QUESTION BANK OF AR

Unit -1

NUMBERS (Natural, Whole, Integers, Rational) –

Q1. Which of the following are rational numbers?

√4, √7, −3/5
Solution:
√4 = 2 → Rational
√7 → Irrational
−3/5 → Rational
Answer: **√4, −3/5**

Q2. Write three integers between −5 and 2.

Solution:
Integers between −5 and 2 are: −4, −3, −2, −1, 0, 1
Any three: **−4, −3, −2**
 Answer: −4, −3, −2

Q3. Write the additive inverse of −9.

Solution:
Additive inverse of a number is the number which gives sum 0.
−9 + 9 = 0
 Answer: 9

Q4. Write two rational numbers between 2 and 3.

Solution:
Convert into fractions:
2 = 8/4, 3 = 12/4
Numbers between: **9/4, 10/4**
 Answer: 9/4, 10/4

Q5. Write the multiplicative inverse of −5/7.

Solution:
Reciprocal of −5/7 is −7/5
 Answer: −7/5

Q6. Find the product of the smallest whole number and the greatest negative integer.

Solution:
Smallest whole number = 0
Greatest negative integer = −1
Product = 0 × (−1) = **0**

FACTORS & MULTIPLES –

Q7. Write all prime factors of 36.

Solution:
$36 = 2^2 \times 3^2$
Prime factors: **2, 3**
 Answer: 2 and 3

Q8. Find the greatest factor of 25 other than itself.

Solution:
Factors of 25: 1, 5, 25
Greatest factor other than itself = **5**
 Answer: 5

Q9. Which is greater: number of factors of 18 or 20?

Solution:
$18 = 2 \times 3^2 \rightarrow (1+1)(2+1) = 6$
$20 = 2^2 \times 5 \rightarrow (2+1)(1+1) = 6$
 Answer: Both have equal factors (6)

Q10. Find common factors of 12 and 18.

Solution:
Factors of 12: 1, 2, 3, 4, 6, 12
Factors of 18: 1, 2, 3, 6, 9, 18
Common factors: **1, 2, 3, 6**
 Answer: 1, 2, 3, 6

Q11. Find first three multiples of 11.

Solution:
$11 \times 1 = 11$
$11 \times 2 = 22$
$11 \times 3 = 33$
 Answer: 11, 22, 33

Q12. Is 1 a prime number?

Solution:
Prime numbers have exactly two factors.
1 has only one factor.
 Answer: No

Q13. Write all even factors of 24.

Solution:
Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
Even factors: **2, 4, 6, 8, 12, 24**
 Answer: 2, 4, 6, 8, 12, 24

Q14. Find the smallest factor of any number.

Solution:
Smallest factor is always **1**
 Answer: 1

Q15. Find the greatest multiple of any number.

Solution:
Multiples are infinite.
 Answer: No greatest multiple

Q16. Write the factors of a prime number 13.

Solution:
Factors: **1 and 13**
 Answer: 1, 13

Q17. How many factors does a prime number have?

Solution:
Prime numbers have exactly **2 factors**.
 Answer: 2

Q18. Write a number having exactly three factors.

Solution:
Square of a prime has 3 factors.
Example: 4 (1, 2, 4)
 Answer: 4

Q19. Find the common multiples of 3 and 5 less than 50.

Solution:
LCM of 3 and 5 = 15
Multiples: 15, 30, 45
 Answer: 15, 30, 45

LCM & HCF –

Q20. Find the HCF of 12 and 18.

Solution:
$12 = 2^2 \times 3$
$18 = 2 \times 3^2$
HCF = $2 \times 3 = \mathbf{6}$
 Answer: 6

Q21. Find the LCM of 12 and 18.

Solution:
LCM = $2^2 \times 3^2 = \mathbf{36}$
 Answer: 36

Q22. Find the HCF and LCM of 8 and 20.

Solution:
$8 = 2^3$
$20 = 2^2 \times 5$
HCF = $2^2 = \mathbf{4}$
LCM = $2^3 \times 5 = \mathbf{40}$
 Answer: HCF = 4, LCM = 40

Q23. Find the HCF of 36, 48 and 60.

Solution:
$36 = 2^2 \times 3^2$
$48 = 2^4 \times 3$
$60 = 2^2 \times 3 \times 5$
HCF = $2^2 \times 3 = \mathbf{12}$
 Answer: 12

Q24. Find the LCM of 15, 20 and 30.

Solution:
$15 = 3 \times 5$
$20 = 2^2 \times 5$
$30 = 2 \times 3 \times 5$
LCM = $2^2 \times 3 \times 5 = \mathbf{60}$
 Answer: 60

Q25. Find the HCF of 72 and 108 by division method.

Solution:
$108 \div 72 = 1$ remainder 36
$72 \div 36 = 2$ remainder 0
HCF = **36**
 Answer: 36

Q26. Find the LCM of 16 and 24 using HCF.

Solution:
HCF of 16 and 24 = 8
LCM × HCF = 16 × 24
LCM = $(16 \times 24) \div 8 = \mathbf{48}$
 Answer: 48

Q27. Find the largest number that divides 70 and 110 leaving remainder 5.

Solution:
$70 - 5 = 65$
$110 - 5 = 105$
HCF of 65 and 105 = **5**
 Answer: 5

Q28. Find the least number which when divided by 6, 8 and 12 leaves remainder 1.

Solution:
LCM of 6, 8, 12 = 24

Required number = 24 + 1 = **25**
 Answer: 25

Q29. Find the greatest number which divides 245 and 385 exactly.

Solution:
$245 = 5 \times 7^2$
$385 = 5 \times 7 \times 11$
HCF = 5×7 = **35**
 Answer: 35

Q30. The HCF of two numbers is 12 and their product is 1800. Find their LCM.

Solution:
LCM = Product ÷ HCF
LCM = 1800 ÷ 12 = **150**
 Answer: 150

Q31. Find the smallest number divisible by 9, 12 and 15.

Solution:
LCM of 9, 12, 15 = **180**
 Answer: 180

Q32. Find the HCF of two numbers whose difference is 12 and product is 180.

Solution:
Numbers are 18 and 30
HCF = **6**
 Answer: 6

Q33. Find the least number which when divided by 5, 6, 8 leaves remainder 3.

Solution:
LCM of 5, 6, 8 = 120
Required number = 120 + 3 = **123**
 Answer: 123

Q34. Find the greatest number which divides 87, 183 and 255 leaving same remainder.

Solution:
183 − 87 = 96
255 − 183 = 72
HCF of 96 and 72 = **24**
 Answer: 24

Q35. If HCF = 6 and LCM = 180, find the product of numbers.

Solution:
Product = HCF × LCM
= 6 × 180 = **1080**
 Answer: 1080

Q36. Find the HCF of first 5 natural numbers.

Solution:
Numbers: 1, 2, 3, 4, 5
HCF = **1**
 Answer: 1

Q37. Find the LCM of first 4 even numbers.

Solution:
Numbers: 2, 4, 6, 8
LCM = **24**
 Answer: 24

Q38. Two numbers are in the ratio 3 : 5 and their HCF is 15. Find the numbers.

Solution:
Numbers = 3×15 = 45, 5×15 = 75
 Answer: 45 and 75

Q39. Find the smallest number divisible by 10, 12 and 15 leaving no remainder.

Solution:
LCM of 10, 12, 15 = **60**
 Answer: 60

PERCENTAGES –

Q40. Find 25% of 640.

Solution:
25% = 1/4
640 ÷ 4 = **160**
 Answer: 160

Q41. Express 3/5 as a percentage.

Solution:
(3/5) × 100 = **60%**
 Answer: 60%

Q42. Convert 0.75 into percentage.

Solution:
0.75 × 100 = **75%**
 Answer: 75%

Q43. What percent of 200 is 40?

Solution:
(40/200) × 100 = **20%**
 Answer: 20%

Q44. Increase ₹800 by 10%.

Solution:
10% of 800 = 80
New value = 800 + 80 = **₹880**
 Answer: ₹880

Q45. Decrease ₹500 by 20%.

Solution:
20% of 500 = 100
New value = **₹400**
 Answer: ₹400

Q46. Find the value of 15% of 360.

Solution:
(15/100) × 360 = **54**
 Answer: 54

Q47. If the price increases by 20%, find the multiplying factor.

Solution:
Multiplying factor = 1 + 20/100 = **1.2**
 Answer: 1.2

Q48. If the price decreases by 15%, find the multiplying factor.

Solution:
Multiplying factor = 1 − 15/100 = **0.85**
 Answer: 0.85

Q49. A number is increased by 25% and then decreased by 25%. Find the net change.

Solution:
Net change % = −(25×25)/100 = −6.25%
 Answer: 6.25% decrease

Q50. Find the original price if 20% of it is ₹80.

Solution:
Let original price = x
20% of x = 80
x = (80 × 100) / 20 = **₹400**
 Answer: ₹400

Q51. A student scores 360 marks out of 500. Find his percentage.

Solution:
(360/500) × 100 = **72%**
 Answer: 72%

Q52. What percent of 50 is 15?

Solution:
(15/50) × 100 = **30%**
 Answer: 30%

Q53. If the population of a town increases from 20,000 to 22,000, find percentage increase.

Solution:
Increase = 2000
(2000/20000) × 100 = **10%**
 Answer: 10%

Q54. Reduce 120 in the ratio 5 : 4.

Solution:
Reduction = 1 part = 120 × (1/5) = 24
Reduced value = 120 − 24 = **96**
 Answer: 96

Q55. Express 7% as a fraction.

Solution:
7% = 7/100
 Answer: 7/100

Q56. Express 45% as a decimal.

Solution:
45% = **0.45**
 Answer: 0.45

Q57. Find the percentage change when price changes from ₹400 to ₹360.

