CUET-UG General Aptitude Test Sample Paper-21

Duration: 1 Hour **Maximum Marks: 250**

Instructions

- This paper contains a total of 50 Multiple Choice Questions.
- Each correct answer carries **+5 marks**.
- Each incorrect answer carries **-1 mark**.
- No negative marking for unattempted questions.

Q1. A shopkeeper marks an article 40% above its cost price and allows a discount of 10% on the marked price. Find the profit percentage earned by the shopkeeper.

(A) 20%

(B) 26%

(C) 30%

(D) 35%

Q2. The ratio of incomes of A and B is 3:5 and the ratio of their expenditures is 2:3. Find the ratio of their savings.

(A) 1:2

(B) 2:3

(C) 3:4

(D) 4:5

Q3. A sum of money amounts to ₹ 800 in 2 years and ₹ 920 in 4 years at simple interest. Find the principal amount.

(A) 600

(B) 650

(C) 700

(D) 750

Q4. Two pipes can fill a tank in 20 minutes and 30 minutes respectively, while a third pipe can empty the tank in 60 minutes. Find the time required to fill the tank if all three pipes are opened together.

(A) 12 min

(B) 15 min

(C) 18 min

(D) 20 min

Q5. A train travels a distance of 300 km at a speed of 60 km/h and returns the same distance at a speed of 75 km/h. Find the average speed for the entire journey.

(A) 66.67 km/h

(B) 67.5 km/h

(C) 68 km/h

(D) 70 km/h

Q6. If 12 men can complete a piece of work in 15 days, how many men are required to complete the same work in 9 days, assuming equal efficiency?

(A) 18

(B) 20

(C) 22

(D) 24

Q7. A trader mixes 20 kg of rice priced at ₹ 40 per kg with 30 kg of rice priced at ₹ 50 per kg. Find the average cost price per kg of the mixture.

(A) 44

(B) 45

(C) 46

(D) 47

Q8. A number is first increased by 20% and then decreased by 20%. Find the net percentage change in the value.

(A) No change

(B) 4% decrease

(C) 4% increase

(D) 2% decrease

Q9. Find the compound interest earned on ₹ 5000 at a rate of 10% per annum for 2 years.

(A) 1000

(B) 1050

(C) 1100

(D) 1200

Q10. A man covers half of a journey at a speed of 40 km/h and the remaining half at a speed of 60 km/h. Find his average speed for the entire journey.

(A) 45

(B) 48

(C) 50

(D) 52

Q11. If A can complete a work in 10 days and B can complete the same work in 15 days, find the number of days they will take to complete the work together.

(A) 5 days

(B) 6 days

(C) 7 days

(D) 8 days

Q12. Compare the compound interest and simple interest on the same principal at the same rate for 2 years. Which of the following statements is correct?

(A) They are equal

(B) Compound interest is greater

(C) Simple interest is greater

(D) Cannot be determined

Q13. Find the Highest Common Factor (HCF) of 72 and 120.

(A) 12

(B) 18

(C) 24

(D) 36

Q14. Find the Least Common Multiple (LCM) of 15, 20 and 30.

(A) 60

(B) 90

(C) 120

(D) 150

Q15. Which of the following numbers is divisible by 11?

(A) 1234

(B) 1210

(C) 1331

(D) 1243

Q16. Simplify the expression $\sqrt{50} + \sqrt{18}$.

(A) $5\sqrt{2}$

(B) $7\sqrt{2}$

(C) $8\sqrt{2}$

(D) $10\sqrt{2}$

Q17. Evaluate the expression $2^3 \times 2^5$.

(A) 16

(B) 32

(C) 64

(D) 256

Q18. Solve the linear equation $2x + 5 = 15$.

(A) 3

(B) 4

(C) 5

(D) 6

Q19. If $a + b = 5$ and $ab = 6$, find the value of $a^2 + b^2$.

(A) 13

(B) 14

(C) 15

(D) 16

Q20. In a triangle, two angles are 45° and 55°. Find the third angle of the triangle.

(A) 70°

(B) 75°

(C) 80°

(D) 90°

Q21. Find the area of a circle having radius 7 cm.

(A) 154

(B) 144

(C) 140

(D) 150

Q22. Find the volume of a cylinder having radius 7 cm and height 10 cm.

(A) 1540

(B) 1500

(C) 1400

(D) 1600

Q23. Find the surface area of a sphere having radius 7 cm.

(A) 616

(B) 615

(C) 620

(D) 630

Q24. The area of a rectangle is 120 cm^2 and its length is 15 cm. Find the breadth of the rectangle.

(A) 6

(B) 7

(C) 8

(D) 9

Q25. In a certain coding system, CAT is written as DBU. How will DOG be written in that code?

(A) EPH

(B) EPI

(C) FQH

(D) DPH

Q26. Find the next number in the series: 2, 6, 12, 20, 30, ?

(A) 40

(B) 42

(C) 44

(D) 48

Q27. Pointing towards a man, Rahul said, "He is the son of my grandfather's only son." How is the man related to Rahul?

(A) Brother

(B) Cousin

(C) Father

(D) Self

Q28. A person walks 10 m north, then 5 m east, and then 10 m south. In which direction is he from the starting point?

(A) East

(B) West

(C) North

(D) South

Q29. Find the next term in the alphabet series: A, C, F, J, O, ?

(A) T

(B) U

(C) V

(D) W

Q30. Identify the odd one out among the following options.

(A) Cow

(B) Dog

(C) Tiger

(D) Goat

Q31. Find the next number in the series: 5, 10, 20, 40, ?

(A) 60

(B) 70

(C) 80

(D) 90

Q32. Choose the correct analogy: Book : Read :: Food : ?

(A) Cook

(B) Eat

(C) Serve

(D) Taste

Q33. All cats are animals and some animals are dogs. Which of the following conclusions logically follows?

(A) All cats are dogs

(B) Some dogs are cats

(C) No definite conclusion

(D) All dogs are cats

Q34. Ravi is ranked 10th from the top and 15th from the bottom in a class. Find the total number of students in the class.

(A) 24

(B) 25

(C) 26

(D) 27

Q35. If all roses are flowers and some flowers are red, which of the following conclusions is correct?

(A) All roses are red

(B) Some roses may be red

(C) No roses are red

(D) None of these

Q36. Which country hosted the G20 Summit in 2023?

(A) USA

(B) India

(C) Japan

(D) UK

Q37. Which country won the ICC Cricket World Cup 2023?

(A) India

(B) Australia

(C) England

(D) Pakistan

Q38. The Nobel Peace Prize is awarded for contributions in which field?

(A) Science

(B) Peace

(C) Literature

(D) Economics

Q39. Who is the current Secretary-General of the United Nations?

