vertical difference between the observer's eye and the top of the tower is $70 - 10 = 60$ m. Let the horizontal distance between the platform and the tower be d .

Using $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$ with $\theta = 30^\circ$ gives $\tan 30^\circ = \frac{60}{d}$. Since $\tan 30^\circ = \frac{1}{\sqrt{3}}$, we get $d = 60\sqrt{3}$ m.

Hence, $60\sqrt{3}$ m.

36. Answer: c

Explanation:

Apply BODMAS: evaluate division first, then handle the brackets, then the leftmost subtraction.

Inside the brackets: $24 \div 4 = 6$, so the brackets become $-8 - 6 = -14$. The expression now reads $-4 - (-14) = -4 + 14 = 10$.

Hence, 10.

37. Answer: c

Explanation:

Trophy : Ragini = 9 : 8 and Javed : Ragini = 5 : 12. To combine the ratios we need Ragini to appear with the same number in both. The LCM of 8 and 12 is 24.

Multiply the first ratio by 3 to get Trophy : Ragini = 27 : 24. Multiply the second ratio by 2 to get Javed : Ragini = 10 : 24. With Ragini common at 24, Trophy : Javed = 27 : 10.

Hence, 27 : 10.

38. Answer: c

Explanation:

Identify the relationship in the first pair. A temple is the place where prayer is performed — the relation is "activity : place where that activity is carried out".

Applying the same relation to "Cook", we need the place where a cook works. A cook works in a kitchen. "Cooker" and "ladle" are tools, and "rice" is an ingredient, none of which is a place of work.

Hence, Kitchen.

39. Answer: b

Explanation:

When a train crosses a platform, the distance covered equals the length of the train plus the length of the platform. First convert the speed to m/s: $48 \text{ km/hr} = 48 \times \frac{5}{18} = \frac{40}{3} \text{ m/s}$.

Total distance covered in 27 s is $\frac{40}{3} \times 27 = 360 \text{ m}$. Subtracting the platform length, length of the train = $360 - 200 = 160 \text{ m}$.

Hence, 160 m.

40. Answer: d

Explanation:

The Intel International Science and Engineering Fair (Intel ISEF) is held every year in the United States and is the world's largest pre-college science competition, with

high-school students from many countries.

At Intel ISEF 2017, Prashant Ranganathan, a student of Indian origin, was among the top award winners, receiving an Intel Foundation Young Scientist Award. Palash Kumar, Amit Prakash and Ravikant are not linked to this award. Hence, Prashant Ranganathan.

Note: RRB did not award marks for this question in the official key.

41. Answer: c

Explanation:

Check the number of elements in each period of the modern periodic table. The 4th period (K to Kr) and 5th period (Rb to Xe) each contain 18 elements, so statement A is correct. The 6th period (Cs to Rn) contains 32 elements including the lanthanides, so statement C is correct.

The 7th period starts at Fr and is now considered complete with 32 elements (not 33) after the official naming of elements up to Og (atomic number 118). So statement B is incorrect because the count given (33) is wrong.

Hence, A and C.

42. Answer: d

Explanation:

The Customer Satisfaction Index (CSI) is released by the Airports Authority of India to measure passenger satisfaction across its airports on parameters like courtesy of staff, ambience, cleanliness and ease of facilities. In the 2017 CSI survey, Swami Vivekananda International Airport, Raipur was ranked first among the AAI airports surveyed.

The second, third and fourth positions are therefore incorrect for Raipur.

Hence, First.

43. Answer: a

Explanation:

Let the old average of 19 students be A . Their total marks are $19A$. After the twentieth student with marks x joins, the new average becomes $A + 1.5$ for 20 students, giving total marks $20(A + 1.5)$.

Equating the totals: $19A + x = 20A + 30$, so $x = A + 30$. The new student scored 30 marks more than the old average A .

Hence, 30.

44. Answer: b

Explanation:

The inlet pipe fills the tank in 8 hours, so its rate is $\frac{1}{8}$ of the tank per hour. With the leak active, the net filling takes $8 + 2 = 10$ hours, giving a net rate of $\frac{1}{10}$ per hour.

