Top 100 Mathematics Questions for RRB NTPC

1. Number System & Simplification

1. **Find the least number which when divided by 35, 45, and 55 leaves the same remainder 5.**
   - ➤ **Answer:** 685
   - ➤ **Explanation:** LCM(35,45,55)=630; Add remainder → 630+55=685.

2. **Find the HCF and LCM of 24, 36, and 60.**
   - ➤ **Answer:** HCF=12, LCM=360
   - ➤ **Explanation:** Product = HCF×LCM relationship holds true.

3. **Simplify: (3/5 of 20) + (2/3 of 9).**
   - ➤ **Answer:** 12 + 6 = **18**.

4. **Find the remainder when 7^{100} is divided by 6.**
   - ➤ **Answer:** 1
   - ➤ **Explanation:** $7 \equiv 1 \pmod 6 \rightarrow 7^{100} \equiv 1^{100} \equiv 1$.

5. **Find the smallest number divisible by 12, 15, and 18.**
   - ➤ **Answer:** 180

6. **If 2x + 3y = 12 and 3x + 2y = 13, find x−y.**
   - ➤ **Answer:** 1
   - ➤ **Explanation:** Subtract → (x−y)=1.

7. **Find the value of 1/2 + 1/3 + 1/4.**
   - ➤ **Answer:** (6+4+3)/12 = **13/12**.

8. **Simplify: √(81/49).**
   - ➤ **Answer:** 9/7.

9. **If a number is divided by 13, the remainder is 9. What is the remainder when it is divided by 26?**
   ➤ **Answer:** 9 (since 9 < 13).

10. **Find the least number which leaves a remainder of 1 when divided by 2, 3, 4, 5, and 6.**
    ➤ **Answer:** 61
    ➤ **Explanation:** LCM(2,3,4,5,6)=60; Add remainder → 60+1=61.

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2. Ratio, Proportion & Percentage

11. **If a:b = 3:4 and b:c = 2:3, find a:c.**
➤ **Answer:** 3:6 → 1:2.

12. **A's salary is 25% more than B's. If B earns ₹16,000, find A's salary.**
➤ **Answer:** ₹20,000.

13. **Find the percentage increase from 80 to 100.**
➤ **Answer:** 25%.

14. **If 30% of a number is 120, find the number.**
➤ **Answer:** 400.

15. **A sum of ₹600 is divided among A and B in the ratio 3:2. Find A's share.**
➤ **Answer:** ₹360.

16. **If 20% of x = 30% of y, then x:y = ?**
➤ **Answer:** 3:2.

17. **Price increases by 25% and later decreases by 20%. Find net effect.**
➤ **Answer:** 0.25×0.8=1.0→ +0% (actually +0%). Correct = +0%.

18. **The population increases 5% annually. Present population = 22050. Find population 2 years ago.**
➤ **Answer:** 22050 / (1.05)² = **20000**.

19. **Two numbers are in ratio 5:7. Their difference is 48. Find numbers.**
➤ **Answer:** 120, 168.

20. **Find x: If x is 20% more than y, then y is what percent less than x?**
➤ **Answer:** 16⅔%.

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3. Time, Speed & Distance

21. **A train travels 360 km in 4 hours. Find its speed.**
➤ **Answer:** 90 km/h.

22. **A train 150 m long passes a man walking at 6 km/h in 12 seconds. Find speed of train.**
➤ **Answer:** 52 km/h.

23. **A car travels 60 km at 40 km/h and next 60 km at 60 km/h. Find average speed.**
➤ **Answer:** 48 km/h.

24. **Two trains running in opposite directions cross each other in 12 s. Each 120 m long. Speed of one = 50 km/h. Find the other.**
➤ **Answer:** 40 km/h.

25. **A boat goes 10 km downstream in 2 h, upstream in 4 h. Find speed of stream.**
➤ **Answer:** 1.67 km/h.

26. **A cyclist covers 40 km in 2½ hours. Find speed in m/s.**
➤ **Answer:** 4.44 m/s.

27. **If a person increases speed by 25%, he saves 10 minutes. Find normal time.**
➤ **Answer:** 50 minutes.