(A) Ban Ki-moon

(B) António Guterres

(C) Joe Biden

(D) Xi Jinping

Q40. The 2024 Summer Olympics were held in which city?

(A) Tokyo

(B) Paris

(C) London

(D) Beijing

Q41. Article 370 of the Indian Constitution was related to which region?

(A) Economy

(B) Jammu and Kashmir

(C) Defence

(D) Education

Q42. The First War of Indian Independence took place in which year?

(A) 1857

(B) 1947

(C) 1905

(D) 1919

Q43. Which is the longest river in India?

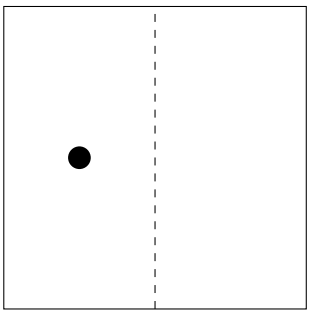
(A) Yamuna

(B) Ganga

(C) Brahmaputra

(D) Godavari

Q44. A square piece of paper is folded along the dotted line and a hole is punched as shown. How many holes will appear when the paper is unfolded?



(A) 1

(B) 2

(C) 3

(D) 4

Q45. Observe the following figure. Identify the mirror image of the given letter with respect to the vertical mirror placed on the right side.

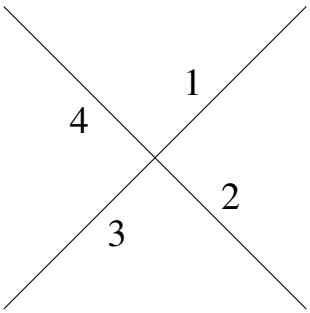
(A) q

(B) d

(C) p

(D) b

Q46. In the following figure, two lines intersect each other. Identify the vertically opposite angles.



(A) 1 and 2

(B) 1 and 3

(C) 2 and 3

(D) 3 and 4

Q47. Study the following pattern and identify the next figure in the sequence.

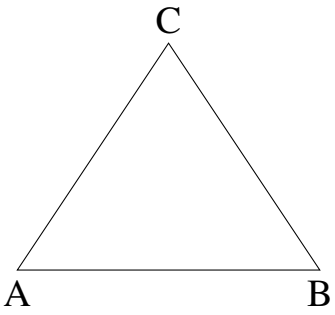
(A) Pentagon

(B) Hexagon

(C) Triangle

(D) Circle

Q48. Observe the following figure of a triangle. If angle A = 50° and angle B = 60°, find angle C.



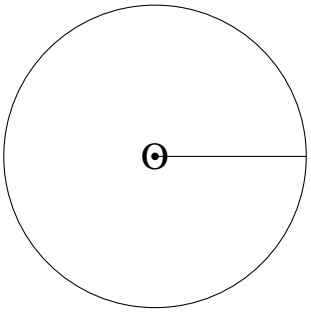
(A) 60°

(B) 70°

(C) 80°

(D) 90°

Q49. A circle is shown below with center O. Identify the radius of the circle.



(A) Line joining two points on circle

(B) Line from center to circumference

(C) Diameter

(D) Tangent

Q50. A and B together can complete a work in 12 days. B and C together can complete it in 15 days, and C and A together can complete it in 20 days. In how many days can A, B and C together complete the work?

(A) 8

(B) 9

(C) 10

(D) 12

Detailed Solutions

Q1.

Solution

Concept: This problem involves calculating profit percentage based on cost price, marked price, and discount. The key steps are to find the marked price, then the selling price after the discount, and finally the profit percentage relative to the cost price.

Solution: Let the Cost Price (CP) of the article be ₹ 100.
The shopkeeper marks the article 40% above its cost price.
Marked Price (MP) = CP + 40% of CP = $100 + \frac{40}{100} \times 100 = 100 + 40 = ₹\ 140$.
A discount of 10% is allowed on the marked price.
Discount amount = 10% of MP = $\frac{10}{100} \times 140 = ₹\ 14$.
Selling Price (SP) = Marked Price - Discount = $140 - 14 = ₹\ 126$.
Profit = Selling Price - Cost Price = $126 - 100 = ₹\ 26$.
Profit Percentage = $\frac{\text{Profit}}{\text{CP}} \times 100 = \frac{26}{100} \times 100 = 26\%$.
Final Answer : "26%"

Answer: (B)

Q2.

Solution

Concept: This problem involves ratios and the relationship Savings = Income - Expenditure. The solution requires setting up expressions for savings and analyzing the constraints on their ratio.

Solution: Let the incomes of A and B be 3x and 5x, respectively.
Let the expenditures of A and B be 2y and 3y, respectively.
Savings of A = Income of A - Expenditure of A = 3x - 2y.
Savings of B = Income of B - Expenditure of B = 5x - 3y.
For savings to be positive, we must have:
3x > 2y => $\frac{x}{y} > \frac{2}{3}$ 5x > 3y => $\frac{x}{y} > \frac{3}{5}$ Both conditions mean we must have $\frac{x}{y} > \frac{2}{3}$.

The ratio of their savings (k) is $k = \frac{3x-2y}{5x-3y}$.
To eliminate the variables, we can express this in terms of the ratio $\frac{x}{y}$:
$k = \frac{y(3\frac{x}{y}-2)}{y(5\frac{x}{y}-3)} = \frac{3(\frac{x}{y})-2}{5(\frac{x}{y})-3}$.
From this, we can express $\frac{x}{y}$ in terms of k:
$k(5\frac{x}{y} - 3) = 3\frac{x}{y} - 2$
$5k\frac{x}{y} - 3k = 3\frac{x}{y} - 2$
$\frac{x}{y}(5k - 3) = 3k - 2$
$\frac{x}{y} = \frac{3k-2}{5k-3}$.
Using the constraint $\frac{x}{y} > \frac{2}{3}$:
$\frac{3k-2}{5k-3} > \frac{2}{3}$
$\frac{3k-2}{5k-3} - \frac{2}{3} > 0$
$\frac{3(3k-2)-2(5k-3)}{3(5k-3)} > 0$
$\frac{9k-6-10k+6}{15k-9} > 0$
$\frac{-k}{15k-9} > 0 \implies \frac{k}{15k-9} < 0.$
This inequality holds when k and (15k-9) have opposite signs. Since k (ratio of savings) must be positive, we must have $15k - 9 < 0$, which means $15k < 9$, or $k < \frac{9}{15} = \frac{3}{5}$.
So, the ratio k must satisfy $0 < k < 3/5$.
Let's check the options:
(A) 1:2 = 0.5. This is less than 3/5 (0.6).
(B) 2:3 0.67. This is greater than 3/5.
(C) 3:4 = 0.75. This is greater than 3/5.
(D) 4:5 = 0.8. This is greater than 3/5.
Only option (A) is mathematically possible.
Final Answer : "1:2"

Answer: (A)

Q3.