Solution:
Decrease = 40
(40/400) × 100 = **10% decrease**
 Answer: 10% decrease

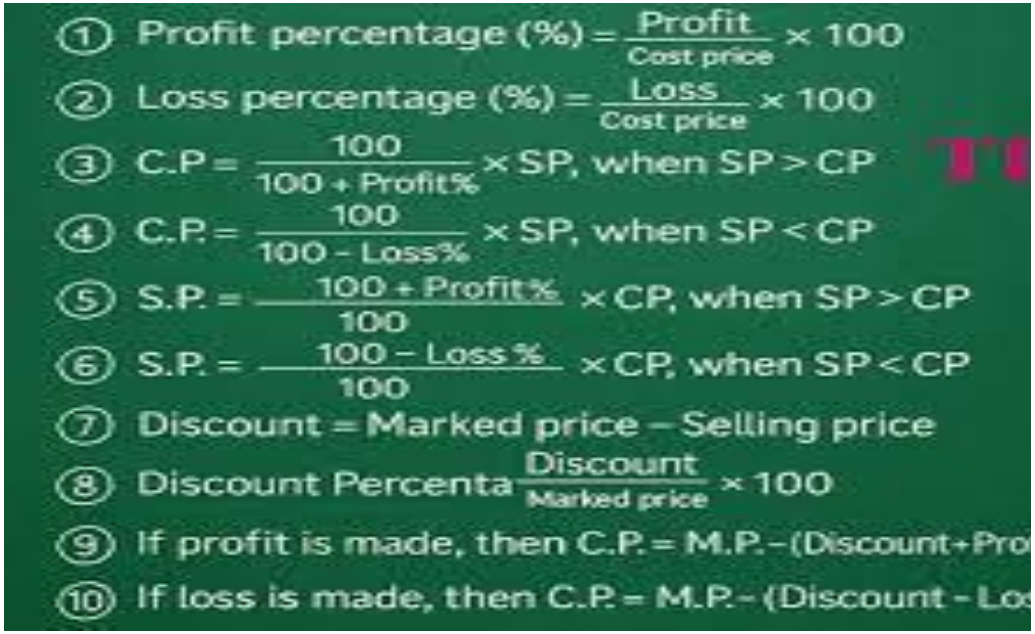
Q58. If 60% of a number is 180, find the number.

Solution:
Number = (180 × 100)/60 = **300**
 Answer: 300

Q59. What is 12.5% of 200?

Solution:
12.5% = 1/8
200 ÷ 8 = **25**
 Answer: 25

PROFIT & LOSS –



Q60. Find the profit if CP = ₹500 and SP = ₹560.

Solution:
Profit = SP − CP = 560 − 500 = **₹60**
 Answer: ₹60

Q61. Find the loss if CP = ₹800 and SP = ₹740.

Solution:
Loss = CP − SP = 800 − 740 = **₹60**
 Answer: ₹60

Q61. Find the profit percent when CP = ₹400 and SP = ₹460.

Solution:
Profit = 60
Profit % = (60/400) × 100 = **15%**
 Answer: 15%

Q62. Find the loss percent when CP = ₹600 and SP = ₹510.

Solution:
Loss = 90
Loss % = (90/600) × 100 = **15%**
 Answer: 15%

Q63. A book is sold for ₹720 at a profit of 20%. Find its cost price.

Solution:
CP = (100/120) × 720 = **₹600**
 Answer: ₹600

Q64. An article is sold at a loss of 10% for ₹450. Find its cost price.

Solution:
CP = (100/90) × 450 = **₹500**
 Answer: ₹500

Q65. Find the selling price if CP = ₹800 and profit = 25%.

Solution:
SP = (125/100) × 800 = **₹1000**
 Answer: ₹1000

Q66. Find the selling price if CP = ₹1200 and loss = 15%.

Solution:
SP = (85/100) × 1200 = **₹1020**
 Answer: ₹1020

Q67. If SP = ₹990 and profit = 10%, find CP.

Solution:
CP = (100/110) × 990 = **₹900**
 Answer: ₹900

Q68. If SP = ₹680 and loss = 15%, find CP.

Solution:
CP = (100/85) × 680 = **₹800**
 Answer: ₹800

Q69. A trader marks an article 25% above CP and gives a discount of 10%. Find profit %.

Solution:
Net gain % = 25 − 10 − (25×10)/100
= 12.5%
 Answer: 12.5%

Q70. A shopkeeper gives two successive discounts of 10% and 20%. Find total discount %.

Solution:
Net discount = 10 + 20 − (10×20)/100
= **28%**
 Answer: 28%

Q71. Find the profit percent if an article is bought for ₹250 and sold for ₹300.

Solution:
Profit = 50
Profit % = (50/250) × 100 = **20%**
 Answer: 20%

Q72. Find loss percent if CP = ₹900 and SP = ₹810.

Solution:
Loss = 90
Loss % = (90/900) × 100 = **10%**
 Answer: 10%

Q73. An article is sold at a profit of 25%. If CP = ₹400, find SP.

Solution:
SP = (125/100) × 400 = **₹500**
 Answer: ₹500

Q74. Find the cost price of an article sold for ₹660 at 10% profit.

Solution:
CP = (100/110) × 660 = **₹600**
 Answer: ₹600

Q75. A man buys an article for ₹1500 and sells it at a loss of 8%. Find SP.

Solution:
SP = (92/100) × 1500 = **₹1380**
 Answer: ₹1380

Q76. If SP = ₹880 and loss = 12%, find CP.

Solution:
CP = (100/88) × 880 = **₹1000**
 Answer: ₹1000

Q77. Find the gain percent if CP = ₹1250 and SP = ₹1375.

Solution:
Gain = 125
Gain % = (125/1250) × 100 = **10%**
 Answer: 10%

Q78. A shopkeeper sells an article at CP but uses a weight of 900 g instead of 1 kg. Find gain %.

Solution:
Gain = 100 g
Gain % = (100/900) × 100 = **11 1/9%**
 Answer: 11 1/9%

AVERAGES –

$$\text{Average} = \frac{\text{Sum of all observations}}{\text{Total number of obsevations}}$$

$$= \frac{a_1 + a_2 + a_3 + \ldots + a_n}{n}$$

$a_1, a_2, \ldots, a_n \rightarrow$ Observations

$n \rightarrow$ Number of observations

Q79. Find the average of 10, 20, 30, 40, 50.

Solution:
Sum = 150
Average = 150 ÷ 5 = **30**
 Answer: 30

Q80. Find the average of first 10 natural numbers.

Solution:
Average = (First + Last)/2
= (1 + 10)/2 = **5.5**
 Answer: 5.5

Q81. The average of 6 numbers is 20. Find their sum.

Solution:
Sum = 20 × 6 = **120**
 Answer: 120

Q82. The average age of 5 boys is 14 years. Find total age.

Solution:
Total age = 14 × 5 = **70 years**
 Answer: 70 years

Q83. Find the average of first 20 even numbers.

Solution:
First even = 2, last = 40
Average = (2 + 40)/2 = **21**
 Answer: 21

Q84. The average of 8 numbers is 15. If one number is 19, find the average of remaining 7 numbers.

Solution:
Total sum = 8 × 15 = 120
Remaining sum = 120 − 19 = 101
Average = 101 ÷ 7 = **14.43**
 Answer: 14.43

Q85. The average marks of 30 students is 60. If one student scored 90, find average of remaining students.

Solution:
Total marks = 30 × 60 = 1800
Remaining marks = 1710
Average = 1710 ÷ 29 = **58.97**
 Answer: 58.97

Q86. Find the average of 3, 7, 11, 15.

Solution:
Sum = 36
Average = 36 ÷ 4 = **9**
 Answer: 9

Q87. The average of 5 numbers is 18. Four numbers are 10, 15, 20, 25. Find the fifth number.

Solution:
Sum = 5 × 18 = 90
Given sum = 70
Fifth number = **20**
 Answer: 20

Q88. Find the average of first 15 natural numbers.

Solution:
Average = (1 + 15)/2 = **8**
 Answer: 8

Q89. The average of 12 numbers is 25. If one number is excluded, the average becomes 24. Find the excluded number.

Solution:
Original sum = 300
New sum = 264
Excluded number = **36**
 Answer: 36

Q90. Find the average of first 10 odd numbers.

Solution:
First odd = 1, last = 19
Average = (1 + 19)/2 = **10**
 Answer: 10

Q91. Find the average of 4 consecutive even numbers whose sum is 80.

Solution:
Average = 80 ÷ 4 = **20**
 Answer: 20

Q92. The average weight of 6 students is 50 kg. If one student weighing 60 kg leaves, find new average.

Solution:
Total weight = 300
Remaining = 240
Average = 240 ÷ 5 = **48 kg**
 Answer: 48 kg

Q93. Find the average of 2, 4, 6, 8, 10.

Solution:
Sum = 30
Average = 6
 Answer: 6

Q94. The average of 7 numbers is 14. Find their total.

Solution:
Total = 14 × 7 = **98**
 Answer: 98

Q95. Find the average of first 100 natural numbers.

Solution:
Average = (1 + 100)/2 = **50.5**
 Answer: 50.5

Q96. The average of 10 numbers is 25. If two numbers 20 and 30 are removed, find new average.

Solution:
Total = 250
Remaining sum = 200
Average = 200 ÷ 8 = **25**
 Answer: 25

Q97. Find the average of 5 consecutive integers whose sum is 75.

Solution:
Average = 75 ÷ 5 = **15**
 Answer: 15

Q98. Find the average of first 50 even numbers.

Solution:
First = 2, Last = 100
Average = (2 + 100)/2 = **51**
 Answer: 51

RATIO & PROPORTION –

Q99. Express the ratio 20 : 50 in simplest form.

Solution:
HCF of 20 and 50 = 10
20 ÷ 10 : 50 ÷ 10 = **2 : 5**
 Answer: 2 : 5

Q100. Find the ratio of 45 minutes to 1 hour.

Solution:
1 hour = 60 minutes
Ratio = 45 : 60 = 3 : 4
 Answer: 3 : 4

Q101. Divide ₹600 in the ratio 2 : 3.

Solution:
Total parts = 5
First share = (2/5) × 600 = 240
Second share = (3/5) × 600 = 360
 Answer: ₹240 and ₹360

Q102. The ratio of boys to girls in a class is 5 : 4. If there are 20 boys, find number of girls.

Solution:
5 parts = 20 ⇒ 1 part = 4
Girls = 4 × 4 = **16**
 Answer: 16

Q103. Find the fourth proportional to 4, 6 and 12.

Solution:
4 : 6 = 12 : x
x = (6 × 12) / 4 = **18**
 Answer: 18

Q104. Find the third proportional to 6 and 24.

Solution:
6 : 24 = 24 : x
x = (24 × 24) / 6 = **96**
 Answer: 96

Q105. If a : b = 3 : 7, find (a − b) : (a + b).

Solution:
a = 3, b = 7
a − b = −4, a + b = 10
Ratio = −4 : 10 = **−2 : 5**
 Answer: −2 : 5

Q106. If 4 pencils cost ₹20, how many pencils can be bought for ₹50?

Solution:
Cost ∝ number
4 pencils = ₹20
1 pencil = ₹5
₹50 = 10 pencils
 Answer: 10

Q107. Divide 360 in the ratio 3 : 5 : 7.