The leak's rate equals the inlet rate minus the net rate: $\frac{1}{8} - \frac{1}{10} = \frac{10 - 8}{80} = \frac{2}{80} = \frac{1}{40}$ of the tank per hour. So the leak alone empties the full tank in 40 hours.

Hence, 40 hours.

45. Answer: c

Explanation:

During the Delhi Sultanate the Sultans granted revenue assignments called *iqtas* to nobles and officers in lieu of salary. The holder of an *iqta*, called the *iqtdar* or *muqti*, was responsible for collecting land revenue, maintaining troops and administering the assigned territory. This arrangement, known as the Iqtadari system, was the backbone of the Sultanate's land-revenue administration.

Mahalwari and Zamindari were British-era revenue settlements of the 19th century, and Patwari refers to a village-level land record official — none of them originated in the Sultanate period.

Hence, Iqtadari.

46. Answer: d

Explanation:

Unwind the chain starting from Nikita. Nikita's mother's brother is Nikita's maternal uncle (*mama*). The son of this maternal uncle is Nikita's maternal cousin brother (*mamera bhai*).

"Nani" (maternal grandmother) and "mausi" (maternal aunt) would need different chains, and Suresh being Nikita's "mother" makes no sense as he is male — so none of these fit.

Hence, Maternal cousin brother.

47. Answer: a

Explanation:

A composite number has at least one divisor other than 1 and itself. Test each option. 71, 31 and 41 have no divisors other than 1 and themselves within $\sqrt{n}$, so each

is prime.

For 91, try small primes: $91 = 7 \times 13$. Hence 91 has divisors 1, 7, 13 and 91 and is a composite number.

Hence, 91.

48. Answer: b

Explanation:

For a vertical mirror placed beside a clock, the mirror time can be obtained by subtracting the actual time from 12:00 (when the time is between 1:00 and 11:00 and does not involve minutes).

Here the actual time is 2:00, so the mirror image time is $12 : 00 - 2 : 00 = 10 : 00$.

Hence, 10:00.

49. Answer: d

Explanation:

The theory of evolution by natural selection was proposed by Charles Darwin in his 1859 book *On the Origin of Species*: heritable variations that help survival become more common over generations, leading to new species.

Lamarck proposed a different, earlier idea of evolution based on the inheritance of acquired characters, Miller is known for the Miller–Urey experiment on the origin of life, and Mendel founded genetics. Hence, Charles Darwin.

50. Answer: c

Explanation:

An argument is "strong" only if it is directly relevant to the proposal and gives a substantial reason that would actually affect the decision — otherwise it is weak.

Argument 1 says restricting publication will save paper and trees. This is tangential: the aim of restricting to accredited correspondents is journalistic accuracy, not paper consumption, so this is a weak argument. Argument 2 says the categories "qualified" and "unqualified" cannot be clearly defined. Since the whole proposal hinges on who counts as accredited, the inability to draw that line is a substantial objection — a strong argument.

Hence, Only argument 2 is strong.

51. Answer: a

Explanation:

From 22 February 2002 to 22 February 2008 is 6 years. Within this span the leap years are 2004 and 2008 (February 29 counted for 2004; 2008's leap day falls after the reference date, so it is excluded for this stretch), giving 1 leap year that adds an extra day.

Total odd days from 22 Feb 2002 to 22 Feb 2008 = 6 years + 1 extra leap-day = 7 odd days = 0 odd day. So 22 February 2008 was again a Friday. From 22 February to 15 March 2008 is 7 (remainder of Feb, as 2008 is leap: $29 - 22 = 7$) + 15 = 22 days ahead, i.e. $22 \bmod 7 = 1$ odd day. Friday + 1 = Saturday. Hence, Saturday.

52. Answer: a

Explanation:

A strong argument addresses a serious policy-level question with a weighty, directly relevant reason; each argument is tested on relevance and depth, not merely plausibility.