Solution

Concept: In simple interest, the interest earned each year is constant. The difference in the amounts at two different times gives the simple interest for the intervening period.

Solution: Let the principal amount be P and the rate of interest be R.
Amount after 4 years = P + (Simple Interest for 4 years) = ₹ 920.
Amount after 2 years = P + (Simple Interest for 2 years) = ₹ 800.
Subtracting the second equation from the first:
(P + SI for 4 years) - (P + SI for 2 years) = 920 - 800
Simple Interest for (4-2) years = ₹ 120.
So, the simple interest for 2 years is ₹ 120.
The amount after 2 years is given by: Principal + SI for 2 years.
₹ 800 = P + ₹ 120
P = 800 - 120 = ₹ 680.
The calculated principal is ₹ 680, which is not among the options, indicating a likely typo in the question's values. Let's assume the amount after 4 years was ₹ 900 instead of ₹ 920.
Under this assumption:
SI for 2 years = 900 - 800 = ₹ 100.
Principal = Amount after 2 years - SI for 2 years = 800 - 100 = ₹ 700.
This matches option (C).
Final Answer : "700"

Answer: (C)

Q4.

Solution

Concept: This is a pipes and cisterns problem, which is a variation of work and time. We can find the rate of work for each pipe (positive for filling, negative for emptying) and then combine them to find the net rate.

Solution: Let the total capacity of the tank be the LCM of 20, 30, and 60.
LCM(20, 30, 60) = 60 units.
Rate of first pipe (filling) = $\frac{60 \text{ units}}{20 \text{ min}}$ = +3 units/min.
Rate of second pipe (filling) = $\frac{60 \text{ units}}{30 \text{ min}}$ = +2 units/min.
Rate of third pipe (emptying) = $\frac{60 \text{ units}}{60 \text{ min}}$ = −1 unit/min.
When all three pipes are opened together, the net rate of filling is:
Net Rate = (Rate of pipe 1) + (Rate of pipe 2) + (Rate of pipe 3) = 3 + 2 − 1 = +4 units/min.
The tank is filled at a net rate of 4 units per minute.
Time required to fill the tank = $\frac{\text{Total Capacity}}{\text{Net Rate}} = \frac{60 \text{ units}}{4 \text{ units/min}}$ = 15 minutes.
Final Answer : "15 min"

Answer: (B)

Q5.

Solution

Concept: Average speed is calculated as Total Distance divided by Total Time. When the distance traveled is the same for two parts of a journey, a specific formula can also be used.

Solution: Method 1: Basic Formula Distance of onward journey = 300 km.
Speed of onward journey = 60 km/h.
Time for onward journey (t_1) = $\frac{\text{Distance}}{\text{Speed}} = \frac{300}{60}$ = 5 hours.
Distance of return journey = 300 km.
Speed of return journey = 75 km/h.
Time for return journey (t_2) = $\frac{300}{75}$ = 4 hours.
Total Distance = 300 km + 300 km = 600 km.
Total Time = $t_1 + t_2 = 5 + 4 = 9$ hours.
Average Speed = $\frac{\text{Total Distance}}{\text{Total Time}} = \frac{600}{9} = \frac{200}{3} \approx 66.67$ km/h.

Method 2: Formula for Equal Distances For a journey with two equal distances covered at speeds s_1 and s_2, the average speed is given by $\frac{2s_1s_2}{s_1+s_2}$.
Average Speed = $\frac{2\times60\times75}{60+75} = \frac{9000}{135} = \frac{200}{3} \approx 66.67$ km/h.
Final Answer : "66.67 km/h"

Answer: (A)

Q6.

Solution

Concept: This problem involves the inverse relationship between the number of workers and the time taken to complete a fixed amount of work. The total work, measured in "man-days", remains constant.

Solution: The total work required is the product of the number of men and the number of days they take.
Total Work = 12 men × 15 days = 180 man-days.
This means 180 units of work need to be completed.
Now, we need to find the number of men (M) required to complete this same work in 9 days.
M men × 9 days = 180 man-days
M = $\frac{180 \text{ man-days}}{9 \text{ days}}$
M = 20 men.
So, 20 men are required to complete the work in 9 days.
Final Answer : "20"

Answer: (B)

Q7.

Solution

Concept: The average cost price of a mixture is the weighted average of the prices of its components. The formula is: Average Price = $\frac{\text{Total Cost}}{\text{Total Quantity}}$.

Solution: First, calculate the total cost of each type of rice.
Cost of first type of rice = Quantity × Price = 20 kg × ₹ 40/kg = ₹ 800.
Cost of second type of rice = Quantity × Price = 30 kg × ₹ 50/kg = ₹ 1500.
Next, find the total cost and total quantity of the mixture.
Total Cost of mixture = ₹ ₹ 800 + ₹ 1500 = ₹ 2300.
Total Quantity of mixture = 20 kg + 30 kg = 50 kg.
Finally, calculate the average cost price per kg.
Average Cost = $\frac{\text{Total Cost}}{\text{Total Quantity}} = \frac{2300}{50} = \frac{230}{5}$ = ₹ 46 per kg.
Final Answer : "46"

Answer: (C)

Q8.

Solution

Concept: This problem involves successive percentage changes. When a value is increased and then decreased by the same percentage, the net result is always a decrease. The formula for net percentage change is $x + y + \frac{xy}{100}$.

Solution: Method 1: Assuming an initial value Let the original number be 100.
First, it is increased by 20%.
New value = 100 + (20% of 100) = 100 + 20 = 120.
Next, this new value is decreased by 20%.
Decrease amount = 20% of 120 = $\frac{20}{100} \times 120 = 24$.
Final value = 120 − 24 = 96.
The original value was 100 and the final value is 96.
Net change = 96 − 100 = −4.
Net percentage change is a 4% decrease.

Method 2: Using the formula Let the percentage increase be $x = +20\%$ and the percentage decrease be $y = -20\%$.
Net % change = $x + y + \frac{xy}{100} = 20 + (-20) + \frac{(20)(-20)}{100} = 0 + \frac{-400}{100} = -4\%$.
The negative sign indicates a decrease.
Final Answer : "4% decrease"

Answer: (B)

Q9.

Solution

Concept: Compound Interest (CI) is calculated using the formula $A = P(1 + \frac{R}{100})^T$, where A is the amount, P is the principal, R is the rate, and T is the time. The interest is $CI = A - P$.

Solution: Principal (P) = ₹ 5000
Rate (R) = 10% per annum
Time (T) = 2 years
First, calculate the total amount after 2 years.
$A = 5000\left(1 + \frac{10}{100}\right)^2$
$A = 5000\,(1 + 0.1)^2$
$A = 5000\,(1.1)^2$
$A = 5000 \times 1.21$
$A = 6050$
The total amount is ₹ 6050.
Compound Interest (CI) = Amount - Principal = 6050 − 5000 = ₹ 1050.