Solution:
Sum of ratios = 15
Shares = 72, 120, 168
 Answer: 72, 120, 168

Q108. Find the mean proportional between 9 and 16.

Solution:
Mean proportional = √(9 × 16) = √144 = **12**
 Answer: 12

Q109. If x : y = 4 : 9, find x/y.

Solution:
x/y = 4/9
 Answer: 4/9

Q110. The ratio of two numbers is 7 : 11 and their sum is 180. Find the numbers.

Solution:
Sum of parts = 18
1 part = 10
Numbers = **70 and 110**
 Answer: 70 and 110

Q111. If a : b = 2 : 5 and b : c = 3 : 7, find a : c.

Solution:
a : b = 6 : 15
b : c = 15 : 35
a : c = **6 : 35**
 Answer: 6 : 35

Q112. The incomes of A and B are in ratio 3 : 4 and their expenses in ratio 2 : 3. If A saves ₹400, find B's saving.

Solution:
Assume income = 12x, 16x
Expenses = 8x, 12x
Savings = 4x = 400
x = 100
B's saving = **₹400**
 Answer: ₹400

Q113. If 5 workers can do a work in 12 days, how many days will 10 workers take?

Solution:
Work ∝ 1/workers
Days = (5 × 12)/10 = **6 days**
 Answer: 6 days

Q114. Find the ratio of 2.5 kg to 500 g.

Solution:
2.5 kg = 2500 g
Ratio = 2500 : 500 = **5 : 1**
 Answer: 5 : 1

Q115. Find the value of x if x : 15 = 4 : 5.

Solution:
x = (4/5) × 15 = **12**
 Answer: 12

Q116. If 8 men can do a work in 15 days, how many men are required to do it in 10 days?

Solution:
Men = (8 × 15)/10 = **12**
 Answer: 12

Q117. Divide ₹840 among A, B, C in the ratio 2 : 3 : 7.

Solution:
Sum = 12
Shares = **₹140, ₹210, ₹490**
 Answer: ₹140, ₹210, ₹490

Q118. Find the ratio of speeds 60 km/h and 40 km/h.

Solution:
Ratio = 60 : 40 = **3 : 2**
 Answer: 3 : 2

□ SIMPLE INTEREST – 20 Questions with Solutions

Simple Interest Formula

$$S.I = \frac{P \times T \times R}{100}$$

Where:

- **P** = Principal (₹)
- **R** = Rate of Interest (% per annum)
- **T** = Time (in years)

Amount = SI+Principal

Q119. Find the simple interest on ₹1000 at 10% p.a. for 2 years.

Solution:
SI = (P × R × T)/100
= (1000 × 10 × 2)/100 = **₹200**
 Answer: ₹200

Q120. Find the amount on ₹1500 at 8% p.a. for 2 years.
 Answer: ₹1740

Q121. Find SI on ₹2000 at 5% p.a. for 3 years.

Solution:
 Answer: ₹300

Q122. Find the rate if SI = ₹360, P = ₹1200, T = 3 years.

Solution:
R = (360 × 100)/(1200 × 3) = **10%**
 Answer: 10%

Q123. Find the time if SI = ₹450, P = ₹1500, R = 10%.

Solution:
T = (450 × 100)/(1500 × 10) = **3 years**
 Answer: 3 years

Q124. Find the principal if SI = ₹400, R = 8%, T = 5 years.

Solution:
P = (400 × 100)/(8 × 5) = **₹1000**
 Answer: ₹1000

Q125. Find the amount on ₹2500 at 6% p.a. for 4 years.
 Answer: ₹3100

Q126. A sum of money doubles itself in 10 years at SI. Find the rate.
 Answer: 10%

Q127. Find SI if amount = ₹1800, principal = ₹1500 for 2 years.

Solution:
SI = 300
Rate = (300×100)/(1500×2) = **10%**
 Answer: 10%

Q128. Find the amount if P = ₹1200, R = 5%, T = 3 years.
 Answer: ₹1380

Q129. Find SI on ₹3000 at 12% p.a. for 2 years.
 Answer: ₹720

Q130. Find the rate if SI = ₹240, P = ₹1200, T = 4 years.
 Answer: 5%

Q131. Find the principal if amount = ₹2200, SI = ₹200 at 5%.
 Answer: ₹2000

Q132. How long will ₹800 take to earn ₹160 at 5% SI?
 Answer: 4 years

Q133. Find SI on ₹5000 for 1½ years at 8%.
 Answer: ₹600

Q134. Find the amount on ₹1800 at 10% for 1 year.
 Answer: ₹1980

Q135. Find SI on ₹4000 at 7.5% for 2 years.
 Answer: ₹600

Q136. At what rate will ₹2500 earn ₹500 in 4 years?
 Answer: 5%

Q137. Find the amount if SI = ₹900, P = ₹3000 for 3 years.
 Answer: ₹3900

Q138. Find SI if P = ₹1600, R = 12.5%, T = 2 years.
 Answer: ₹400

MIXED APPLICATION PROBLEMS – 20 Questions with Solutions

(Numbers, LCM–HCF, Percentages, Profit–Loss, Average, Ratio, Simple Interest)

Q139. Find the smallest number which when divided by 12, 15 and 20 leaves remainder 5 in each case.

Solution:
LCM of 12, 15, 20 = 60
Required number = 60 + 5 = **65**
 Answer: 65

Q140. The HCF and LCM of two numbers are 18 and 360 respectively. Find the numbers if one number is 72.

Solution:
Product of numbers = HCF × LCM = 18 × 360 = 6480
Other number = 6480 ÷ 72 = **90**
 Answer: 72 and 90

Q141. What percent of 2 hours is 30 minutes?

Solution:
2 hours = 120 minutes
Percentage = (30/120) × 100 = **25%**
 Answer: 25%

Q142. A shopkeeper buys an article for ₹400 and sells it for ₹480. Find the gain percent.

Solution:
Gain = 80
Gain % = (80/400) × 100 = **20%**
 Answer: 20%

Q143. The average of 10 numbers is 25. If one number is 35, find the average of remaining numbers.

Solution:
Total sum = 250
Remaining sum = 215
Average = 215 ÷ 9 = **23.89**
 Answer: 23.89

Q144. Divide ₹720 between A and B so that A gets 20% more than B.

Solution:
Ratio = 120 : 100 = 6 : 5
A's share = (6/11) × 720 = **₹392.73**
B's share = **₹327.27**
 Answer: ₹392.73 and ₹327.27

Q145. Find the simple interest on ₹2400 at 7.5% for 2 years.

Solution:
SI = (2400 × 7.5 × 2)/100 = **₹360**
 Answer: ₹360

Q146. A number is increased by 20% and then decreased by 10%. Find the net percentage change.

Solution:
Net change = 20 − 10 − (20×10)/100
= **8% increase**
 Answer: 8% increase

Q147. Find the average of first 25 natural numbers.

Solution:
Average = (1 + 25)/2 = **13**
 Answer: 13

Q148. A trader sells an article at 10% profit. If CP = ₹900, find SP.

Solution:
SP = (110/100) × 900 = **₹990**
 Answer: ₹990

Q149. Find the ratio of 3/4 and 5/6.

Solution:
(3/4) : (5/6) = (3×6) : (5×4) = **18 : 20 = 9 : 10**
 Answer: 9 : 10

Q150. Find the smallest number divisible by 8, 12 and 18.

Solution:
LCM = **72**
 Answer: 72

Q151. If 40% of a number is 160, find the number.

Solution:
Number = (160 × 100)/40 = **400**
 Answer: 400

Q152. A man lent ₹2000 at 5% p.a. for 3 years. Find the amount.

Solution:
SI = 300
Amount = **₹2300**
 Answer: ₹2300

Q153. Find the greatest number that will divide 120, 180 and 300 exactly.

Solution:
HCF = **60**
 Answer: 60

Q154. The average age of 4 members of a family is 30 years. If the age of the youngest member is 18 years, find the average age of remaining members.

Solution:
Total age = 120
Remaining age = 102
Average = 102 ÷ 3 = **34 years**
 Answer: 34 years

Q154. Find the loss percent if CP = ₹1500 and SP = ₹1350.

Solution:
Loss = 150
Loss % = (150/1500) × 100 = **10%**
 Answer: 10%

Q155. Express 0.625 as a percentage.

Solution:
0.625 × 100 = **62.5%**
 Answer: 62.5%

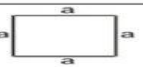
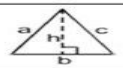
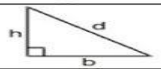
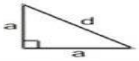
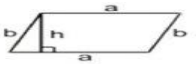
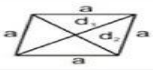
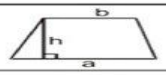
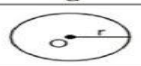
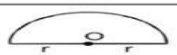
Q156. Find the mean proportional between 16 and 64.

Solution:
Mean proportional = √(16×64) = √1024 = **32**
 Answer: 32

Q157. How long will ₹3000 take to earn ₹900 at 10% simple interest?