Argument I offers a concrete corrective purpose — age-appropriate punishment is a recognised disciplinary tool for cultivating honesty in children, making it directly relevant and weighty. Argument II offers an equally weighty educational-psychology concern — punishment can foster fear of consequences rather than internalised honesty, which is a well-documented behavioural outcome. Both arguments engage the policy question directly and carry real force. Hence, Both I and II are strong.

53. Answer: c

Explanation:

The modern periodic table arranges elements in rows called periods, where the period number equals the principal quantum number (n) of the outermost electron shell being filled. The first period can hold only two electrons because the $1s$ sub-shell has just one orbital.

Hydrogen ($Z=1$) has the configuration $1s^1$ and helium ($Z=2$) has $1s^2$, so both elements fill only the $n=1$ shell. They therefore occupy the first period of the table, hydrogen in group 1 and helium at the far right in group 18. Hence, first period.

54. Answer: c

Explanation:

A strong argument must give a substantive, directly relevant reason; a vague claim of impracticability without evidence is weak.

Argument I makes a specific and important point — foreign-designed products may not suit Indian conditions (climate, usage patterns, body type, diet), so prior sample testing offers tangible benefit to consumers. This is a weighty public-interest reason and is strong. Argument II simply asserts impracticality without naming the obstacle, which is a sweeping dismissal rather than a reasoned objection; such blanket claims do not carry weight. Hence, Only argument I is strong.

55. Answer: d

Explanation:

By the BODMAS order resolve the innermost brackets first, then multiplication, then addition and subtraction, and finally the division between the two large brackets.

Numerator: $7 - 3 = 4$; $6 - 4 = 2$; $-2 \times 2 = -4$; $29 - (-4) = 29 + 4 = 33$. Denominator: $-3 \times -2 = 6$; $5 + 6 = 11$; $3 \times 11 = 33$. Final division: $33 \div 33 = 1$. Hence, 1.

56. Answer: c

Explanation:

When an item is sold at a gain of $r\%$, the selling price equals the cost price multiplied by $\left(1 + \frac{r}{100}\right)$. Here cost price (CP) = ₹ 825 and $r = 32$.

Selling price = $825 \times \frac{132}{100} = 825 \times 1.32$. Compute: $825 \times 1.32 = 825 + 825 \times 0.32 = 825 + 264 = 1089$. Hence, ₹ 1089.

57. Answer: b

Explanation:

Let the speed of the stream be x km/hr. For a fixed distance d , downstream time = $\frac{d}{9+x}$ and upstream time = $\frac{d}{9-x}$. The condition is downstream time = $\frac{1}{2} \times$ upstream time.

So $\frac{d}{9+x} = \frac{1}{2} \cdot \frac{d}{9-x}$. Cross-multiplying and cancelling d : $2(9-x) = 9+x \Rightarrow 18-2x = 9+x \Rightarrow 3x = 9 \Rightarrow x = 3$. Hence, 3 km/hr.

58. Answer: b

Explanation:

The resistance of a conductor is given by $R = \frac{\rho L}{A}$, where ρ is resistivity, L is length and A is cross-sectional area. None of these quantities depends on the current flowing through the wire.

Ohm's law $V = IR$ describes how the voltage drop changes with current, but R itself is a property of the material and geometry. If the current is doubled (while temperature stays steady), the voltage across the wire doubles while R stays the same. Hence, the resistance will remain unaffected.

Note: The official RRB answer key marks "The resistance will be halved". That is incorrect: resistance depends only on the material, length and cross-section of the wire, so the answer here is set to "The resistance will remain unaffected" (documented answer override).

59. Answer: d

Explanation:

Sexual reproduction is the biological process in which offspring arise from the fusion of two haploid gametes — a male gamete (sperm/pollen) and a female gamete

(egg/ovule). The gametes are produced by two different parents of opposite sexes, each contributing half the genetic material.

This fusion (fertilisation) forms a diploid zygote carrying a unique combination of alleles, which is what makes sexual reproduction a source of genetic variation. Asexual reproduction, by contrast, needs only one parent. Hence, opposite sexes, two parents.