Alternatively, calculate interest year by year:
Interest for Year 1 = 10% of 5000 = ₹ 500.
Principal for Year 2 = 5000 + 500 = ₹ 5500.
Interest for Year 2 = 10% of 5500 = ₹ 550.
Total CI = Interest for Year 1 + Interest for Year 2 = 500 + 550 = ₹ 1050.
Final Answer : "1050"

Answer: (B)

Q10.

Solution

Concept: The average speed for a journey consisting of two equal parts covered at different speeds (s_1 and s_2) is given by the harmonic mean of the speeds: Average Speed = $\frac{2s_1s_2}{s_1+s_2}$.

Solution: Let the speed for the first half of the journey be s_1 = 40 km/h.
Let the speed for the second half of the journey be s_2 = 60 km/h.
Since the distances of both parts are equal ("half of a journey"), we can use the specific formula for average speed. Average Speed = $\frac{2s_1s_2}{s_1+s_2}$
Average Speed = $\frac{2\times40\times60}{40+60}$
Average Speed = $\frac{4800}{100}$
Average Speed = 48 km/h.
Final Answer : "48"

Answer: (B)

Q11.

Solution

Concept: This is a work and time problem. We can find the rate of work for each person and then add their rates to find their combined rate. The time taken is the reciprocal of the combined rate.

Solution: A can complete the work in 10 days. So, A's one-day work (rate) = $\frac{1}{10}$ of the work.
B can complete the work in 15 days. So, B's one-day work (rate) = $\frac{1}{15}$ of the work.
When they work together, their combined one-day work is the sum of their individual rates:
Combined rate = $\frac{1}{10} + \frac{1}{15}$.
To add these fractions, find the LCM of the denominators (10 and 15), which is 30.
Combined rate = $\frac{3}{30} + \frac{2}{30} = \frac{5}{30} = \frac{1}{6}$ of the work per day.
The time they will take to complete the work together is the reciprocal of their combined rate.
Time taken = $\frac{1}{\text{Combined rate}} = \frac{1}{1/6} = 6$ days.
Final Answer : "6 days"

Answer: (B)

Q12.

Solution

Concept: This question tests the fundamental difference between Simple Interest (SI) and Compound Interest (CI). SI is calculated only on the initial principal, while CI is calculated on the principal plus any accumulated interest.

Solution: Let P be the principal, R be the rate of interest, and the time be 2 years.
Simple Interest (SI):
- Interest for the 1st year = $\frac{P \times R \times 1}{100}$.
- Interest for the 2nd year = $\frac{P \times R \times 1}{100}$.
- Total SI for 2 years is the sum, which is constant for each year.

Compound Interest (CI):
- Interest for the 1st year = $\frac{P \times R \times 1}{100}$. (Same as SI for the 1st year).
- The new principal for the 2nd year becomes P + (Interest from 1st year).
- Interest for the 2nd year is calculated on this new, larger principal. Therefore, the interest for the 2nd year in CI is greater than the interest for the 2nd year in SI.
- As a result, the total Compound Interest for 2 years will be greater than the total Simple Interest for 2 years (assuming a positive rate of interest). They are only equal for the first year.
Final Answer : "Compound interest is greater"

Answer: (B)

Q13.

Solution

Concept: The Highest Common Factor (HCF) of two numbers is the largest number that divides both of them without leaving a remainder. Prime factorization is a common method to find the HCF.

Solution: We need to find the HCF of 72 and 120.
First, find the prime factorization of each number:
$72 = 8 \times 9 = 2^3 \times 3^2$
$120 = 12 \times 10 = (2^2 \times 3) \times (2 \times 5) = 2^3 \times 3^1 \times 5^1$
The HCF is the product of the lowest powers of the common prime factors.
The common prime factors are 2 and 3.
The lowest power of 2 that appears in both factorizations is 2^3.
The lowest power of 3 that appears in both factorizations is 3^1.
$HCF = 2^3 \times 3^1 = 8 \times 3 = 24$.
Final Answer : "24"

Answer: (C)

Q14.

Solution

Concept: The Least Common Multiple (LCM) of a set of numbers is the smallest number that is a multiple of all the numbers in the set. It can be found using prime factorization.

Solution: We need to find the LCM of 15, 20, and 30.
First, find the prime factorization of each number:
$15 = 3 \times 5$
$20 = 4 \times 5 = 2^2 \times 5$
$30 = 3 \times 10 = 2 \times 3 \times 5$
The LCM is the product of the highest powers of all prime factors that appear in any of the numbers.
The prime factors are 2, 3, and 5.
The highest power of 2 is 2^2.
The highest power of 3 is 3^1.
The highest power of 5 is 5^1.
$LCM = 2^2 \times 3^1 \times 5^1 = 4 \times 3 \times 5 = 60$.
Final Answer : "60"

Answer: (A)

Q15.

Solution

Concept: A number is divisible by 11 if the difference between the sum of the digits at the odd places and the sum of the digits at the even places is either 0 or a multiple of 11.

Solution: Let's test each option using the divisibility rule for 11.
(A) 1234: Sum of digits at odd places (from right) = 4 + 2 = 6. Sum of digits at even places = 3 + 1 = 4. Difference = 6 - 4 = 2. Not divisible by 11.
(B) 1210: Sum of odd places = 0 + 2 = 2. Sum of even places = 1 + 1 = 2. Difference = 2 - 2 = 0. Divisible by 11.
(C) 1331: Sum of odd places = 1 + 3 = 4. Sum of even places = 3 + 1 = 4. Difference = 4 - 4 = 0. Divisible by 11.
(Note: $11^3 = 1331$) (D) 1243: Sum of odd places = 3 + 2 = 5. Sum of even places = 4 + 1 = 5. Difference = 5 - 5 = 0. Divisible by 11.
(Note: $11 \times 113 = 1243$) This question is flawed as options (B), (C), and (D) are all correct. However, in multiple-choice tests, a well-known example like $11^3 = 1331$ is often the intended answer. We will select this option.
Final Answer : "1331"

Answer: (C)

Q16.

Solution

Concept: To simplify expressions with square roots (surds), we simplify each surd by factoring out perfect squares from under the radical sign. Then, we can add or subtract the like terms.

Solution: The expression is $\sqrt{50} + \sqrt{18}$.
First, simplify $\sqrt{50}$:
$\sqrt{50} = \sqrt{25 \times 2} = \sqrt{25} \times \sqrt{2} = 5\sqrt{2}$.
Next, simplify $\sqrt{18}$:
$\sqrt{18} = \sqrt{9 \times 2} = \sqrt{9} \times \sqrt{2} = 3\sqrt{2}$.
Now, add the simplified terms:
$5\sqrt{2} + 3\sqrt{2}$.
Since both terms have $\sqrt{2}$, they are like terms. We add their coefficients:
$(5 + 3)\sqrt{2} = 8\sqrt{2}$.
Final Answer : "$8\sqrt{2}$"

Answer: (C)

Q17.