Solution:
T = (900 × 100)/(3000 × 10) = **3 years**
 Answer: 3 years

UNIT 2

Name	Figure	Perimeter	Area
Rectangle		2 (a + b)	ab
Square		4a	a^2
Triangle		a + b + c = 2s	$1 = \frac{1}{2} \times b \times h$ $2 = \sqrt{s(s-a)(s-b)(s-c)}$
Right triangle		b + h + d	$\frac{1}{2}$ bh
Equilateral triangle		3a	1. $\frac{1}{2}$ ah 2. $\frac{\sqrt{3}}{4} a^2$
Isosceles right triangle		2a + d	$\frac{1}{2} a^2$
Parallelogram		2 (a + b)	ah
Rhombus		4a	$\frac{1}{2} d_1 d_2$
Trapezium		Sum of its four sides	$\frac{1}{2}$ h (a + b)
Circle		$2\pi r$	πr^2
Semicircle		$\pi r + 2r$	$\frac{1}{2} \pi r^2$
Ring (shaded region)		----	$\pi (R^2 - r^2)$
Sector of a circle		l + 2r where $l = (\theta/360) \times 2\pi r$	$\theta/360° \times \pi r^2$

Algebraic Expressions (Basics)

Q1. Simplify:

3x+5x−2x3x + 5x - 2x3x+5x−2x

Solution:
(3+5−2)x=6x(3 + 5 - 2)x = 6x(3+5−2)x=6x

Q2. Simplify:

4a−3b+2a+5b4a - 3b + 2a + 5b4a−3b+2a+5b

Solution:
Combine like terms:
(4a+2a)+(−3b+5b)=6a+2b(4a + 2a) + (-3b + 5b) = 6a + 2b(4a+2a)+(−3b+5b)=6a+2b

Q3. Simplify:

7x−(3x−5)7x - (3x - 5)7x−(3x−5)

Solution:
Remove brackets:
7x−3x+5=4x+57x - 3x + 5 = 4x + 57x−3x+5=4x+5

Q4. Simplify:

5a+2(3a−4)5a + 2(3a - 4)5a+2(3a−4)

Solution:
5a+6a−8=11a−85a + 6a - 8 = 11a - 85a+6a−8=11a−8

Q5. Simplify:

(2x+3y)−(x−y)(2x + 3y) - (x - y)(2x+3y)−(x−y)

Solution:
2x+3y−x+y=x+4y2x + 3y - x + y = x + 4y2x+3y−x+y=x+4y

Q6 Solve: 2(x+3)=162(x + 3) = 162(x+3)=16

Solution:

x+3=8x=5x + 3 = 8 x = 5x+3=8x=5

 Answer: x=5x = 5x=5

Q7. Find the product:

(a+5)(a+2)(a + 5)(a + 2)(a+5)(a+2)

Solution:
a2+2a+5a+10=a2+7a+10a^2 + 2a + 5a + 10 = a^2 + 7a + 10a2+2a+5a+10=a2+7a+10

Q8. Multiply:

(2x−3)(x+4)(2x - 3)(x + 4)(2x−3)(x+4)

Solution:
2x2+8x−3x−12=2x2+5x−122x^2 + 8x - 3x - 12 = 2x^2 + 5x - 122x2+8x−3x−12=2x2+5x−12

Q9. Multiply:

(3a+2b)(a−b)(3a + 2b)(a - b)(3a+2b)(a−b)

Solution:
3a2−3ab+2ab−2b2=3a2−ab−2b23a^2 - 3ab + 2ab - 2b^2 = 3a^2 - ab - 2b^23a2−3ab+2ab−2b2=3a2−ab−2b2

Q10. Multiply:

(x−5)(x−2)(x - 5)(x - 2)(x−5)(x−2)

Solution:
x2−2x−5x+10=x2−7x+10x^2 - 2x - 5x + 10 = x^2 - 7x + 10x2−2x−5x+10=x2−7x+10

Q11. Using identity, find:

(x+3)2(x + 3)^2(x+3)2

Solution:
Using (a+b)2=a2+2ab+b2(a + b)^2 = a^2 + 2ab + b^2(a+b)2=a2+2ab+b2
x2+6x+9x^2 + 6x + 9x2+6x+9

Q12. Expand:

(2x−5)2(2x - 5)^2(2x−5)2

Solution:
(2x)2−2(2x)(5)+52=4x2−20x+25(2x)^2 - 2(2x)(5) + 5^2 = 4x^2 - 20x + 25(2x)2−2(2x)(5)+52=4x2−20x+25

Q13. Find:

(a+b)(a−b)(a + b)(a - b)(a+b)(a−b)

Solution:
Using a2−b2a^2 - b^2a2−b2
Answer: a2−b2a^2 - b^2a2−b2

Q14. Expand:

(x+2)(x−2)(x + 2)(x - 2)(x+2)(x−2)

Solution:
x2−4x^2 - 4x2−4

Q15. Expand using identity:

(x+1)2(x + 1)^2(x+1)2

Solution:
x2+2x+1x^2 + 2x + 1x2+2x+1

Q16. Simplify:

(x+3)(x+5)−x(x+8)(x + 3)(x + 5) - x(x + 8)(x+3)(x+5)−x(x+8)

Solution:
(x2+8x+15)−(x2+8x)=15(x^2 + 8x + 15) - (x^2 + 8x) =
15(x2+8x+15)−(x2+8x)=15

Q17. Simplify:

(2a−b)2(2a - b)^2(2a−b)2

Solution:
4a2−4ab+b24a^2 - 4ab + b^24a2−4ab+b2

Q18. Evaluate:

(x+4)2−(x−4)2(x + 4)^2 - (x - 4)^2(x+4)2−(x−4)2

Solution:
(x2+8x+16)−(x2−8x+16)=16x(x^2 + 8x + 16) - (x^2 - 8x + 16) =
16x(x2+8x+16)−(x2−8x+16)=16x

Q19. Find the value of:

x2−y2x^2 - y^2x2−y2 when x=5x = 5x=5, y=3y = 3y=3

Solution:
25−9=1625 - 9 = 1625−9=16

Q20. Simplify:

(x+2)(x−3)+6(x + 2)(x - 3) + 6(x+2)(x−3)+6

Solution:
x2−3x+2x−6+6=x2−xx^2 - 3x + 2x - 6 + 6 = x^2 - xx2−3x+2x−6+6=x2−x

5x−7=3x+9

Solution:
5x−3x=9+75x - 3x = 9 + 75x−3x=9+7
2x=162x = 162x=16
x=8x = 8x=8

Q21. The sum of a number and 7 is 19. Find the number.

Solution:
Let the number be xxx.
x+7=19x + 7 = 19x+7=19
x=12x = 12x=12

Q22. Five times a number is equal to 45. Find the number.

Solution:
5x=455x = 455x=45
x=9x = 9x=9

Q23. The difference between a number and 6 is 14. Find the number.

Solution:
x−6=14x - 6 = 14x−6=14
x=20x = 20x=20

Q24. Three more than twice a number is 17. Find the number.

Solution:
2x+3=172x + 3 = 172x+3=17
2x=142x = 142x=14
x=7x = 7x=7

Q25. In an equilateral triangle, find each angle.

Solution:
Sum of angles = 180°
Each angle = 180° ÷ 3 = **60°**
 Answer: 60°

Q26. Find the perimeter of a triangle with sides 5 cm, 7 cm, and 9 cm.

Solution:
Perimeter =5+7+9=21= 5 + 7 + 9 = 21=5+7+9=21 cm

Q27. Each side of an equilateral triangle is 10 cm. Find its perimeter.

Solution:
Perimeter =3×10=30= 3 \times 10 = 30=3×10=30 cm

Q28. Find the area of a rectangle of length 9 cm and breadth 4 cm.

Solution:
Area =l×b=9×4=36= l \times b = 9 \times 4 = 36=l×b=9×4=36 cm²

Q29. A rectangular field is 25 m long and 15 m wide. Find the cost of fencing it at ₹10 per metre.

Solution:
Perimeter =2(25+15)=80= 2(25 + 15) = 80=2(25+15)=80 m
Cost =80×10=₹800= 80 \times 10 = ₹800=80×10=₹800

UNIT 3

READING AND INTERPRETING TABLES

Table: Number of Students in Different Classes

Class	Boys	Girls	Total
I	20	25	45
II	30	20	50
III	25	30	55
IV	35	40	75
V	40	35	75

Q1. What is the total number of students in Class III and IV together?

Solution:
Class III + Class IV = 55 + 75 = **130**

Answer: 130

Q2. What is the total number of boys in all classes?

Solution:
20 + 30 + 25 + 35 + 40 = **150**

Answer: 150

Q3. In which class is the number of girls greater than the number of boys?

Solution:
Compare Boys and Girls:

- Class I: Girls 25 > Boys 20 □
- Class II: Girls 20 < Boys 30 □
- Class III: Girls 30 > Boys 25 □
- Class IV: Girls 40 > Boys 35 □
- Class V: Girls 35 < Boys 40 □

Answer: Classes I, III, IV

Q4. What is the average number of students per class?

Solution:
Total students = 45 + 50 + 55 + 75 + 75 = 300
Average = 300 ÷ 5 = **60**

Answer: 60

Q5. What is the ratio of boys to girls in Class V?

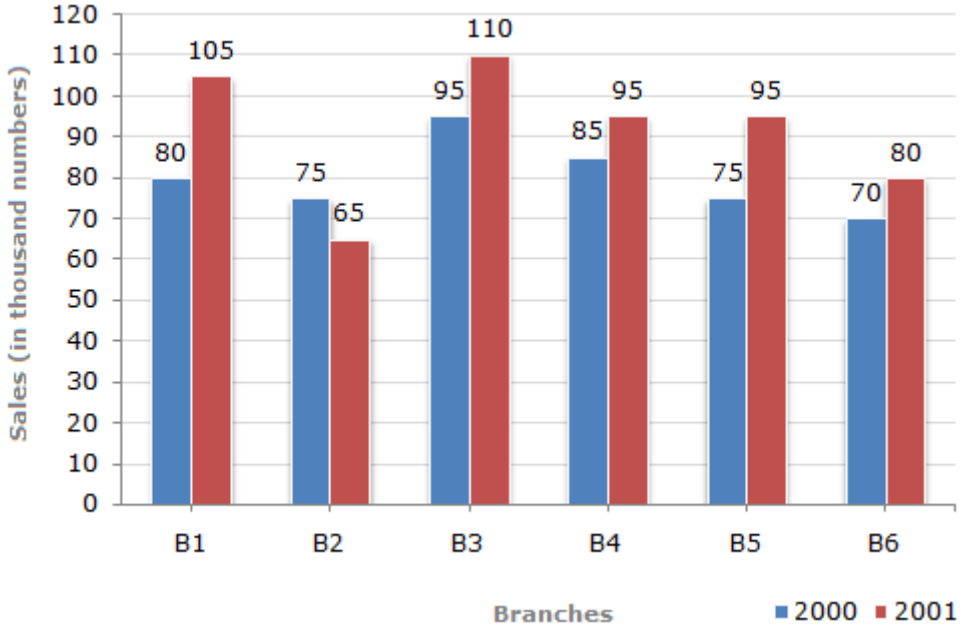
Solution:
Boys : Girls = 40 : 35 = **8 : 7**

Answer: 8 : 7

Bar Graph

The bar graph given below shows the sales of books (in thousand number) from six branches of a publishing company during two consecutive years 2000 and 2001.

Sales of Books (in thousand numbers) from Six Branches - B1, B2, B3, B4, B5 and B6 of a publishing Company in 2000 and 2001.



1. What is the ratio of the total sales of branch B2 for both years to the total sales of branch B4 for both years?

A. 2:3
B. 3:5
C. 4:5
D. 7:9

Answer: Option D
Explanation:

Required ratio =	(75 + 65) / (85 + 95)	=	140 / 180	=	7 / 9.