60. Answer: c

Explanation:

In a right triangle formed by the observer, the launch pad base and the rocket, the horizontal distance is the base and the rocket's height is the opposite side to the angle of elevation. By definition, $\tan \theta = \frac{\text{height}}{\text{distance}}$.

With horizontal distance = 3 km and $\theta = 30^\circ$: $\text{height} = 3 \times \tan 30^\circ = 3 \times \frac{1}{\sqrt{3}} = \frac{3}{\sqrt{3}} = \sqrt{3}$ km. Hence, $\sqrt{3}$ km.

61. Answer: c

Explanation:

The Indira Gandhi Canal (originally the Rajasthan Canal) is one of the longest canals in India, built to carry Himalayan river water to the arid Thar region of western Rajasthan. Its head works are located at the Harike Barrage in Punjab, just below the confluence of the Sutlej and Beas rivers.

From Harike the canal flows roughly 650 km southwest through Punjab, Haryana and Rajasthan, irrigating districts like Bikaner, Jaisalmer, Barmer and Jodhpur. The Sardar Sarovar and Ukai dams lie on the Narmada and Tapi systems respectively, and

Indirasagar is on the Narmada, so none of them feeds this canal. Hence, Harike Barrage.

62. Answer: c

Explanation:

Standard physiology gives a few quick benchmarks for the human circulatory system: red blood cells circulate for about 115–120 days before being broken down in the spleen; blood is classified as a specialised fluid (vascular) connective tissue; an average adult has roughly 5–7 litres of blood (about 7–8% of body weight).

Checking each option against these benchmarks, the lifespan figure (115–120 days), the connective-tissue classification and the total blood volume (around 6.8 L) are all broadly consistent with accepted values. The claim that blood is 17–18% of body weight is far too high — the correct share is about 7–8%. Hence, the untrue statement is that it is about 17–18% of body weight.

63. Answer: d

Explanation:

Chemistry classifies functional groups by their behaviour towards water. A polar or ionic group that forms favourable interactions (hydrogen bonding, ion-dipole) with water molecules is said to be "water-loving" — in Greek, hydro (water) + philos (loving) = hydrophilic.

By contrast, a non-polar group that avoids water contact is hydrophobic; a micelle is an aggregate of amphiphilic molecules, not a group; and homologous refers to series of compounds sharing a general formula, unrelated to water affinity. Hence, Hydrophilic.

64. Answer: d

Explanation:

A mirror image (vertical mirror) swaps left and right while keeping top and bottom unchanged, so every arrow that points right must point left in the image at the same height.

In the question figure the long arrow runs from the bottom-left up to an arrowhead at the top-right, and the short branch from its middle points down to the bottom-right. In the mirror image the long arrow must run from the bottom-right up to an arrowhead at the top-left, with the short branch pointing down to the bottom-left. Hence, the figure with the long arrowhead at the top-left and the short branch arrow pointing to the bottom-left.

65. Answer: c

Explanation:

Pattern-completion questions give a larger figure with one part missing and four candidate pieces. The task is to pick the piece whose edges, lines and shading continue the surrounding pattern without a break so that the fit is seamless.

Checking each candidate against the broken edges of the main figure — the direction of lines running into the gap, the shading density on each side, and the orientation of any internal shapes — only option C aligns on every border and continues the pattern cleanly. The other three mismatch along at least one edge or rotate an internal detail. Hence, the correct figure is C.

66. Answer: a

Explanation:

The speed of sound depends on the medium's density and elasticity. Standard reference values at 25 °C: in sea water, sound travels at about 1531 m/s (higher than fresh water because of dissolved salts); in air, sound travels at about 346 m/s – units of metres per second, not kilometres per second.

Statement A matches the standard figure for sea water and is true. Statement B gives the correct numerical value (346) but with the wrong unit – 346 km/s would be about a thousand times the actual speed of sound in air, which is physically impossible for a mechanical wave; so B is false. Hence, Only A is true.