28. **A train crosses a platform 200 m long in 25 s at 72 km/h. Find train's length.**
➤ **Answer:** 300 m.

29. **If speed is reduced by 25%, time increases by how much?**
➤ **Answer:** 33⅓%.

30. **A car travels at 60 km/h. Find time for 30 km.**
➤ **Answer:** 0.5 hours.

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4. Time & Work

31. **A does a job in 10 days, B in 15 days. How long together?**
➤ **Answer:** 6 days.

32. **A can do a work in 12 days, B in 16 days. They work together 4 days. Remaining work?**
➤ **Answer:** 5/12.

33. **A and B can do work in 8 and 12 days. If B leaves after 3 days, total days to finish?**
➤ **Answer:** 5½ days.

34. **Pipe A fills a tank in 10 h, pipe B empties in 15 h. If both open, fill time?**
➤ **Answer:** 30 h.

35. **A and B together do work in 5 days. A alone takes 8 days. B alone?**
➤ **Answer:** 13⅓ days.

36. **If 4 men can finish a work in 12 days, how many men needed to do it in 8 days?**
➤ **Answer:** 6 men.

37. **A is twice as good a worker as B. Together they finish in 12 days. A alone?**
➤ **Answer:** 18 days.

38. **Three taps fill a tank in 10, 15, and 20 min respectively. Time when all open?**
➤ **Answer:** 4 min.

39. **A can complete work in 15 days, B in 10. Together they earn ₹600. A's share?**
➤ **Answer:** ₹240.

40. **A and B can do work in 12 and 18 days. They start together, B leaves after 4 days. Find total time.**
➤ **Answer:** 10 days.

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5. Simple & Compound Interest

41. **Find SI on ₹1200 for 2 years at 10% p.a.**
➤ **Answer:** ₹240.

42. **Find CI on ₹1000 for 2 years at 10% p.a.**
➤ **Answer:** ₹210.

43. **Find principal if SI = ₹480, rate = 12%, time = 2 years.**
➤ **Answer:** ₹2000.

44. **Find rate if CI on ₹8000 for 2 years = ₹1280.**
➤ **Answer:** 8%.

45. **The difference between CI and SI on ₹5000 for 2 years at 10% is?**
➤ **Answer:** ₹50.

46. **If sum becomes ₹7920 in 2 years and ₹8346 in 3 years, find rate.**
➤ **Answer:** 5%.

47. **In how many years will ₹625 amount to ₹729 at 8% CI?**
➤ **Answer:** 2 years.

48. **What sum will become ₹9800 in 2 years at 10% p.a. SI?**
➤ **Answer:** ₹8000.

49. **A sum triples in 15 years. Find rate p.a. SI.**
➤ **Answer:** 13⅓%.

50. **Find the amount after 3 years on ₹1000 at 10% CI.**
➤ **Answer:** ₹1331.

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6. Profit, Loss & Discount

51. **CP=₹400, SP=₹500. Find gain%.**
➤ **Answer:** 25%.

52. **Loss% when CP=₹500, SP=₹450.**
➤ **Answer:** 10%.

53. **Find SP to gain 20% on ₹600.**
➤ **Answer:** ₹720.

54. **Find CP if SP=₹750 and gain=25%.**
➤ **Answer:** ₹600.

55. **Successive discounts of 10% and 20% on ₹1000 equal to single discount of?**
➤ **Answer:** 28%.

56. **A sells article at 25% gain, new SP ₹500. Find CP.**
➤ **Answer:** ₹400.

57. **A shopkeeper marks goods 40% above cost, gives 10% discount. Profit%?**
➤ **Answer:** 26%.

58. **Profit of ₹100 on CP ₹400. Find profit%.**

➤ **Answer:** 25%.

59. **Selling price 85% of CP. Find loss%.**

➤ **Answer:** 15%.

60. **Find SP if marked price ₹2000, discount 15%.**

➤ **Answer:** ₹1700.

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7. Average, Age & Partnership

61. **Average of 5 numbers = 20. If one number is 30, find new average.**

➤ **Answer:** 18.

62. **Average of first 10 natural numbers.**

➤ **Answer:** 5.5.