2. Total sales of branch B6 for both the years is what percent of the total sales of branches B3 for both the years?

A. 68.54%
B. 71.11%
C. 73.17%
D. 75.55%

Answer: Option C
Explanation:

Required percentage	= [(70 + 80) / (95 + 110) x 100] %
	= [150 / 205 x 100] %
	= 73.17%.

3. What percent of the average sales of branches B1, B2 and B3 in 2001 is the average sales of branches B1, B3 and B6 in 2000?

A. 75%
B. 77.5%
C. 82.5%
D. 87.5%

Answer: Option D

Explanation:

Average sales (in thousand number) of branches B1, B3 and B6 in 2000

$$= \frac{1}{3} \times (80 + 95 + 70) = \left(\frac{245}{3}\right).$$

Average sales (in thousand number) of branches B1, B2 and B3 in 2001

$$= \frac{1}{3} \times (105 + 65 + 110) = \left(\frac{280}{3}\right).$$

$$\therefore \text{ Required percentage } = \left[\frac{245/3}{280/3} \times 100\right]\% = \left(\frac{245}{280} \times 100\right)\% = 87.5\%.$$

4. What is the average sales of all the branches (in thousand numbers) for the year 2000?

A. 73
B. 80
C. 83
D. 88

Answer: Option B

Explanation:

Average sales of all the six branches (in thousand numbers) for the year 2000

$$= \frac{1}{6} \times [80 + 75 + 95 + 85 + 75 + 70]$$

= 80.

5. Total sales of branches B1, B3 and B5 together for both the years (in thousand numbers) is?

A. 250
B. 310
C. 435
D. 560

Answer: Option D

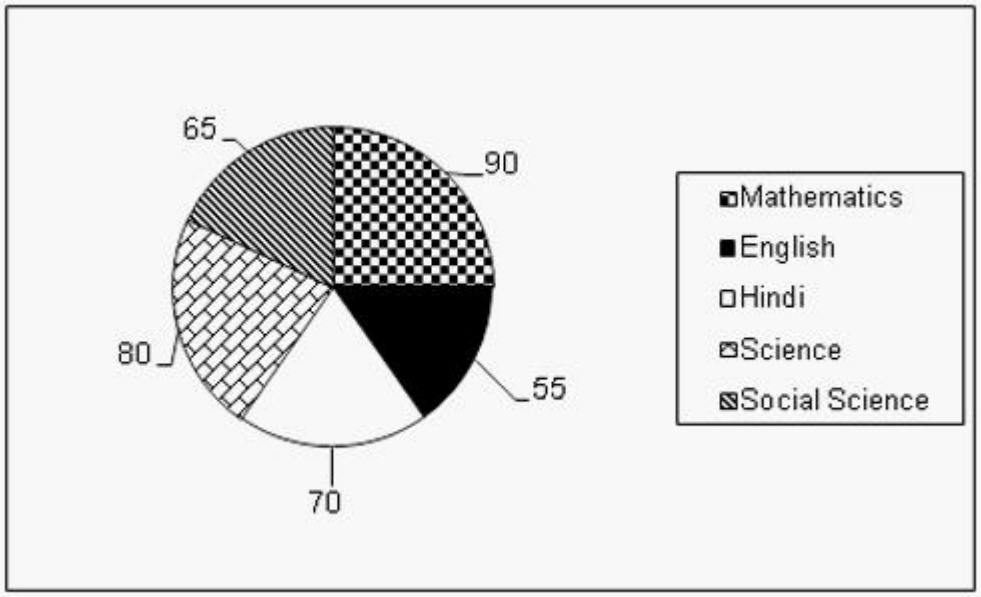
Explanation:

Total sales of branches B1, B3 and B5 for both the years (in thousand numbers)

= (80 + 105) + (95 + 110) + (75 + 95)

= 560.

PIE CHART



1. If the total marks were 3000, then marks in Mathematics would be

1. 800

2. 750

3. 850

4. 900

Answer Option: 2

Marks obtained in Mathematics would be = 90 / 360 x 3000 = 750

2. The Marks scored in English and Mathematics is less than the marks scored in Science and Hindi by

1. 5%

2. 4.33%

3. 3.33%

4. 6%

Answer Option: 3

Marks scored in English and Mathematics = (55 + 90) / 360 x 900 = 362.5 Marks scored in Hindi and Science = (70 + 80) / 360 x 900 = 375 Percent decrease = 12.5 / 375 x 100 = 3.33

3. If the marks scored by the student are 137.5, then the subject is

1. English

2. Hindi

3. Mathematics

4. Science

Answer Option: 1
Going by the options, marks scored in English = 55 /360 x 900 = 137.5

4. Total marks scored in Social Science and English is
1. 400
2. 350
3. 500
4. 300

Answer Option: 4
Angle of English sector is 55^0 and angle of Social Science sector is 65^0. So sum of angles is 120^0. Sum of marks =(120^0 x 900) / 360 = 300.

5. The difference of marks scored in Social Science and Science is
1. 37.5
2. 40
3. 20
4. 15

Answer Option: 1
Angle of Science sector is 80^0 and angle of Social Science sector is 65^0. So difference of angle is 15^0 .Difference of marks = (15^0 x 900) / 360^0 = 37.5

DATA SUFFICIENCY QUESTIONS

Given below is a question and a set of statements. We have to find which of the given statements is required to reach the conclusion.

Q1. Who is the tallest among the brothers A, B, C, and D?
Statements:
1. C is shorter than only B.
2. D is taller than only A.
Options:
I) Statement 1 alone is sufficient
II) Statement 2 alone is sufficient
III) Both Statement 1 and Statement 2 together are sufficient
IV) Both Statement 1 and Statement 2 even together are not sufficient

Solution:

Considering Statement 1:
"C is shorter than only B" means that B is taller than C and all other brothers, making B the tallest. Therefore, Statement 1 alone is sufficient to determine the tallest brother.
Considering Statement 2:
"D is taller than only A" implies that D is the second shortest, and A is the shortest of all the brothers. However, this statement alone

does not provide enough information about who the tallest is among B and C, so Statement 2 alone is not sufficient.

Conclusion:
Statement 1 alone is sufficient to answer the question, so the correct answer is **I) Statement 1 alone is sufficient**

Q2. What is the value of 'x'

Statement 1 : $x^2 + x - 6 = 0$

Statement 2 : $x \geq 0$

I) Statement 1 alone is sufficient
II) Statement 2 alone is sufficient
III)Both statement 1 and statement 2 together are sufficient
IV) Both statement 1 and statement 2 even together are not sufficient

Solution : *If we consider statement 1 alone, we have $x^2 + x - 6 = 0 \Rightarrow x^2 + 3x - 2x - 6 = 0 \Rightarrow (x + 3)(x - 2) = 0 \Rightarrow x = -3, 2$ If we consider statement 2 alone, we have $x \geq 0$ Combining the two statements, we can safely say that x = 2 Therefore, both statement 1 and statement 2 together are sufficient but neither alone is sufficient.*

Q3. What is the sum of the ages of John and Peter?

Statement 1: John is 5 years older than Peter.

Statement 2: The average of their ages is 25.

I) Statement 1 alone is sufficient
II) Statement 2 alone is sufficient
III) Both statement 1 and statement 2 together are sufficient
IV) Both statement 1 and statement 2 even together are not sufficient
Answer: *II) Statement 2 alone is sufficient*

Q4. What is the value of x in the equation x^2 + 6x + 9 = 0?

Statement 1: x = -3

Statement 2: The discriminant of the equation is zero.

I) Statement 1 alone is sufficient
II) Statement 2 alone is sufficient
III) Both statement 1 and statement 2 together are sufficient
IV) Both statement 1 and statement 2 even together are not sufficient

Answer: *III) Both statement 1 and statement 2 together are sufficient*

Q5. Is triangle ABC an equilateral triangle?

Statement 1: The length of AB is equal to the length of AC.

Statement 2: The length of BC is equal to twice the length of AB.

I) Statement 1 alone is sufficient
II) Statement 2 alone is sufficient
III) Both statement 1 and statement 2 together are sufficient
IV) Both statement 1 and statement 2 even together are not sufficient

Answer: *II) Statement 2 alone is sufficient*

UNIT 4

SERIES AND NUMBER PATTERNS

Q1. Find the next number:

2, 4, 8, 16, ?

Solution:
Each number is ×2
16 × 2 = **32**

Answer: 32

Q2. Find the missing number:

3, 6, 9, 12, ?

Solution:
Addition of 3
12 + 3 = **15**

Answer: 15

Q3. Find the next number:

5, 10, 20, 40, ?

Solution:
Each term ×2
40 × 2 = **80**

Answer: 80

Q4. Find the missing number:

1, 4, 9, 16, ?

Solution:
Squares:
$1^2, 2^2, 3^2, 4^2$
Next = 5^2 = **25**

Answer: 25

Q5. Find the next number:

2, 6, 12, 20, ?

Solution:
Pattern: n(n+1)
1×2 = 2
2×3 = 6
3×4 = 12
4×5 = 20
5×6 = **30**

Answer: 30

Q6. Find the missing number:

7, 14, 28, ?, 112

Solution:
×2 pattern
28 × 2 = **56**

Answer: 56

Q7. Find the next number:

1, 3, 6, 10, ?

Solution:
Add natural numbers:
+2, +3, +4
Next = 10 + 5 = **15**

Answer: 15

Q8. Find the missing number:

2, 5, 10, 17, ?

Solution:
Pattern: +3, +5, +7
Next = +9
17 + 9 = **26**

Answer: 26

Q9. Find the next number:

81, 27, 9, 3, ?

Solution:
÷3 pattern
3 ÷ 3 = **1**

Answer: 1

Q10. Find the missing number:

4, 9, 19, 39, ?

Solution:
×2 +1
4×2+1 = 9
9×2+1 = 19
19×2+1 = 39
39×2+1 = **79**

Answer: 79

Q11. Find the next number:

1, 4, 3, 8, 5, 12, ?

Solution:
Odd places: 1, 3, 5 → +2
Even places: 4, 8, 12 → +4
Next odd = **7**

Answer: 7

Q12. Find the missing number:

2, 6, 4, 12, 6, ?

Solution:
Odd terms: 2, 4, 6 → +2
Even terms: 6, 12 → ×2
Next even = 12 × 2 = **24**

Answer: 24

Q13. Find the next number:

10, 9, 12, 11, 14, ?

Solution:
Odd: 10, 12, 14 → +2
Even: 9, 11 → +2
Next even = **13**

Answer: 13

Q14. Find the next number:

1, 1, 2, 3, 5, ?