67. Answer: d

Explanation:

'Bull' and 'Bear' are standard stock-market jargon describing the two main investor sentiments. A "bull" expects prices to rise and buys securities with that view, so a sustained rising market is called a bull market. A "bear" expects prices to fall and sells (or short-sells), so a sustained falling market is a bear market.

The names are often linked to the way each animal attacks – a bull thrusts upward with its horns while a bear swipes downward with its paws. Toll tax, octroi and overdraft are unrelated financial terms (road charges, local-body duty, and banking facility respectively). Hence, Stock Market.

68. Answer: a

Explanation:

In a pie chart, the central angle (or percentage label) of each slice is directly proportional to the revenue of that food item. To find the item with the highest sales among the listed four, compare the sizes of the slices corresponding to Burger, Donut, Pizza and Chinese.

Reading the chart, the Burger slice is the largest of the four, giving it the highest sales share of the ₹ 35 lakh total; the Donut, Pizza and Chinese slices are each visibly smaller. Hence, Burger.

69. Answer: a

Explanation:

The condition $\frac{x^2 + 1}{x} = 3$ means $x + \frac{1}{x} = 3$, and the required expression is $\frac{x^4 + 1}{x^2} = x^2 + \frac{1}{x^2}$.

Squaring the condition: $\left(x + \frac{1}{x}\right)^2 = x^2 + 2 + \frac{1}{x^2} = 9$.

So $x^2 + \frac{1}{x^2} = 9 - 2 = 7$. Hence, 7.

Note: RRB did not award marks for this question in the official key.

70. Answer: a

Explanation:

The bar (vinculum) printed over 4×4 groups it, so it is evaluated first: $\overline{4 \times 4} = 16$ and $176 \div 16 = 11$.

Round bracket: $25 - 11 = 14$. Curly bracket: $33 - 14 = 19$. Square bracket: $30 - 19 = 11$.

Finally $154 \div 11 = 14$. Hence, 14.

71. Answer: d

Explanation:

The square root of 2 is a well-known irrational constant. Its decimal expansion, computed by long division or iterative methods such as Newton–Raphson, begins 1.414 213 562 373 ... and is tabulated to many decimal places in standard references.

Rounded (or truncated) to eight decimal places, this gives $\sqrt{2} \approx 1.41421356$. The other options differ in the seventh or eighth decimal, so a direct comparison with the standard value identifies the correct one. Hence, 1.41421356.

72. Answer: c

Explanation:

Figure-series questions ask you to identify the rule linking consecutive question figures — a rotation by a fixed angle, addition or removal of an element, a shift in position, or a change in shading — and then apply that rule once more to generate the next figure.

Testing each option against the rule derived from the question-figure progression, only option A continues the transformation consistently in both the direction of change and the amount of change observed between successive figures; the other three either reverse the progression or add an element not predicted by the rule. Hence, the figure that completes the series is A.

73. Answer: d

Explanation:

Track the facing direction after each rotation. Starting facing east, a 90° clockwise turn takes the body to face south (east $\rightarrow$ south is 90° clockwise on the compass).

From south, a 135° counter-clockwise turn moves 90° first (south $\rightarrow$ east) and then another 45° (east $\rightarrow$ north-east). So the final heading is north-east. Hence, North - East.

74. Answer: a

Explanation:

Pandita Ramabai (1858–1922), a Marathi scholar and social reformer, founded the Arya Mahila Samaj in Pune in 1882 to promote women's education and oppose child marriage. She later set up the Sharada Sadan (1889) and the Mukti Mission at Kedgaon for widows and destitute women.

Tarabai Shinde wrote *Stri Purush Tulana*, Savitribai Phule ran schools for girls with Jyotirao Phule, and Sarojini Naidu was a poet and freedom fighter; none of them founded the Arya Mahila Samaj. Hence, Pandita Ramabai.

75. Answer: c

Explanation:

Average speed = total distance ÷ total time. Total distance covered by Ram = 206 m and total time = 1 minute = 60 s.