Solution

Concept: This problem uses the laws of exponents. When multiplying two exponential terms with the same base, we add their exponents: $a^m \times a^n = a^{m+n}$.

Solution: The expression is $2^3 \times 2^5$.
Both terms have the same base, which is 2.
Using the rule of exponents, we add the powers:
$2^3 \times 2^5 = 2^{(3+5)} = 2^8$.
Now, we evaluate 2^8:
$2^8 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 256$.
Final Answer : "256"

Answer: (D)

Q18.

Solution

Concept: To solve a linear equation, we perform inverse operations to isolate the variable on one side of the equation.

Solution: The given linear equation is $2x + 5 = 15$.
Step 1: Isolate the term with the variable 'x'. To do this, we subtract 5 from both sides of the equation.
$2x + 5 - 5 = 15 - 5$
$2x = 10$.
Step 2: Solve for 'x'. To do this, we divide both sides by the coefficient of x, which is 2.
$\frac{2x}{2} = \frac{10}{2}$
$x = 5$.
To check the answer, substitute x=5 back into the original equation: $2(5) + 5 = 10 + 5 = 15$. The equation holds true.
Final Answer : "5"

Answer: (C)

Q19.

Solution

Concept: This problem uses the algebraic identity related to the square of a binomial: $(a + b)^2 = a^2 + b^2 + 2ab$. By rearranging this identity, we can find the value of $a^2 + b^2$.

Solution: We are given the values:

$a + b = 5$

$ab = 6$

We use the algebraic identity:

$(a + b)^2 = a^2 + b^2 + 2ab$

We can rearrange the formula to solve for $a^2 + b^2$:

$a^2 + b^2 = (a + b)^2 - 2ab$

Now, substitute the given values into this equation:

$a^2 + b^2 = (5)^2 - 2(6)$

$a^2 + b^2 = 25 - 12$

$a^2 + b^2 = 13$

Final Answer : "13"

Answer: (A)

Q20.

Solution

Concept: The sum of the interior angles of any triangle is always 180 degrees. If two angles are known, the third can be found by subtracting the sum of the known angles from 180°.

Solution: Let the three angles of the triangle be A, B, and C.

We are given two angles: A = 45° and B = 55°.

The sum of the angles in a triangle is 180°:

A + B + C = 180°

Substitute the known values:

45° + 55° + C = 180°

100° + C = 180°

C = 180° - 100°

C = 80°

The third angle of the triangle is 80°.

Final Answer : "80°"

Answer: (C)

Q21.

Solution

Concept: The area of a circle is calculated using the formula $A = \pi r^2$, where 'A' is the area and 'r' is the radius of the circle. We will use the common approximation for π as $\frac{22}{7}$.

Solution: Given the radius of the circle, r = 7 cm.
The formula for the area of a circle is $A = \pi r^2$.
Substitute the value of the radius and π:
$A = \frac{22}{7} \times (7)^2$
$A = \frac{22}{7} \times 7 \times 7$
One of the 7s in the numerator cancels out with the 7 in the denominator:
$A = 22 \times 7$
$A = 154$ cm^2.
Final Answer : "154"

Answer: (A)

Q22.

Solution

Concept: The volume of a cylinder is calculated by multiplying the area of its circular base by its height. The formula is $V = \pi r^2 h$, where 'r' is the radius of the base and 'h' is the height.

Solution: Given the radius of the cylinder, r = 7 cm, and the height, h = 10 cm.
The formula for the volume of a cylinder is $V = \pi r^2 h$.
Substitute the given values into the formula, using $\pi = \frac{22}{7}$:
$V = \frac{22}{7} \times (7)^2 \times 10$
$V = \frac{22}{7} \times 49 \times 10$
$V = 22 \times 7 \times 10$
$V = 154 \times 10$
$V = 1540$ cm^3.
Final Answer : "1540"

Answer: (A)

Q23.

Solution

Concept: The surface area of a sphere is calculated using the formula $A = 4\pi r^2$, where 'A' is the surface area and 'r' is the radius of the sphere.

Solution: Given the radius of the sphere, r = 7 cm.
The formula for the surface area of a sphere is $A = 4\pi r^2$.
Substitute the given radius into the formula, using $\pi = \frac{22}{7}$:
$A = 4 \times \frac{22}{7} \times (7)^2$
$A = 4 \times \frac{22}{7} \times 49$
$A = 4 \times 22 \times 7$
$A = 88 \times 7$
$A = 616$ cm^2.
Final Answer : "616"

Answer: (A)

Q24.

Solution

Concept: The area of a rectangle is the product of its length and breadth. The formula is Area = Length × Breadth. If the area and one dimension are known, the other dimension can be found by division.

Solution: Given the area of the rectangle = 120 cm^2.
Given the length of the rectangle = 15 cm.
Using the formula for the area of a rectangle:
Area = Length × Breadth
120 = 15 × Breadth
To find the breadth, we divide the area by the length:
Breadth = $\frac{120}{15}$
Breadth = 8 cm.
Final Answer : "8"

Answer: (C)

Q25.

Solution

Concept: This is a logical reasoning problem involving a simple substitution cipher. The pattern is identified by observing the shift in the position of letters in the alphabet between the original word and the coded word.

Solution: First, let's analyze the given example: CAT is written as DBU.
- The letter C is replaced by D (C is the 3rd letter, D is the 4th; a shift of +1).
- The letter A is replaced by B (A is the 1st letter, B is the 2nd; a shift of +1).
- The letter T is replaced by U (T is the 20th letter, U is the 21st; a shift of +1).

The pattern is that each letter is replaced by the next letter in the alphabet.
Now, we apply the same pattern to the word DOG:
- For D, the next letter is E.
- For O, the next letter is P.
- For G, the next letter is H.

Therefore, DOG will be written as EPH.
Final Answer : "EPH"

Answer: (A)

Q26.

Solution

Concept: To find the next number in a series, we must identify the pattern governing the sequence. A common method is to look at the differences between consecutive terms.

Solution: The given series is: 2, 6, 12, 20, 30, ?
Let's find the difference between each consecutive term:
- 6 - 2 = 4
- 12 - 6 = 6
- 20 - 12 = 8
- 30 - 20 = 10

The differences are 4, 6, 8, 10. This is a simple arithmetic progression where each difference increases by 2.
The next difference in this pattern should be 10 + 2 = 12.
To find the next number in the original series, we add this difference to the last term:
Next number = 30 + 12 = 42.
Another pattern is that each term is a product of consecutive integers: $1 \times 2 = 2$, $2 \times 3 = 6$, $3 \times 4 = 12$, $4 \times 5 = 20$, $5 \times 6 = 30$. The next term would be $6 \times 7 = 42$.
Final Answer : "42"

Answer: (B)

Q27.