Solution:
Fibonacci series
3 + 5 = **8**

Answer: 8

Q15. Find the missing number:

6, 11, 21, 41, ?

Solution:
×2 −1
6×2−1 = 11
11×2−1 = 21
21×2−1 = 41
41×2−1 = **81**

Answer: 81

Q16. Find the next number:

3, 7, 15, 31, ?

Solution:
×2 +1
31×2 +1 = **63**

Answer: 63

Q17. Find the missing number:

100, 90, 81, 73, ?

Solution:
−10, −9, −8
Next −7
73 − 7 = **66**

Answer: 66

Q18. Find the next number:

2, 3, 5, 8, 12, ?

Solution:
Add increasing numbers:
+1, +2, +3, +4
Next +5
12 + 5 = **17**

Answer: 17

Q19. Find the missing number:

9, 18, 36, ?, 144

Solution:
×2
36 × 2 = **72**

Answer: 72

Q20. Find the next number:

11, 22, 44, 88, ?

Solution:
×2
88 × 2 = **176**

Answer: 176

Q21. Find the missing number:

5, 10, 9, 18, 17, ?

Solution:
×2, −1 pattern
17 × 2 = **34**

Answer: 34

Q22. Find the next number:

1, 2, 6, 24, ?

Solution:
×2, ×3, ×4
Next ×5
24 × 5 = **120**

Answer: 120

Q23. Find the missing number:

7, 14, 21, 28, ?

Solution:
Add 7
28 + 7 = **35**

Answer: 35

Q24. Find the next number:

64, 32, 16, 8, ?

Solution:
÷2
8 ÷ 2 = **4**

Answer: 4

Q25. Find the missing number:

2, 4, 7, 11, ?

Solution:
+2, +3, +4
Next +5
11 + 5 = **16**

Answer: 16

CODING- DECODING

Q26. If CAT is coded as DBU, how is DOG coded?

Solution:
C → D (+1)
A → B (+1)
T → U (+1)

DOG →
D → E
O → P
G → H

Answer: EPH

Q27. If PEN is coded as QFO, then INK is coded as?

Solution:
P→Q (+1)
E→F (+1)
N→O (+1)

INK →
I→J

N→O
K→L

Answer: JOL

Q28. If BOOK is coded as CPPL, how is READ coded?

Solution:
Each letter +1

R→S
E→F
A→B
D→E

Answer: SFBE

Q29. If MAN is coded as OCP, how is DOG coded?

Solution:
M→O (+2)
A→C (+2)
N→P (+2)

DOG →
D→F
O→Q
G→I

Answer: FQI

Q30. If INDIA is written as JOEJB, how is CHINA written?

Solution:
Each letter +1

C→D
H→I
I→J
N→O
A→B

Answer: DIJOB

Q31. If A = Z, B = Y, C = X, then DOG is coded as?

Solution:
D → W
O → L
G → T

Answer: WLT

Q32. If CAT is coded as XZG, then BAT is coded as?

Solution:
Reverse alphabet coding

B → Y
A → Z
T → G

Answer: YZG

Q33. If MANGO is coded as NZMTL, then APPLE is coded as?

Solution:
Reverse letters

A→Z
P→K
P→K

L→O
E→V

Answer: ZKKOV

Q34. If TRAIN is coded as WUDLQ, how is PLANE coded?

Solution:
Alternate +2 and +1

P(+2)=R
L(+1)=M
A(+2)=C
N(+1)=O
E(+2)=G

Answer: RMCOG

Q35. If LIGHT is coded as MJIGV, how is NIGHT coded?

Solution:
Alternate +1 and −1

N(+1)=O
I(−1)=H
G(+1)=H
H(−1)=G
T(+1)=U

Answer: OHHGU

Q36. If SKY is coded as ULC, how is FLY coded?

Solution:
+2, +3, +4

F(+2)=H
L(+3)=O
Y(+4)=C

Answer: HOC

Q37. If “BLUE SKY” is coded as “ELUB YKS”, how is “GOOD DAY” coded?

Solution:
Each word reversed

GOOD → DOOG
DAY → YAD

Answer: DOOG YAD

Q38. If “GOOD” is coded as “HPPF”, how is “BEST” coded?

Solution:
Each letter +1

B→C
E→F
S→T
T→U

Answer: CFTU

Q39. If “LION” is written as “OLIN”, how is “TIGER” written?

Solution:
Letters reversed

Answer: REGIT

Q40. If 245 is coded as 357, how is 369 coded?

Solution:
Each digit +1

3→4
6→7
9→0

Answer: 470

Q41. If 123 is written as 246, how is 345 written?

Solution:
×2

3×2=6
4×2=8
5×2=10 → 0

Answer: 680

Q42. If 48 is coded as 12, how is 64 coded?

Solution:
Divide by 4

64 ÷ 4 = **16**

Answer: 16

Q43. If + means ×, × means −, − means ÷, and ÷ means +, then

8 + 2 × 3 − 1 = ?

Solution:
Replace symbols:

8 × 2 − 3 ÷ 1
= 16 − 3 ÷ 1
= 16 − 3
= **13**

Answer: 13

Q44. If @ means +, # means ×, $ means −, then

5 @ 3 # 2 $ 4 = ?

Solution:
5 + 3 × 2 − 4
= 5 + 6 − 4
= **7**

Answer: 7

Alphabet–Number Coding

Q45. If A = 1, B = 2, … Z = 26, then

CODE is written as?

Solution:
C=3, O=15, D=4, E=5
Sum = 3+15+4+5 = **27**

Answer: 27

Q46. If MAN = 38, then DOG = ?

Solution:
M=13, A=1, N=14 → 28
D=4, O=15, G=7 → **26**

Answer: 26

Q47. If TABLE is coded as UBMFH, how is CHAIR coded?

Solution:
+1

C→D
H→I
A→B
I→J
R→S

Answer: DIBJS

Q48. If EARTH is coded as FCSTJ, how is MOON coded?

Solution:
+1

M→N
O→P
O→P
N→O

Answer: NPPO

Q49. If BUS is coded as CVT, how is CAR coded?

Solution:
+1

C→D
A→B
R→S

Answer: DBS

Q50. If ZEBRA is coded as AFCSB, how is LION coded?

Solution:
+1 (Z→A loop)

L→M
I→J
O→P
N→O

Answer: MJPO

Direct Blood Relations

Q51. A is the father of B. B is the mother of C. How is A related to C?

Solution:
A → father of B
B → mother of C
So, A is **maternal grandfather** of C.

Answer: Maternal Grandfather

Q52. P is the brother of Q. Q is the mother of R. How is P related to R?

Solution:
P → brother of Q
Q → mother of R
So, P is **maternal uncle** of R.

Answer: Maternal Uncle

Q53. M is the mother of N. N is the brother of O. How is M related to O?

Solution:
N and O are siblings
M is mother of N
So, M is **mother** of O.

Answer: Mother

Q54. A is the sister of B. B is the father of C. How is A related to C?

Solution:
A → sister of B
B → father of C
So, A is **paternal aunt** of C.

Answer: Paternal Aunt

Q55. X is the son of Y. Y is the sister of Z. How is Z related to X?

Solution:
Y → sister of Z
Z → brother of Y
Y → mother of X
So, Z is **maternal uncle** of X.

Answer: Maternal Uncle

Q56. A is the father of B. B is the brother of C. How is A related to C?

Solution:
B and C are siblings
A → father of B
So, A is **father** of C.

Answer: Father

Q57. P is the mother of Q. Q is the sister of R. How is P related to R?

Solution:
Q and R are siblings
P → mother of Q
So, P is **mother** of R.

Answer: Mother

Q58. S is the son of T. T is the wife of U. How is U related to S?

Solution:
T → wife of U
T → mother of S
So, U is **father** of S.

Answer: Father

Q59. A is the brother of B. B is the sister of C. How is A related to C?

Solution:
A, B, C are siblings
So, A is **brother** of C.

Answer: Brother

Q60. X is the daughter of Y. Y is the son of Z. How is Z related to X?

Solution:
Y → son of Z
X → daughter of Y
So, Z is **grandfather** of X.

Answer: Grandfather

Q61. M is the brother of N. N is the wife of O. How is M related to O?

Solution:
M → brother of N
N → wife of O
So, M is **brother-in-law** of O.

Answer: Brother-in-law

Q62. P is the son of Q. Q is the brother of R. How is R related to P?

Solution:
Q → brother of R
Q → father of P
So, R is **paternal uncle** of P.

Answer: Paternal Uncle

Q63. A is the sister of B. B is married to C. How is A related to C?

Solution:
A → sister of B
B → husband of C
So, A is **sister-in-law** of C.

Answer: Sister-in-law

Q64. R is the father of S. S is the wife of T. How is R related to T?

Solution:
S → wife of T
R → father of S
So, R is **father-in-law** of T.

Answer: Father-in-law

Q65. X is the brother of Y. Y is married to Z. How is Z related to X?

Solution:
Y → sister of X
Z → husband of Y
So, Z is **brother-in-law** of X.

Answer: Brother-in-law

Q66. A is the grandfather of B. B is the brother of C. How is A related to C?

Solution:
B and C are siblings
A → grandfather of B
So, A is **grandfather** of C.

Answer: Grandfather

Q67. P is the grandmother of Q. Q is the daughter of R. How is R related to P?

Solution:
P → grandmother of Q
R → parent of Q
So, R is **son or daughter** of P.

Answer: Son or Daughter

Q68. S is the son of T. T is the daughter of U. How is U related to S?

Solution:
T → daughter of U
S → son of T
So, U is **grandparent** of S.

Answer: Grandparent

Q69. A is the brother of B. B is the mother of C. How is A related to C?

Solution:
A → brother of B
B → mother of C
So, A is **maternal uncle** of C.

Answer: Maternal Uncle

Q70. P is the sister of Q. Q is the father of R. How is P related to R?

Solution:
P → sister of Q
Q → father of R
So, P is **paternal aunt** of R.

Answer: Paternal Aunt

Q71. A is the son of B. B is the brother of C. How is C related to A?

Solution:
B → father of A
C → brother of B
So, C is **paternal uncle** of A.

Answer: Paternal Uncle

Q72. M is the daughter of N. N is the wife of O. How is O related to M?

Solution:
N → wife of O
M → daughter of N
So, O is **father** of M.

Answer: Father

Q73. R is the sister of S. S is the son of T. How is R related to T?