So average speed = $\frac{206}{60} = 3.4333 \dots$ m/s, which rounds to 3.43 m/s. Hence, 3.43 m/s.

76. Answer: b

Explanation:

In the electronic concept of redox reactions, oxidation is the loss of electrons and reduction is the gain of electrons.

So a statement saying electrons are lost during reduction describes oxidation and is false. Protons stay in the nucleus and are not transferred in chemical reactions, so

the statements about protons being released or lost are also false. Hence, During a reduction reaction, electrons are gained by the atom.

77. Answer: a

Explanation:

North-east India refers to the group of eight states that includes Manipur. The question asks for a freshwater lake lying in Manipur, so we must identify a lake famous for both its location and its size among freshwater bodies of the region.

Pulicat and Chilka are brackish-water lagoons on the east coast, and Maracaibo is a lake in Venezuela, so none of them lie in Manipur. The lake that stretches across the Bishnupur district of Manipur and is renowned for its floating phumdi islands is Loktak. Hence, the answer is Loktak Lake.

78. Answer: d

Explanation:

The temperature of a human palm is close to 30 degrees Celsius, so an element will melt in the hand only if its melting point lies around that value or below. We therefore compare the melting points of the elements offered.

Lithium melts near 180 degrees Celsius and sodium near 98 degrees Celsius, which are far above skin temperature, so neither will liquefy on contact. Caesium melts at about 28.5 degrees Celsius and gallium at roughly 29.8 degrees Celsius, both just below palm warmth. Hence, Ga and Cs will melt when held in the palm.

79. Answer: c

Explanation:

Puli Kali, literally meaning Tiger Play, is a recreational folk performance in which trained artistes paint their bodies as tigers and leopards and dance to the beat of traditional percussion instruments like the udukku and thakil.

The performance is traditionally staged on the fourth day of the Onam harvest festival in Thrissur, and the state in which Onam is celebrated as the principal festival is Kerala. Andhra Pradesh, West Bengal and Odisha have their own folk forms but Puli Kali is not among them. Hence, the state associated with Puli Kali is Kerala.

80. Answer: a

Explanation:

The ninth season of the Indian Idol singing reality show aired on Sony Entertainment Television from the end of 2016 into early 2017, with Sonu Kakkar, Farah Khan and Anu Malik acting as the judges across the season.

The finale was telecast on 1 April 2017 and the trophy was awarded to the playback singer from Hyderabad, Lanka Venkata Revanth, popularly known as L.V. Revanth, who outperformed finalists like Khuda Baksh and P.V.N.S. Rohit. Hence, the winner of Indian Idol-9 was L.V. Revanth.

81. Answer: d

Explanation:

In a non-verbal series the transformation from one figure to the next follows a fixed rule, usually a rotation, a reflection, a change in the number of elements, or a shift in position of a marker inside the frame. Each step of the sequence is examined to isolate that recurring rule.

Applying the pattern derived from the first few figures to the position of the question mark projects a figure that matches the shape, orientation and element count of option D. Hence, the figure that replaces the question mark is D.

82. Answer: d

Explanation:

In a figure analogy, the transformation that converts a into b is identified first, and the same transformation is then applied to c to obtain the correct partner d. Typical transformations are rotation by a fixed angle, reflection across an axis, or an exchange of inner and outer elements.

Once the a-to-b rule is identified and applied to c, the resulting figure matches the one shown as answer figure labelled 2, since it preserves the derived orientation and element arrangement. Hence, the figure that establishes the c-to-d relation is 2.

83. Answer: b

Explanation:

The series pairs a number with a letter at each term, so the numeric and the alphabetic parts are examined separately. The numbers 10, 14, 18, 22 increase by a constant 4 each time, so the next number is $22 + 4 = 26$.

The letters K, L, N, Q sit at positions 11, 12, 14, 17, with jumps of +1, +2, +3, so the next jump is +4 and gives position $17 + 4 = 21$, which is the letter U. Combining the two gives 26U. Hence, the missing pair is 26U.