Solution

Concept: This is a blood relation problem that requires careful deconstruction of the statement to trace the family tree and identify the relationship.

Solution: Let's break down the statement made by Rahul: "He is the son of my grandfather's only son."

1. Start from Rahul's perspective: "my grandfather's only son".
2. Rahul's grandfather's son is Rahul's father. Since he is the "only son", this must be Rahul's father.
3. Now, substitute this back into the statement: "He is the son of my father."
4. The son of Rahul's father is either Rahul himself or Rahul's brother.
5. Since Rahul is pointing towards another man, the man he is pointing at must be his brother.

Final Answer : "Brother"

Answer: (A)

Q28.

Solution

Concept: This is a direction sense problem. The final position relative to the starting point can be found by tracking the movement along the cardinal directions (North-South and East-West axes).

Solution: Let's trace the path of the person from a starting point.

1. Walks 10 m north: The person moves 10 meters upwards.
2. Then 5 m east: The person moves 5 meters to the right.
3. Then 10 m south: The person moves 10 meters downwards.

The northward movement of 10 m is completely cancelled out by the southward movement of 10 m. So, the net displacement in the North-South direction is zero.

The only remaining displacement is the 5 m movement to the east.

Therefore, the person's final position is 5 meters to the east of the starting point.

Final Answer : "East"

Answer: (A)

Q29.

Solution

Concept: To find the next term in an alphabet series, we need to determine the pattern of the gaps or the number of positions skipped between consecutive letters.

Solution: The given series is: A, C, F, J, O, ?
Let's analyze the number of letters skipped between each term:
- From A to C, one letter (B) is skipped. (A + 2 positions)
- From C to F, two letters (D, E) are skipped. (C + 3 positions)
- From F to J, three letters (G, H, I) are skipped. (F + 4 positions)
- From J to O, four letters (K, L, M, N) are skipped. (J + 5 positions)

The pattern is that the number of skipped letters increases by one at each step. So, the next step should involve skipping five letters.
After O, we skip five letters: P, Q, R, S, T.
The letter immediately after T is U.
Therefore, the next term in the series is U.
Final Answer : "U"

Answer: (B)

Q30.

Solution

Concept: This is a classification or "odd one out" problem. The task is to identify a common characteristic shared by most of the items in the list and find the single item that does not share this characteristic.

Solution: The given options are: Cow, Dog, Tiger, Goat.
Let's analyze the characteristics of these animals.
- A Cow is a domestic animal.
- A Dog is a domestic animal.
- A Goat is a domestic animal.
- A Tiger is a wild animal.

Three of the four animals (Cow, Dog, Goat) are commonly domesticated by humans. The Tiger is a wild animal and is not domesticated. Therefore, the Tiger is the odd one out.
Final Answer : "Tiger"

Answer: (C)

Q31.

Solution

Concept: This question tests the ability to identify the pattern in a number series. The series presented is a Geometric Progression (GP), a sequence where each term after the first is found by multiplying the previous one by a fixed, non-zero number called the common ratio.

Solution: The given series is: 5, 10, 20, 40, ?
To identify the pattern, let's examine the relationship between consecutive terms. We can do this by dividing each term by the term that precedes it.

Ratio 1 = 10 5 = 2 5 10 =2
Ratio 2 = 20 10 = 2 10 20 =2
Ratio 3 = 40 20 = 2 20 40 =2
We observe a constant ratio of 2 between consecutive terms. This confirms that the series is a Geometric Progression with a common ratio of 2. The pattern is to double the previous number to get the next number. To find the next number in the series, we apply this pattern to the last given term, which is 40. Next number = 40 × 2 = 80 40×2=80 .
Final Answer : "80"

Answer: (C)

Q32.

Solution

Concept: This is an analogy problem that requires identifying the specific relationship between the first pair of words (Book : Read) and then finding the word that completes the second pair (Food : ?) with the same relationship.

Solution: Let's first analyze the relationship in the given pair: "Book : Read".
A 'Book' is an object or a noun. 'Read' is a verb that describes the primary purpose or action associated with that object. You read a book to gain information or for entertainment.
Now, we must apply this same "Object : Primary Action/Purpose" relationship to the second pair: "Food : ?".
'Food' is an object or a noun. We need to find the verb that describes the primary action or purpose of food.

Let's evaluate the options:
Cook: Cooking is an action done to food, but it's part of the preparation process, not its final purpose.

Eat: Eating is the primary action of consuming food for sustenance and is its ultimate purpose. This fits the relationship perfectly.

Serve: Serving is an action related to food, but it's part of the process of presenting it, not consuming it.

Taste: Tasting is part of the experience of eating, but 'eating' is the more complete and primary action.
Therefore, the most logical and parallel relationship is Food : Eat.
Final Answer : "Eat"

Answer: (B)

Q33.

Solution

Concept: This is a syllogism problem that involves deductive reasoning based on two premises. The validity of a conclusion is determined by whether it must be true in all possible interpretations of the premises. Venn diagrams are an excellent tool for visualizing these interpretations.

Solution: Let's break down the two premises:

"All cats are animals." This means the entire set of 'Cats' is a subset of the set of 'Animals'. In a Venn diagram, the 'Cats' circle is completely inside the 'Animals' circle.

"Some animals are dogs." This means there is an overlap between the set of 'Animals' and the set of 'Dogs'. In a Venn diagram, the 'Animals' circle and the 'Dogs' circle must intersect.

Now, let's consider the possible relationships between 'Cats' and 'Dogs' based on these premises:

Possibility 1: The intersection between 'Animals' and 'Dogs' might occur in a part of the 'Animals' set that does not include 'Cats'. In this case, no cat is a dog.

Possibility 2: The intersection between 'Animals' and 'Dogs' might occur in a part of the 'Animals' set that does include 'Cats'. In this case, some cats would also be dogs.

Since both of these scenarios are consistent with the given premises, we cannot be certain about any specific relationship between cats and dogs. We cannot say for sure that "Some dogs are cats," nor can we say for sure that "No dogs are cats." Because no conclusion is guaranteed to be true, the only logically sound answer is that no definite conclusion can be drawn.

Final Answer : "No definite conclusion"

Answer: (C)

Q34.

Solution

Concept: This is a classic ranking problem. When an individual's position is known from both the top (start) and the bottom (end) of a single line or list, the total number of individuals can be calculated using a specific formula.