Solution:
R and S are siblings
S → son of T
So, R is **daughter** of T.

Answer: Daughter

Q74. A is the father of B. C is the wife of B. How is C related to A?

Solution:
B → son of A
C → wife of B
So, C is **daughter-in-law** of A.

Answer: Daughter-in-law

Q75. X is the mother of Y. Y is the wife of Z. How is X related to Z?

Solution:
Y → wife of Z
X → mother of Y
So, X is **mother-in-law** of Z.

Answer: Mother-in-law

DIRECTION SENSE

Q76. A person walks 10 m towards North, then 5 m towards East. What is his distance from the starting point?

Solution:
Using right-angled triangle:
Distance = $\sqrt{(10^2 + 5^2)}$
= $\sqrt{(100 + 25)}$
= $\sqrt{125}$ = **11.18 m (approx.)**

Answer: 11.18 m

Q77. A man walks 8 m South, then 6 m East. How far is he from the starting point?

Solution:
Distance = $\sqrt{(8^2 + 6^2)}$
= $\sqrt{(64 + 36)}$
= $\sqrt{100}$ = **10 m**

Answer: 10 m

Q78. A person walks 10 m East, then 10 m West. What is the final distance from the starting point?

Solution:
He returns to the starting point.

Answer: 0 m

Q79. A boy walks 5 m North, then 12 m East. How far is he from the starting point?

Solution:
Distance = $\sqrt{(5^2 + 12^2)}$
= $\sqrt{169}$ = **13 m**

Answer: 13 m

Q80. A man walks 7 m West and then 7 m South. What is his distance from the starting point?

Solution:
Distance = $\sqrt{(7^2 + 7^2)}$
= $\sqrt{98} \approx$ **9.9 m**

Answer: 9.9 m

Q81. A person faces North, turns right, then turns left. Which direction is he facing now?

Solution:
North → Right = East
East → Left = **North**

Answer: North

Q82. A man is facing East. He turns 180°. Which direction is he facing now?

Solution:
Opposite of East = **West**

Answer: West

Q83. A boy faces South, turns left, then turns left again. Which direction is he facing?

Solution:
South → Left = East
East → Left = **North**

Answer: North

Q84. A person faces West, turns right, then turns right again. Which direction is he facing?

Solution:
West → Right = North
North → Right = **East**

Answer: East

Q85. A man faces North, turns right, then turns right, then turns left. Which direction is he facing?

Solution:
North → Right = East
East → Right = South
South → Left = **East**

Answer: East

Q86. A person walks 10 m North, then 10 m East, then 10 m South. How far is he from the starting point?

Solution:
North and South cancel
Remaining distance = **10 m East**

Answer: 10 m

Q87. A man walks 15 m East, then 5 m North, then 15 m West. How far is he from the starting point?

Solution:
East and West cancel
Remaining distance = **5 m North**

Answer: 5 m

Q88. A person walks 6 m North, 8 m East, then 6 m South. How far is he from the starting point?

Solution:
North and South cancel
Remaining distance = **8 m East**

Answer: 8 m

Q89. A boy walks 4 m East, 3 m North, 4 m West. How far is he from the starting point?

Solution:
East and West cancel
Remaining distance = **3 m North**

Answer: 3 m

Q90. A man walks 12 m South, 5 m East, then 12 m North. How far is he from the starting point?

Solution:
South and North cancel
Remaining distance = **5 m East**

Answer: 5 m

Q91. A person walks 10 m North, then turns right and walks 5 m. In which direction is he from the starting point?

Solution:
North then East → Position is **North-East**

Answer: North-East

Q92. A man walks 8 m West, then turns right and walks 6 m. Which direction is he in now?

Solution:
West → Right = North
Position is **North-West**

Answer: North-West

Q93. A person walks 5 m South, then turns left and walks 5 m. Which direction is he in?

Solution:
South → Left = East
Position is **South-East**

Answer: South-East

Q94. A boy walks 6 m East, then turns left and walks 8 m. Which direction is he from the starting point?

Solution:
East → Left = North
Position is **North-East**

Answer: North-East

Q95. A man walks 7 m North, then turns right and walks 7 m. Which direction is he in?

Solution:
Position is equal distance North and East
→ **North-East**

Answer: North-East

Q96. A person walks 20 m North, 10 m East, then 20 m South. How far is he from the starting point?

Solution:
North and South cancel
Remaining distance = **10 m East**

Answer: 10 m

Q97. A man walks 9 m East, 12 m South, then 9 m West. How far is he from the starting point?

Solution:
East and West cancel
Remaining distance = **12 m South**

Answer: 12 m

Q98. A person walks 3 m North, 4 m East, then 3 m South. How far is he from the starting point?

Solution:
Remaining distance = **4 m East**

Answer: 4 m

Q99. A boy walks 10 m West, then turns left and walks 10 m. Which direction is he facing now?

Solution:
West → Left = **South**

Answer: South

Q100. A man faces South, turns right, then turns right again. Which direction is he facing?

Solution:
South → Right = West
West → Right = **North**

Answer: North

UNIT 5

SIMPLE PUZZLES

Q1. A, B, and C are sitting in a row. A is to the left of B and B is to the left of C. Who is sitting in the middle?

Solution:
Order: A – B – C
Middle position is **B**

Answer: B

Q2. Three friends P, Q, and R are standing in a line. P is not at the end, Q is not in the middle. Who is in the middle?

Solution:
Q is not middle → Q at end
P is not at end → P in middle

Answer: P

Q3. Five persons A, B, C, D, and E are sitting in a row. B is to the right of A, C is to the left of A. Who is sitting at the left end?

Solution:
Order: C – A – B (D and E anywhere right)
Leftmost is **C**

Answer: C

Q4. A, B, and C are sitting facing north. A is to the right of B and C is to the left of B. Who is sitting in the middle?

Solution:
Order: C – B – A
Middle is **B**

Answer: B

Q5. Four friends are sitting in a row. P is not at the ends. Q is to the left of P. Who can be at the right end?

Solution:
P must be in middle positions
Q is left of P
Right end can be **R or S**

Answer: R or S

Q6. Ram is taller than Shyam but shorter than Mohan. Who is the tallest?

Solution:
Mohan > Ram > Shyam

Answer: Mohan

Q7. A is older than B. B is older than C. Who is the youngest?

Solution:
A > B > C

Answer: C

Q8. In a race, Rahul finished before Amit but after Suresh. Who finished first?

Solution:
Suresh → Rahul → Amit

Answer: Suresh

Q9. P is heavier than Q but lighter than R. Who is the lightest?

Solution:
R > P > Q

Answer: Q

Q10. A is better than B but worse than C. Who is the best?

Solution:
C > A > B

Answer: C

Q11. A walks 5 m north, then turns right and walks 3 m. In which direction is he from the starting point?

Solution:
North then East → **North-East**

Answer: North-East

Q12. A person walks 10 m east, then 10 m west. How far is he from the starting point?

Solution:
He returns to starting point

Answer: 0 m

Q13. A man walks 4 m south, then 3 m east. How far is he from the starting point?

Solution:
Distance = $\sqrt{(4^2 + 3^2)}$ = **5 m**

Answer: 5 m

Q14. A is the father of B. B is the brother of C. How is A related to C?

Solution:
B and C are siblings
A is father of B
So A is **father of C**

Answer: Father

Q15. P is the sister of Q. Q is the father of R. How is P related to R?

Solution:
P is sister of R's father

Answer: Paternal Aunt

Q16. X is the mother of Y. Y is the wife of Z. How is X related to Z?

Solution:
X is mother of Z's wife

Answer: Mother-in-law

Q17. If A = 1, B = 2, … Z = 26, find the value of CAT.

Solution:
C = 3, A = 1, T = 20
Sum = 3 + 1 + 20 = **24**

Answer: 24

Q18. If 2 → 4, 3 → 9, 4 → 16, then 5 → ?

Solution:
Square pattern
5^2 = **25**

Answer: 25

Q19. Find the odd one out: 2, 4, 8, 16, 18

Solution:
All are powers of 2 except 18

Answer: 18

Q20. If yesterday was Monday, what day will it be tomorrow?

Solution:
Yesterday Monday → Today Tuesday → Tomorrow **Wednesday**

Answer: Wednesday

Q21. A clock shows 3:00. What is the angle between the hour and minute hand?

Solution:
At 3:00 → **90°**

Answer: 90°

Q22. How many months have 31 days?

Solution:
January, March, May, July, August, October, December = **7**

Answer: 7

Q23. Which number comes next?

1, 4, 9, 16, ?

Solution:
Squares: 1^2, 2^2, 3^2, 4^2
Next = 5^2 = **25**

Answer: 25

Q24. If SOUTH is written as TOUTI, how is NORTH written?

Solution:
Each letter +1
N→O, O→P, R→S, T→U, H→I

Answer: OPSUI

Q25. A is facing north. He turns right, then right again, then left. Which direction is he facing now?

Solution:
North → Right = East
East → Right = South
South → Left = **East**

Answer: East

DAY AND DATE

Q26. If today is Monday, what day will it be after 10 days?

Solution:
10 ÷ 7 = 3 remainder **3**
Monday + 3 = **Thursday**

Answer: Thursday

Q27. If today is Wednesday, what day was 5 days ago?

Solution:
Wednesday − 5 days = **Friday**

Answer: Friday

Q28. If today is Sunday, what day will it be after 15 days?

Solution:
15 ÷ 7 = 2 remainder **1**
Sunday + 1 = **Monday**

Answer: Monday

Q29. If today is Friday, what day was 14 days ago?

Solution:
14 days = exact 2 weeks
Day remains **Friday**

Answer: Friday

Q30. If today is Tuesday, what day will it be after 100 days?

Solution:
100 ÷ 7 = 14 remainder **2**
Tuesday + 2 = **Thursday**

Answer: Thursday

Q31. If yesterday was Thursday, what day will it be tomorrow?

Solution:
Yesterday Thursday → Today Friday → Tomorrow **Saturday**

Answer: Saturday

Q32. If tomorrow is Sunday, what day was it yesterday?

Solution:
Tomorrow Sunday → Today Saturday → Yesterday **Friday**

Answer: Friday

Q33. If today is Monday, what day will it be after 21 days?

Solution:
21 ÷ 7 = exact
Day remains **Monday**

Answer: Monday

Q34. If today is Saturday, what day was 9 days ago?

Solution:
9 ÷ 7 = 1 remainder **2**
Saturday − 2 = **Thursday**

Answer: Thursday

Q35. If today is Thursday, what day will it be after 45 days?

