

12. NUMBERS, HCF & LCM

UNITS DIGIT OF THE NUMBER	POSSIBLE UNITS DIGIT OF THE RESULT
0	0
1	1
2	2, 4, 8, 6
3	3, 9, 7, 1
4	4, 6
5	5
6	6
7	7, 9, 3, 1
8	8, 4, 2, 6
9	9, 1

PRACTICE EXERCISE

Directions for questions 1 to 50: Select the correct alternative from the given choices.

1. a. Find the smallest number, which should be multiplied with 540 to make it a perfect square.
(1) 8 (2) 12 (3) 9 (4) 15
b. Find the smallest number, which should be multiplied with 960 to make it a perfect cube.
(1) 15 (2) 225 (3) 45 (4) 275
2. What is the remainder when 2^{80} is divided by 15?
(1) 0 (2) 1 (3) 2 (4) 3
3. What is the largest power of 3 in 150!?
(1) 56 (2) 72 (3) 64 (4) 48
4. Find the number of zeros at the end of 100!.
(1) 18 (2) 35 (3) 24 (4) 28
5. Find the number of factors of 2160.
(1) 25 (2) 35 (3) 40 (4) 28
6. Find the units digits of $(111)^{111} + (222)^{222} + (333)^{333} + (444)^{444}$
(1) 0 (2) 6 (3) 5 (4) 4
7. Find the units digit of $(15847)^{3265}$.
(1) 1 (2) 3 (3) 7 (4) 9
8. If 987642x is divisible by 36, find the value of x.
(1) 0 (2) 6 (3) 9 (4) 4
9. $\text{LCM}(480, 360, 320) =$
(1) 1440 (2) 2880 (3) 2160 (4) 1800
10. $\text{HCF}(63, 84, 147) =$
(1) 21 (2) 7 (3) 12 (4) 17

11. $\text{LCM}\left(\frac{5}{6}, \frac{9}{10}, \frac{8}{9}\right) =$
(1) 720 (2) 1440 (3) 360 (4) 2880
12. $\text{HCF}\left(\frac{7}{12}, \frac{21}{5}, \frac{14}{18}\right) =$
(1) $\frac{7}{360}$ (2) $\frac{7}{180}$ (3) $\frac{7}{1080}$ (4) $\frac{7}{2160}$
13. Four bells toll at intervals of 10 seconds, 15 seconds, 20 seconds and 30 seconds respectively. If they toll together at 10:00 a.m. at what time will they toll together for the first time after 10:00 a.m.?
(1) 10:01 (2) 10:02 (3) 10:05 (4) 10:03
14. Find the units digit of $(98648)^{3265}$.
(1) 6 (2) 4 (3) 8 (4) 2
15. Find the largest 4 digit number which gives a remainder of 1 when divided by 7 and 5 respectively.
(1) 9968 (2) 9981 (3) 9971 (4) 9976
16. If $x + \frac{1}{x} = 4$, $x^2 + \frac{1}{x^2} =$
(1) 8 (2) 10 (3) 12 (4) 14
17. If $y - \frac{1}{y} = 3$, $y^2 + \frac{1}{y^2} =$
(1) 11 (2) 12 (3) 13 (4) 14
18. Which of the following is a prime number?
(1) 437 (2) 323 (3) 651 (4) 241
19. Which of the following is a perfect square?
(1) $(64)_8$ (2) $(36)_7$ (3) $(25)_6$ (4) $(121)_3$

20. Which of the following numbers is divisible by 24?
 (1) 6666 (2) 3384 (3) 2732 (4) 8072
21. (i) $(73)_{10} = \underline{\hspace{2cm}} (\underline{\hspace{2cm}})_2$
 (ii) $(110110)_2 = \underline{\hspace{2cm}} (\underline{\hspace{2cm}})_{10}$
 (iii) $(565)_8 = \underline{\hspace{2cm}} (\underline{\hspace{2cm}})_2$
22. Find the largest prime number which when expressed, in binary system has 8 characters.
 (1) 10101010 (2) 11111110
 (3) 11111111 (4) 11111011
23. Find the greatest number which when divides 4430 and 5530, leaves respective remainders of 10 and 5.
 (1) 1065 (2) 1055 (3) 1105 (4) 1050
24. Find the greatest number which when divides 63, 121 and 208, leaves the same remainder.
 (1) 27 (2) 29 (3) 31 (4) 33
25. Find the least number which when divided by 12, 13, 15 leaves a remainder of 7 in each case.
 (1) 773 (2) 787 (3) 780 (4) 782
26. If the number 756432a8 is divisible by 2, then which of the following can be the value of a?
 (1) 3 (2) 6 (3) 7 (4) all the above
27. If the number 7856A32 is divisible by 3, then the value of A can be
 (1) 3 (2) 6 (3) 0 (4) 8
28. If the number 780432a is divisible by 6, then the value of a can be
 (1) 3 (2) 8 (3) 0 (4) 4
29. If the number 1008943a8 is divisible by 6, then the value of a can be
 (1) 1 (2) 2 (3) 9 (4) 8
30. If the number 45327a is divisible by 4, then the value of a can be
 (1) 3 (2) 6 (3) 0 (4) 4
31. If the number 63a2488 is divisible by 4, then the value of a can be
 (1) 5 (2) 6 (3) 9 (4) all the above
32. If the number 20064a6 is divisible by 4, then the value of a can be
 (1) 3 (2) 6 (3) 0 (4) 8
33. If the number 6743a is divisible by 5, then the value of a can be
 (1) 3 (2) 6 (3) 5 (4) 2
34. If the number 203a00 is divisible by 8, then the value of a can be
 (1) 3 (2) 6 (3) 5 (4) 9
35. If the number 234560a is divisible by 8, then the value of a can be
 (1) 2 (2) 8 (3) 6 (4) 4
36. If the number 64a86 is divisible by 8, then the value of a can be
 (1) 1 (2) 2 (3) 7 (4) none of these
37. If the number 9562a4 is divisible by 8, then the value of a can be
 (1) 9 (2) 7 (3) 6 (4) 0
38. If the number 34567a is divisible by 9, then the value of a can be
 (1) 3 (2) 6 (3) 1 (4) 2
39. If the number 8a64927 is divisible by 9, then the value of a can be
 (1) 8 (2) 5 (3) 0 (4) 7
40. If the number 98075a2 is divisible by 12, then the value of a can be
 (1) 3 (2) 5 (3) 1 (4) 4
41. If the number 5438ab is divisible by 12, then a, b can be respectively
 (1) 3, 2 (2) 6, 4 (3) 0, 8 (4) 2, 6
42. a. Which of the following numbers is divisible by both 2 and 3?
 (1) 3136 (2) 6654 (3) 338 (4) 224
 b. Which of the following numbers is divisible by 2, 3, 4, 8 and 9?
 (1) 3546 (2) 4954 (3) 3124 (4) 3024
 c. Which of the following numbers is divisible by 2, 4 and 5?
 (1) 7185 (2) 8180 (3) 9154 (4) 6750
 d. Which of the following numbers is divisible by 2, 3, 4, 8, 9 and 11?
 (1) 67892 (2) 64364 (3) 16632 (4) 75466
 e. Which of the following numbers is divisible by 2, 3 and 9?
 (1) 3392 (2) 7484 (3) 1564 (4) 7182
43. What least whole number should be added to the following numbers to make them multiples of 9?
 (a) 96345
 (1) 2 (2) 0 (3) 4 (4) 5
 (b) 67892
 (1) 4 (2) 1 (3) 0 (4) 2
44. Find the least number divisible by 15, 25 and 30.
 (1) 60 (2) 75 (3) 120 (4) 150
45. The LCM and GCD of two natural numbers is 60 and