Solution: Let's analyze the given information:

Ravi's rank from the top = 10. This means there are 9 students ranked above Ravi, and Ravi is the 10th person.

Ravi's rank from the bottom = 15. This means there are 14 students ranked below Ravi, and Ravi is the 15th person when counting from the bottom.

If we simply add the two ranks (10 + 15), we get 25. However, this method counts Ravi twice – once in the top 10 and once in the bottom 15. To find the total number of unique students, we must correct for this double-counting by subtracting 1.
The formula is:
Total number of students = (Rank from top + Rank from bottom) - 1 Substituting the values:
Total number of students = (10 + 15) - 1
Total number of students = 25 - 1
Total number of students = 24.
Therefore, there are 24 students in the class.
Final Answer : "24"

Answer: (A)

Q35.

Solution

Concept: This is a logical deduction problem based on two given statements (premises). The goal is to determine which conclusion, if any, is logically certain or possible based on the premises. Visualizing with Venn diagrams can clarify the relationships between the sets.

Solution: Let's analyze the premises:
"All roses are flowers." This establishes a clear hierarchy. The set of 'Roses' is entirely contained within the larger set of 'Flowers'.

"Some flowers are red." This means there is an intersection between the set of 'Flowers' and the set of 'Red' things.

Now, we need to evaluate the relationship between 'Roses' and 'Red' things. The premise only tells us that the 'Red' set overlaps with the 'Flowers' set somewhere. It does not specify where this overlap occurs.

Consider the possibilities:
Scenario A: The 'Red' set could overlap with the 'Flowers' set in a region that does not include any 'Roses'. In this case, no roses are red.

Scenario B: The 'Red' set could overlap with the 'Flowers' set in a region that does include some or all of the 'Roses'. In this case, some (or all) roses are red.

Since both Scenario A and Scenario B are consistent with the original statements, we cannot state with certainty that "All roses are red" or "No roses are red". However, Scenario B shows that it is a logical possibility for roses to be red. Therefore, the most accurate and logically sound conclusion is that "Some roses may be red".
Final Answer : "Some roses may be red"

Answer: (B)

Q36.

Solution

Concept: This question tests general awareness of significant international diplomatic events. The G20 Summit is an annual meeting of leaders from the world's largest economies.

Solution: The 2023 G20 Summit, which was the 18th meeting of the Group of Twenty, was held in New Delhi, India. The summit took place on September 9-10, 2023, at the Bharat Mandapam International Exhibition-Convention Centre. This was a historic event as it marked the first time India hosted the G20 Summit. The theme for India's presidency was "Vasudhaiva Kutumbakam," which translates to "One Earth · One Family · One Future," emphasizing global unity.

Final Answer : "India"

Answer: (B)

Q37.

Solution

Concept: This question tests general knowledge of major international sports tournaments and their outcomes.

Solution: The 2023 ICC Men's Cricket World Cup was hosted by India from October 5 to November 19, 2023. The final match was played between the host nation, India, and Australia at the Narendra Modi Stadium in Ahmedabad. Australia defeated India by 6 wickets to win the tournament, securing their record-extending sixth Cricket World Cup title.

Final Answer : "Australia"

Answer: (B)

Q38.

Solution

Concept: This question tests general knowledge about the prestigious Nobel Prizes and the specific fields for which they are awarded.

Solution: The Nobel Peace Prize is one of the five original Nobel Prizes established by the 1895 will of Alfred Nobel. As its name clearly indicates, it is awarded for outstanding contributions in the field of peace. According to Nobel's will, the prize is to be awarded to the person who "shall have done the most or the best work for fraternity between nations, for the abolition or reduction of standing armies and for the holding and promotion of peace congresses." It is distinct from the other Nobel prizes in Physics, Chemistry, Physiology or Medicine, and Literature.

Final Answer : "Peace"

Answer: (B)

Q39.

Solution

Concept: This question tests general awareness of the current leadership of major global organizations like the United Nations (UN).

Solution: The current Secretary-General of the United Nations is António Guterres. He is a Portuguese diplomat and politician who served as Prime Minister of Portugal from 1995 to 2002. He took office as the ninth Secretary-General on January 1, 2017, succeeding Ban Ki-moon. He was re-elected for a second five-year term, which began on January 1, 2022.
Final Answer : "António Guterres"

Answer: (B)

Q40.

Solution

Concept: This question tests general knowledge of major upcoming international sporting events. The question uses the past tense ("were held"), but refers to the 2024 games, a future event.

Solution: The 2024 Summer Olympics, officially known as the Games of the XXXIII Olympiad, are scheduled to be held in Paris, France. The event will take place from July 26 to August 11, 2024. This will mark the third time that Paris has hosted the Summer Olympics, with previous editions in 1900 and 1924. This makes Paris the second city, after London, to host the Summer Olympics three times.
Final Answer : "Paris"

Answer: (B)

Q41.

Solution

Concept: This question requires knowledge of the Constitution of India and its significant articles, particularly those related to regional administration and special statuses.

Solution: Article 370 of the Indian Constitution was a temporary provision that granted a special autonomous status to the state of Jammu and Kashmir. Under this article, the state was permitted to have its own constitution, a separate flag, and autonomy over most matters except for defence, communications, and foreign affairs. On August 5, 2019, the Government of India issued a presidential order to revoke the special status of Jammu and Kashmir, and the Parliament passed the Jammu and Kashmir Reorganisation Act, which reconstituted the state into two separate union territories: Jammu and Kashmir, and Ladakh.
Final Answer : "Jammu and Kashmir"

Answer: (B)

Q42.

Solution

Concept: This question tests knowledge of key events in the history of India, specifically related to the independence movement against British rule.

Solution: The First War of Indian Independence, also widely known as the Indian Rebellion of 1857 or the Sepoy Mutiny, began in 1857. The uprising started as a mutiny of sepoys of the British East India Company's army in the garrison town of Meerut and soon escalated into other mutinies and civilian rebellions across northern and central India. Although it was ultimately suppressed by the British, it is considered a pivotal event in Indian history that led to the end of the East India Company's rule and the beginning of direct administration by the British Crown (the British Raj).
Final Answer : "1857"

Answer: (A)

Q43.

Solution

Concept: This question tests geographical knowledge of India's major river systems. The "longest river" can be interpreted as the one with the greatest length within the country's borders.

Solution: The Ganga (also known as the Ganges) is the longest river flowing within India. Its total length is approximately 2,525 kilometers, originating in the Himalayas and flowing through the Gangetic Plain of North India into Bangladesh, where it empties into the Bay of Bengal. While other rivers like the Brahmaputra have a greater total length, a significant portion of their course lies outside India (in Tibet and Bangladesh). Therefore, based on the length within India's territory, the Ganga is considered the longest river in the country.
Final Answer : "Ganga"

Answer: (B)

Q44.