63. **Average age of A, B, C = 30. Age of A=25, B=35. Age of C?**

➤ **Answer:** 30.

64. **A invests ₹900 for 3 months, B ₹1200 for 2 months. Find profit ratio.**

➤ **Answer:** 3:2.

65. **Average of 6 numbers is 12. If 2 numbers are removed, new average 10. Find sum of removed numbers.**

➤ **Answer:** 24.

66. **Father's age is twice the son's age. After 10 years, difference 25. Find present ages.**

➤ **Answer:** 40 and 20.

67. **Average of 4 consecutive even numbers is 27. Find the largest.**
➤ **Answer:** 30.

68. **Average of 7,9,11,13,15.**
➤ **Answer:** 11.

69. **A invests ₹4000, B ₹6000, profit ₹2000. A's share?**
➤ **Answer:** ₹800.

70. **Mean of 10 observations is 15. If one new obs 25 added, new mean?**
➤ **Answer:** 16.

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8. Mensuration & Geometry

71. **Area of rectangle = 60 m², length = 12 m. Find breadth.**
➤ **Answer:** 5 m.

72. **Find perimeter of square with side 15 cm.**
➤ **Answer:** 60 cm.

73. **Area of triangle with base 10 cm, height 8 cm.**
➤ **Answer:** 40 cm².

74. **Circumference of circle = 44 cm. Find radius.**
➤ **Answer:** 7 cm.

75. **Area of circle with diameter 14 cm.**
➤ **Answer:** 154 cm².

76. **Volume of cube with side 5 cm.**
➤ **Answer:** 125 cm³.

77. **Surface area of cuboid 5×4×3 cm.**
➤ **Answer:** 94 cm².

78. **Volume of cylinder radius 7 cm, height 10 cm.**
➤ **Answer:** 1540 cm³.

79. **Area of parallelogram base 12, height 9.**
➤ **Answer:** 108 cm².

80. **Area of trapezium parallel sides 8, 12, height 6.**
➤ **Answer:** 60 cm².

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9. Algebra & Trigonometry

81. **If $x+y=7$, $xy=10$, find x^2+y^2.**
➤ **Answer:** 29.

82. **Simplify: $(x+y)^2 - (x-y)^2$.**
➤ **Answer:** 4xy.

83. **If $a/b=3/4$, find $(3a+2b):(2a+3b)$.**
➤ **Answer:** 17:18.

84. **If $x=3$, $y=2$, find $(x^3-y^3)/(x-y)$.**
➤ **Answer:** 13.

85. **If $\sin A=3/5$, find $\cos A$.**
➤ **Answer:** 4/5.

86. **$\tan A=3/4$, find $\sin A$ and $\cos A$.**
➤ **Answer:** $\sin A=3/5$, $\cos A=4/5$.

87. **If $\sec^2 A - \tan^2 A = ?$**
➤ **Answer:** 1.

88. **Simplify $(\sin^2 A + \cos^2 A)$.**
➤ **Answer:** 1.

89. **If $\cot A = \sqrt{3}$, find A.**
➤ **Answer:** 30°.

90. **If $\tan A = 1$, find A.**
➤ **Answer:** 45°.

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10. Miscellaneous & Probability

91. **Find probability of getting a 4 in a single dice throw.**
➤ **Answer:** 1/6.

92. **Find probability of drawing a king from 52 cards.**
➤ **Answer:** 1/13.

93. **How many 3-digit numbers divisible by 5?**
➤ **Answer:** 180.

94. **In how many ways can 3 medals be awarded to 6 students?**
➤ **Answer:** 6P3 = 120.

95. **From digits 2,3,5,7 how many 3-digit numbers can be formed without repetition?**
➤ **Answer:** 24.

96. **In a toss of 2 coins, find probability of at least one head.**
➤ **Answer:** 3/4.

97. **In how many ways can letters of “TRAIN” be arranged?**

➤ **Answer:** 120.

98. **A card is drawn from a deck. Probability of red card?**

➤ **Answer:** 1/2.

99. **How many factors does 72 have?**

➤ **Answer:** 12.

100. **Find sum of first 20 natural numbers.**

➤ **Answer:** n(n+1)/2 = 210.