- 3 respectively. If one of the numbers is 15, find the other.
 (1) 15 (2) 12 (3) 8 (4) 10
46. Three persons A, B and C start running round a circular track at the same time. If they complete one round in 10, 12, 15 minutes respectively, after how much time will they meet for the first time at the starting point?
 (1) 160 min (2) 120 min (3) 150 min (4) 60 min
47. Given that H.C.F. of two numbers is 25 and the product of the numbers is 5000, find the number of such possible pairs.
 (1) One (2) Two (3) Four (4) Infinite
48. Two positive numbers have their H.C.F. as 11 & their product is 726. How many such pairs are possible?
 (1) 0 (2) 1 (3) 3 (4) 2
49. If six bells toll at intervals of 3, 4, 5, 6, 7 & 8 seconds respectively, find when they will toll together again given that these bells toll together at 11:15 a.m.
 (1) 11:19 (2) 11:29 (3) 11:30 (4) 11:39
50. A teacher wants to divide 247 boys & 209 girls into several groups of equal size without mixing them.
- What could be the minimum number of groups?
 (1) 19 (2) 24 (3) 32 (4) 17
 - What is the size of each group?
 (1) 13 (2) 17 (3) 19 (4) 21
51. A dealer has 136kg and 187kg of two varieties of sugar. In order to pack them into bags of equal size without mixing the two varieties, the least number of bags required is
 (1) 19 (2) 21 (3) 25 (4) 17
52. What should be the minimum number of students so that they can be arranged in groups of 30 or 32 or 40 or 42?
 (1) 3320 (2) 3360 (3) 42 (4) 420
53. Find the remainder when 2^{39} divided by 8.
 (1) 2 (2) 5 (3) 0 (4) 7
54. The remainder when $6^{17} + 17^6$ is divided by 7 is...
 (1) 1 (2) 6 (3) 0 (4) 3
55. The prime factorization of integer N is $A \times A \times B \times C$, where A, B and C are all distinct prime integers. How many factors N have?
 (1) 12 (2) 24 (3) 4 (4) 6
56. Find the units digit of the expression:
 $1! + 2! + 3! + \dots + 29!$.
 (1) 0 (2) 6 (3) 3 (4) 5
57. Find the number of zeros at the end of the expression:
 $55 \times 22 \times 70 \times 85 \times 28 \times 36 \times 95 \times 142 \times 35 \times 50$.
 (1) 8 (2) 5 (3) 3 (4) 7
58. What is the largest power of 4 in $100!$?
 (1) 32 (2) 31 (3) 48 (4) 49
59. Find the number of zeros at the end of the expression:
 $1^1 \times 2^2 \times 3^3 \times 4^4 \times 5^5 \times \dots \times 34^{34}$.
 (1) 105 (2) 109 (3) 30 (4) 130
60. Which of the following cannot be the number of zeros at the end of any factorial?
 (1) 24 (2) 26 (3) 27 (4) 29

Numbers, HCF & LCM																			
1	4,3	6	4	11	3	16	4	21		26	4	31	4	36	4	41	2	46	4
2	2	7	3	12	2	17	1	22	4	27	4	32	1	37	3	42		47	1
3	2	8	1	13	1	18	4	23	3	28	3	33	3	38	4	43	2,1	48	4
4	3	9	2	14	3	19	4	24	2	29	3	34	2	39	3	44	4	49	2
5	3	10	1	15	4	20	2	25	2	30	2	35	2	40	2	45	2	50	2,3
																		55	1
																		60	4