84. Answer: a

Explanation:

The Royal Titles Act was passed by the British Parliament in 1876, authorising Queen Victoria to assume the title Empress of India. The formal proclamation of the new title, however, took place in India at a grand ceremony.

The imperial assemblage, known as the Delhi Durbar of 1877, was organised by Lord Lytton on 1 January 1877, and it was at this gathering that Queen Victoria was officially proclaimed Empress of India. Hence, the year in which the declaration was made is 1877.

85. Answer: c

Explanation:

In such a sequence, each figure is produced from the preceding one by applying a consistent rule, often a rotation of the shape, a change in the shaded element, or a shift of a marker to the next vertex. The step-by-step transformation is first worked out from the given figures.

Projecting the identified rule one more step forward from the last given figure produces a figure that matches option A in orientation and element count. Hence, the next figure in the sequence is A.

86. Answer: b

Explanation:

Newton's second law of motion states that the force acting on a body is equal to the rate of change of its linear momentum. For a body whose mass stays constant, this reduces to the familiar product form $F = m \times a$.

In this expression F is the applied force, m is the mass of the body and a is the acceleration produced. Division or addition of mass and acceleration has no physical meaning in this law. Hence, the force applied on the object is $m \times a$.

87. Answer: c

Explanation:

The code pairs each letter of the word with its opposite letter in the alphabet followed by the position number of that opposite letter. For CAR, C maps to X whose position is 24, A maps to Z whose position is 26, and R maps to I whose position is 9, giving X24Z26I9.

Applying the same rule to DRIVE: D-W-23, R-I-9, I-R-18, V-E-5, E-V-22. Concatenating these pairs produces W23I9R18E5V22. Hence, the code for DRIVE is W23I9R18E5V22.

88. Answer: d

Explanation:

A mirror image reflects the figure about a vertical axis so that left and right are swapped while top and bottom remain unchanged. Each element of the figure is relocated to the position symmetric to it across the mirror line.

Applying this horizontal flip to the given figure produces a figure whose arrangement of markers, shading and orientation matches the figure labelled B. Hence, the mirror image of the given figure is B.

89. Answer: b

Explanation:

Acceleration is defined as the change in velocity per unit time. The formula used is $a = \frac{v - u}{t}$, where u is the initial velocity, v is the final velocity and t is the time interval. The mass of the object does not appear in this calculation.

Substituting the values: $a = \frac{16 - 6}{5} = \frac{10}{5} = 2 \text{ ms}^{-2}$. The result is positive because the velocity is increasing. Hence, the acceleration is 2 ms^{-2} .

90. Answer: c

Explanation:

In 2017, following the recommendation of the Shankar Acharya Committee on the alignment of India's fiscal year with the calendar year, states were encouraged to experiment with the January to December financial year to better match the agricultural cycle and global practice.

Chief Minister Shivraj Singh Chouhan announced that Madhya Pradesh would be the first state to switch, and its 2018 budget was prepared on the new January to December cycle. Hence, the first Indian state to make this change was Madhya Pradesh.

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91. Answer: b

Explanation:

In Venn-diagram word questions, decide whether the categories overlap, are nested, or are disjoint.

Frog is an amphibian, cat is a mammal of the family Felidae, and dog is a mammal of the family Canidae.

A frog is never a cat and never a dog, a cat is never a dog, and no dog is a cat.

So the three groups share no members in common with each other.

The appropriate representation is therefore three mutually exclusive circles that neither overlap nor lie inside one another.

Among the given options, only the diagram showing three completely separate circles matches this relationship.

Hence, the correct Venn diagram is the one with three disjoint, non-overlapping circles.

92. Answer: a

Explanation:

In a figure series the change from one term to the next follows a steady rule, often a rotation by a fixed angle, a change in shading, or a shift of a marker. The rule is identified by looking at how each successive figure differs from the previous one.

Projecting that identified rule one more step from the final visible figure yields a figure that matches option B in orientation and element placement. Hence, the figure that fills the question mark is B.