Solution:
45 ÷ 7 = 6 remainder **3**
Thursday + 3 = **Sunday**

Answer: Sunday

Q36. What is the day on 15 August 1947?

Solution:
15 August 1947 was **Friday**

Answer: Friday

Q37. What day was 26 January 1950?

Solution:
26 January 1950 was **Thursday**

Answer: Thursday

Q38. If 1st January 2020 was Wednesday, what day was 8th January 2020?

Solution:
8 − 1 = 7 days later
Same day = **Wednesday**

Answer: Wednesday

Q39. If 1st March is Monday, what day will be 15th March?

Solution:
15 − 1 = 14 days later
14 ÷ 7 = exact
Same day = **Monday**

Answer: Monday

Q40. If 5th June is Friday, what day will be 20th June?

Solution:
20 − 5 = 15 days
15 ÷ 7 = 2 remainder **1**
Friday + 1 = **Saturday**

Answer: Saturday

Q41. Which of the following is a leap year?

(a) 1900
(b) 2000
(c) 2100
(d) 2200

Solution:
Leap year: divisible by 4
Century year must be divisible by 400
Only **2000** satisfies condition.

Answer: 2000

Q42. How many days are there in a leap year?

Solution:
Leap year has **366 days**

Answer: 366

Q43. How many odd days are there in a leap year?

Solution:
366 ÷ 7 = 52 weeks + **2 odd days**

Answer: 2

Q44. How many odd days are there in 100 years?

Solution:
100 years = 76 normal + 24 leap
Odd days = (76×1) + (24×2)
= 76 + 48 = 124
124 ÷ 7 = remainder **5**

Answer: 5 odd days

Q45. How many odd days are there in 200 years?

Solution:
200 years = 152 normal + 48 leap
Odd days = 152 + 96 = 248
248 ÷ 7 = remainder **3**

Answer: 3 odd days

Q46. If 1st January 2015 was Thursday, what day was 31st December 2015?

Solution:
2015 is not a leap year → 365 days
365 ÷ 7 = remainder **1**
Thursday + 1 = **Friday**

Answer: Friday

Q47. What day comes three days after the day before yesterday if today is Sunday?

Solution:
Day before yesterday = Friday
Three days after Friday = **Monday**

Answer: Monday

Q48. If today is Monday, what day was it the day after yesterday?

Solution:
Yesterday = Sunday
Day after yesterday = **Monday**

Answer: Monday

Q49. If 10th April is Monday, what day will be 25th April?

Solution:
25 − 10 = 15 days
15 ÷ 7 = 2 remainder **1**
Monday + 1 = **Tuesday**

Answer: Tuesday

Q50. If 1st January is Sunday, what day will be 31st January?

Solution:
January has 31 days
31 − 1 = 30 days later
30 ÷ 7 = 4 remainder **2**
Sunday + 2 = **Tuesday**

Answer: Tuesday

CLOCKS

Q51. What is the angle between the hour and minute hands at 3:00?

Solution:
At 3:00, angle = 3 × 30° = **90°**

Answer: 90°

Q52. What is the angle between the hands at 6:00?

Solution:
6 × 30° = **180°**

Answer: 180°

Q53. What is the angle between the hands at 12:00?

Solution:
Both hands overlap

Answer: 0°

Q54. What is the angle between the hands at 9:00?

Solution:
9 × 30° = **270°**
Smaller angle = 360 − 270 = **90°**

Answer: 90°

Q55. What is the angle between the hands at 1:00?

Solution:
1 × 30° = **30°**

Answer: 30°

Q56. Find the angle between the hands at 5:30.

Solution:
Hour hand position = (5 × 30) + (30 × 0.5) = 150 + 15 = 165°
Minute hand = 30 × 6 = 180°
Angle = |180 − 165| = **15°**

Answer: 15°

Q57. Find the angle between the hands at 4:20.

Solution:
Hour hand = (4 × 30) + (20 × 0.5) = 120 + 10 = 130°
Minute hand = 20 × 6 = 120°
Angle = |130 − 120| = **10°**

Answer: 10°

Q58. What is the angle between the hands at 2:15?

Solution:
Hour hand = (2 × 30) + (15 × 0.5) = 60 + 7.5 = 67.5°
Minute hand = 15 × 6 = 90°
Angle = |90 − 67.5| = **22.5°**

Answer: 22.5°

Q59. Find the angle between the hands at 7:30.

Solution:
Hour hand = (7 × 30) + (30 × 0.5) = 210 + 15 = 225°
Minute hand = 180°
Angle = |225 − 180| = **45°**

Answer: 45°

Q60. What is the angle between the hands at 10:10?

Solution:
Hour hand = (10 × 30) + (10 × 0.5) = 300 + 5 = 305°
Minute hand = 10 × 6 = 60°
Angle = |305 − 60| = 245°
Smaller angle = 360 − 245 = **115°**

Answer: 115°

Q61. At what time are the hands at right angle at 3 o’clock?

Solution:
At exactly **3:00**, angle is 90°

Answer: 3:00

Q62. How many times do the hands form a right angle in a day?

Solution:
In 12 hours → 22 times
In 24 hours → **44 times**

Answer: 44 times

Q63. At what time are the hands in a straight line at 6 o'clock?

Solution:
At **6:00**, hands are opposite (180°)

Answer: 6:00

Q64. How many times are the hands in opposite direction in a day?

Solution:
In 12 hours → 11 times
In 24 hours → **22 times**

Answer: 22 times

Q65. How many times do the hands overlap in a day?

Solution:
In 12 hours → 11 times
In 24 hours → **22 times**

Answer: 22 times

Q66. A clock gains 5 minutes every hour. How much will it gain in 24 hours?

Solution:
5 × 24 = **120 minutes = 2 hours**

Answer: 2 hours

Q67. A clock loses 10 minutes every hour. How much time will it lose in 6 hours?

Solution:
10 × 6 = **60 minutes = 1 hour**

Answer: 1 hour

Q68. A clock gains 2 minutes every hour. If it shows correct time at 6 AM, what time will it show at 12 noon?

Solution:
Time gap = 6 hours
Gain = 2 × 6 = 12 minutes
Clock shows **12:12 PM**

Answer: 12:12 PM

Q69. What is the angle between the hands at 8:40?

Solution:
Hour hand = (8 × 30) + (40 × 0.5) = 240 + 20 = 260°
Minute hand = 40 × 6 = 240°
Angle = |260 − 240| = **20°**

Answer: 20°

ANALYTICAL PROBLEMS

Q70. All roses are flowers. Some flowers are red.

Conclusion: Some roses are red. Is the conclusion correct?

Solution:
No direct relation is given between roses and red flowers.

Answer: Cannot be concluded

Q71. All pens are books. All books are papers.

Conclusion: All pens are papers.

Solution:
Pens → Books → Papers
So pens are papers.

Answer: Conclusion follows

Q72. Some cats are dogs. All dogs are animals.

Conclusion: Some cats are animals.

Solution:
Some cats are dogs and all dogs are animals.

Answer: Conclusion follows

Q73. All boys are students. Some students are players.

Conclusion: Some boys are players.

Solution:
No direct link between boys and players.

Answer: Cannot be concluded

Q74. No chair is a table. All tables are furniture.

Conclusion: No chair is furniture.

Solution:
Tables are furniture, but nothing about chairs and furniture.

Answer: Cannot be concluded

Q75. A is taller than B but shorter than C. Who is the tallest?

Solution:
C > A > B

Answer: C

Q76. In a row of boys, Ravi is 10th from the left and 15th from the right. How many boys are there?

Solution:
Total = 10 + 15 − 1 = **24**

Answer: 24

Q77. Suresh is 7th from the top and 18th from the bottom. How many persons are there?

Solution:
7 + 18 − 1 = **24**

Answer: 24

Q78. P is older than Q but younger than R. Who is the youngest?

Solution:
R > P > Q

Answer: Q

Q79. In a class, Rohan is 12th from the front and 9th from the back. Find total students.

Solution:
12 + 9 − 1 = **20**

Answer: 20

Q80. Statement: The government has reduced petrol prices.

Effect: Transport fares may reduce.

Solution:
Reduced fuel cost can reduce transport fares.

Answer: Effect is possible

Q81. Statement: Heavy rainfall occurred continuously.

Effect: Floods occurred in low-lying areas.

Solution:
Continuous rainfall causes floods.

Answer: Effect follows

Q82. Statement: Exams were postponed.

Effect: Students got more preparation time.

Solution:
Postponement gives extra time.

Answer: Effect follows

Q83. Statement: The road was under repair.

Effect: Traffic jams occurred.

Solution:
Road repairs cause congestion.

Answer: Effect follows

Q84. Statement: The company reduced employee salaries.

Effect: Employee dissatisfaction increased.

Solution:
Salary cuts usually cause dissatisfaction.

Answer: Effect follows

Q85. A walks 10 m north, then 10 m east, then 10 m south. How far is he from the starting point?

Solution:
North and south cancel → remaining 10 m east.

Answer: 10 m

Q86. A man faces north, turns right, then right again. Which direction is he facing now?

Solution:
North → East → South

Answer: South

Q87. A walks 5 m west and then 12 m south. Find the distance from the starting point.

Solution:
Distance = $\sqrt{(5^2 + 12^2)} = \sqrt{169} =$ **13 m**

Answer: 13 m

Q88. If A = 1, B = 2 … Z = 26, find value of DOG.

Solution:
D = 4, O = 15, G = 7
Sum = 4 + 15 + 7 = **26**

Answer: 26

Q89. If 2 → 6, 3 → 12, 4 → 20, then 5 → ?

Solution:
Pattern: n × (n + 1)
5 × 6 = **30**

Answer: 30

Q90. Find the odd one out:

2, 4, 8, 16, 20

Solution:
All except 20 are powers of 2.

Answer: 20

Q91. All apples are fruits. Some fruits are sweet.

Conclusion: Some apples are sweet.

Solution:
No direct relation between apples and sweet fruits.

Answer: Cannot be concluded

Q92. Pointing to a man, Ramesh said, "He is the son of my grandfather's only son."

How is the man related to Ramesh?

Solution:
Grandfather's only son = Father
Son of father = Brother

Answer: Brother

Q93. If SOUTH is written as TOUTI, how is EAST written?

Solution:
Each letter +1
E→F, A→B, S→T, T→U

Answer: FBTU

Q94. In a certain code, MAD = NBE. How is CAT written?

Solution:
Each letter +1
C→D, A→B, T→U

Answer: DBU