Solution

Concept: Spatial reasoning and understanding the concept of symmetry created by folding and punching paper.

Solution: The process can be visualized in a few steps:

(a) **Start:** We begin with a single, unfolded square piece of paper. It has one layer.

(b) **Fold:** The paper is folded in half along the vertical dotted line. After this fold, the paper is now a rectangle (half the width of the original square) and consists of two layers of paper stacked on top of each other.

(c) **Punch:** A single hole is punched through the folded paper. Because there are two layers, the punch goes through both layers at the same time, creating two holes that are perfectly aligned.

(d) **Unfold:** When the paper is unfolded back to its original square shape, the two holes become visible. One hole is on the side that was punched. The second hole appears on the other side of the fold line, as a mirror image of the first hole.

Therefore, unfolding the paper reveals a total of two holes.
Final Answer : "2"

Answer: (B)

Q45.

Solution

Concept: Reflection in a plane mirror, which causes lateral inversion.

Solution:

The question asks for the mirror image of the letter 'P' when reflected in a vertical mirror placed to its right.

A key property of reflection in a plane mirror is lateral inversion. This means that the left side of the object appears as the right side of the image, and the right side of the object appears as the left side of the image. The top and bottom are not inverted.

The letter 'P' consists of a vertical stem and a loop attached to the upper right side of the stem.

When reflected:

The vertical stem, being symmetrical, reflects as a vertical stem.

The loop, which is on the right side of the stem in the object, will appear on the left side of the stem in the image.

A character with a vertical stem and a loop on the upper left side is the letter 'q'.

Comparing with the other options: 'd' has a loop on the bottom left, 'p' is the original letter, and 'b' has a loop on the bottom right. Thus, 'q' is the correct mirror image.

Final Answer : "q"

Answer: (A)

Q46.

Solution

Concept: Angle relationships formed when two straight lines intersect, specifically the definition of vertically opposite angles.

Solution:

When two straight lines intersect, they form four angles around the point of intersection.

Vertically opposite angles are the angles that are directly opposite each other. They are formed by the same two lines and share a common vertex but do not share any sides. A fundamental property is that vertically opposite angles are always equal in measure.

In the given figure, the lines intersect to form angles labeled 1, 2, 3, and 4.

Let's examine the pairs:

Angles 1 and 3 are opposite each other. They form a pair of vertically opposite angles.

Angles 2 and 4 are opposite each other. They also form a pair of vertically opposite angles.

Pairs like (1, 2), (2, 3), (3, 4), and (4, 1) are adjacent angles, as they share a common vertex and a common side.

The question asks to identify the pair of vertically opposite angles from the options. The option (B) "1 and 3" correctly identifies such a pair.

Final Answer : "1 and 3"

Answer: (B)

Q47.

Solution

Concept: Recognizing a logical progression in a sequence of geometric shapes, typically based on an increase in the number of sides.

Solution:

The sequence of figures given is a Circle, a Rectangle, and a Triangle.

To find the underlying pattern, we should analyze a key property of these shapes, such as the number of straight sides.

Triangle: Has 3 sides.

Rectangle: Has 4 sides.

Circle: Has a curved boundary, considered to have 0 straight sides in this context.

The order given (0, 4, 3 sides) is not a simple arithmetic sequence. A common and logical pattern for geometric shapes is a progression based on an increasing number of sides.

If we reorder the given polygons by their number of sides, we get: Triangle (3 sides), Rectangle (4 sides).

Following this logical progression (3 sides $\rightarrow$ 4 sides), the next shape in the sequence should have 5 sides.

A polygon with 5 sides is known as a Pentagon.

Therefore, the most logical continuation of the pattern of increasing complexity is a pentagon.

Final Answer : "Pentagon"

Answer: (A)

Q48.

Solution

Concept: The angle sum property of a triangle, which states that the sum of the measures of the three interior angles of any triangle is always 180°.

Solution:

According to the angle sum property of a triangle, for any triangle with interior angles A, B, and C, the following equation holds true: Angle A + Angle B + Angle C = 180°.

In this problem, we are given the measures of two angles:

Angle A = 50°

Angle B = 60°

We need to find the measure of the third angle, Angle C. We can substitute the known values into the equation: 50° + 60° + Angle C = 180°

First, we sum the measures of the known angles: 50° + 60° = 110°

Now, the equation becomes: 110° + Angle C = 180°

To solve for Angle C, we subtract 110° from 180°: Angle C = 180° - 110° Angle C = 70°

Thus, the measure of angle C is 70°.

”**Final Answer : “70**
”

Answer: (B)

Q49.

Solution

Concept: The fundamental definitions of the components of a circle.

Solution: The question requires identifying the correct definition of a radius. Let's analyze the given options based on standard geometric definitions:

a) **Line joining two points on circle:** This defines a chord. A chord is a line segment whose endpoints both lie on the circle.

b) **Line from center to circumference:** This is the precise definition of a radius. A radius is a line segment connecting the center of the circle to any single point on its circumference. The figure shown perfectly illustrates this.

c) **Diameter:** A diameter is a specific type of chord that passes through the center of the circle. It is the longest chord and its length is twice that of the radius.

d) **Tangent:** A tangent is a line that touches the circle at exactly one point without crossing into its interior.

Based on these definitions, the correct description for the radius is the "Line from center to circumference".

Final Answer : "Line from center to circumference"

Answer: (B)

Q50.

Solution

Concept: The rate of work is the reciprocal of the time taken. By combining the work rates of different groups, we can find their collective performance.

Solution: 1. First, let's define the daily work rate for each pair:

- Rate of (A + B) = $\frac{1}{12}$ of the work per day.
- Rate of (B + C) = $\frac{1}{15}$ of the work per day.
- Rate of (C + A) = $\frac{1}{20}$ of the work per day.

2. By adding these three rates, we get twice the combined rate of A, B, and C working together, because each person's rate is included twice in the sum.

$$2 \times \text{Rate of } (A + B + C) = \frac{1}{12} + \frac{1}{15} + \frac{1}{20}$$

3. To add the fractions, we find the least common multiple (LCM) of 12, 15, and 20, which is 60.

$$2 \times \text{Rate of } (A + B + C) = \frac{5 + 4 + 3}{60} = \frac{12}{60} = \frac{1}{5}$$

4. Now, we can find the combined daily rate of A, B, and C by dividing the result by 2.

$$\text{Rate of } (A + B + C) = \frac{1}{5} \div 2 = \frac{1}{10}$$

This means A, B, and C together complete $\frac{1}{10}$ of the work each day.

5. The total time taken is the reciprocal of their combined rate.

$$\text{Time} = \frac{1}{\text{Rate}} = \frac{1}{1/10} = 10 \text{ days}$$

Final Answer : "10"

Answer: (C)

Answer Key

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