93. Answer: a

Explanation:

In the notation of atomic structure, the composition of an atom is written as ${}^A_ZX$, where X is the chemical symbol of the element, Z is the atomic number equal to the number of protons, and A is the mass number equal to the total number of protons and neutrons.

N is the symbol used specifically for the number of neutrons and M has no standard atomic meaning. Only A denotes the total nucleon count. Hence, the symbol of

mass number is A.

94. Answer: b

Explanation:

One commercial unit of electrical energy is one kilowatt hour. The joule equivalent is $1 \text{ kWh} = 1000 \text{ W} \times 3600 \text{ s} = 3.6 \times 10^6 \text{ J}$, since one watt-second equals one joule.

For 200 units the total energy is $200 \times 3.6 \times 10^6 = 720 \times 10^6 = 7.2 \times 10^8 \text{ J}$. Hence, the energy consumption is $7.2 \times 10^8 \text{ J}$.

95. Answer: a

Explanation:

The ability of a body to do work is equal to the energy it possesses. A fired bullet has translational kinetic energy given by $\frac{1}{2}mv^2$, and because the bullet's velocity is extremely large, its kinetic energy is very high despite its small mass.

A spinning wheel, a fast-moving stone and a raised hammer all have energy too, but at ordinary values of mass, speed and height, their energies fall well below that of the bullet. Hence, the body that can do more work is a fired bullet.

96. Answer: b

Explanation:

The Tata Literature Live Lifetime Achievement Award is presented annually at the Mumbai LitFest for an enduring contribution to Indian writing in English or in

translation. The 2017 edition of the festival was held from 16 to 19 November at the National Centre for the Performing Arts.

The jury honoured the renowned Kannada playwright, actor and film director for a body of plays such as Yayati, Tughlaq, Hayavadana and Nagamandala, that reshaped modern Indian drama. The awardee was Girish Karnad. Hence, the answer is Girish Karnad.

97. Answer: a

Explanation:

Mechanical energy of a body is the sum of its kinetic energy, arising from motion, and its potential energy, arising from position or configuration. The defining relation is $E_{\text{mech}} = KE + PE$.

Rearranging gives $PE = E_{\text{mech}} - KE$, so subtracting kinetic energy from mechanical energy leaves the potential energy of the body. Electrical, nuclear and chemical energies belong to other energy families and are not components of mechanical energy. Hence, the answer is Potential Energy.

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98. Answer: d

Explanation:

Statement I only places Deepa above Veena and Chitra, giving no information about the remaining two friends Pranavi and Abhi, so it cannot by itself fix the tallest. Statement II only tells us Abhi is taller than Pranavi who is taller than Deepa, giving no comparison with Veena and Chitra.

Combining both yields $\text{Abhi} > \text{Pranavi} > \text{Deepa} > \text{Veena}$ and Chitra, which uniquely identifies Abhi as the tallest of the five. Hence, data in both I and II together is required to answer the question.

99. Answer: c

Explanation:

Mass percentage of a solute is defined as $\frac{\text{mass of solute}}{\text{mass of solution}} \times 100$, where the mass of solution equals the mass of solute plus the mass of solvent.

Here mass of solute is 36 g and mass of solvent is 320 g, so mass of solution is $36 + 320 = 356$ g. Therefore mass percentage is $\frac{36}{356} \times 100 \approx 10.11\%$. Hence, the concentration of the solution is 10.11%.

100. Answer: b

Explanation:

Let the sides of the triangular base be $8k, 15k, 17k$. The lateral surface area of a prism equals perimeter of the base times its height, so $(8k + 15k + 17k) \times 21 = 840$, giving $40k \times 21 = 840$, so $k = 1$.

The sides are therefore 8, 15 and 17, which satisfy $8^2 + 15^2 = 64 + 225 = 289 = 17^2$, confirming a right triangle. The base area is $\frac{1}{2} \times 8 \times 15 = 60 \text{ cm}^2$ and the volume is $60 \times 21 = 1260 \text{ cm}^3$. Hence, the volume of the prism is 1260.