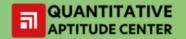


NUMBER SYSTEM CHARA UNIVERSITY



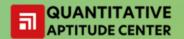


Introduction to Number Theory:-

In number theory, the numbers are classified into different types, such as natural numbers, whole numbers, complex numbers, and so on. The sub-classifications of the natural number are given below:

- ➤ Odd Numbers 1, 3, 5, 7, 9, 11, 13, 15, 17, 19.....
- ➤ Even Numbers 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 . . .
- ➤ Square Numbers 4, 9, 16, 25, 36, 49, 64, 81,100 . . .
- ➤ Cube Numbers 8, 27, 64, 125, 216, 343, 512 . . .
- ➤ Prime Numbers 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47,53, 59, 61 . . .
- ➤ Composite Numbers 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24 . . .
- > 1 (modulo 4) Numbers 1, 5, 9, 13, 17, 21, 25, . . .
- > 3 (modulo 4) Numbers − 3, 7, 11, 15, 19, 23, 27, . . .
- ➤ Triangular Numbers 3, 6, 10, 15, 21, 28, 36, 45,...
- ➤ Perfect Numbers 6, 28, 496, 8128, . . .
- Fibonacci Numbers -1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89. . .





BODMAS:-

BODMAS - Order of Simplification of an expression of numbers

B = Bracket

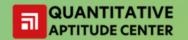
O = Of

D = Division

M = Multiplication

A = Addition

S = Subtraction



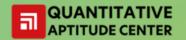
NUMBER SYSTEM

- **Q** 1. What is the unit digit of the product of 207-781-39-94?
- (a) 9
- (b) 1
- (c) 7
- (d) 2



NUMBER SYSTEM

- **Q** 1. What is the unit digit of the product of 207-781-39-94?
- (a) 9
- (b) 1
- (c) 7
- (d) 2



NUMBER SYSTEM

Q 2. What will come in the place of unit digit in the value of (7^{35}) . (3^{71}) . (11^{55}) ?

- (a) 0
- (b) 3
- (c) 1
- (d) 6



NUMBER SYSTEM

Q 2. What will come in the place of unit digit in the value of (7^{35}) . (3^{71}) . (11^{55}) ?

- (a) 0
- (b) 3
- (c) 1
- (d) 6



- (a) 22
- (b) 24
- (c) 26
- (d) 28



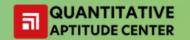
- (a) 22
- (b) 24
- (c) 26
- (d) 28



- **Q** 4. Find the number of zeros at the end of the product of $2 \times 4 \times 6 \times 8 \times 10 \times \dots \times 98 \times 100$:
- (a) 10
- (b) 11
- (c) 12
- (d) 15



- **Q** 4. Find the number of zeros at the end of the product of $2 \times 4 \times 6 \times 8 \times 10 \times \dots \times 98 \times 100$:
- (a) 10
- (b) 11
- (c) 12
- (d) 15

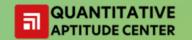


NUMBER SYSTEM

Q 5. Find the number of zeros at the end of the product of 10×20

× 30 × × 2000 :

- (a) 222
- (b) 249
- (c) 226
- (d) 220



NUMBER SYSTEM

Q 5. Find the number of zeros at the end of the product of 10×20

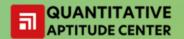
× 30 × × 2000 :

- (a) 222
- (b) 249
- (c) 226
- (d) 220



- **Q** 6. Find the number of factors of 100:
- (a) 8
- (b) 9
- (c) 10
- (d) 12





- **Q** 6. Find the number of factors of 100:
- (a) 8
- (b) 9
- (c) 10
- (d) 12



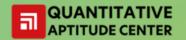


NUMBER SYSTEM

Q 7. Find the number of factors of 80:

- (a) 10
- (b) 12
- (c) 6
- (d) 8





NUMBER SYSTEM

Q 7. Find the number of factors of 80:

- (a) 10
- (b) 12
- (c) 6
- (d) 8





- **Q** 8. Find the sum of the factors of 100:
- (a) 127
- (b) 217
- (c) 219
- (d) 189





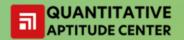
- **Q** 8. Find the sum of the factors of 100:
- (a) 127
- (b) 217
- (c) 219
- (d) 189





NUMBER SYSTEM

- **Q** 9. Find the sum of the factors of 50:
- (a) 92
- (b) 93
- (c) 97
- (d) 91



- **Q** 9. Find the sum of the factors of 50:
- (a) 92
- (b) 93
- (c) 97
- (d) 91



NUMBER SYSTEM

Q 10. Find the average of the factors of 60:

- (a) 12
- (b) 13
- (c) 14
- (d) 16



NUMBER SYSTEM

Q 10. Find the average of the factors of 60:

- (a) 12
- (b) 13
- (c) 14
- (d) 16



NUMBER SYSTEM

Q 11. Find the product of the factors of 100:

- (a) 10⁹
- (b) $10^{9/2}$
- (c) $10^{11/2}$
- (d) 10¹⁹



NUMBER SYSTEM

Q 11. Find the product of the factors of 100:

- (a) 10⁹
- (b) $10^{9/2}$
- (c) $10^{11/2}$
- (d) 10¹⁹





NUMBER SYSTEM

Q 12. How many 3 digit numbers are completely divisible by 6?

- (a) 149
- (b) 150
- (c) 151
- (d) 166

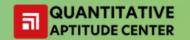


NUMBER SYSTEM

Q 12. How many 3 digit numbers are completely divisible by 6?

- (a) 149
- (b) 150
- (c) 151
- (d) 166



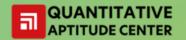


NUMBER SYSTEM

Q 13. How many 3 digit numbers are completely divisible by 3 and 4:

- (a) 67
- (b) 75
- (c) 57
- (d) 83





NUMBER SYSTEM

Q 13. How many 3 digit numbers are completely divisible by 3 and 4:

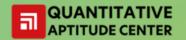
- (a) 67
- (b) 75
- (c) 57
- (d) 83



NUMBER SYSTEM

Q 14. What will be the remainder when 17²⁰⁰ is divided by 18?

- (a) 17
- (b) 16
- (c) 1
- (d) 2



NUMBER SYSTEM

Q 14. What will be the remainder when 17²⁰⁰ is divided by 18?

- (a) 17
- (b) 16
- (c) 1
- (d) 2





NUMBER SYSTEM

Q 14 A. Find the remainder when 3⁸⁵ is divided by 6.

- (a) 3
- (b) 16
- (c) 1
- (d) 2





NUMBER SYSTEM

Q 14 A. Find the remainder when 3⁸⁵ is divided by 6.

- (a) 3
- (b) 16
- (c) 1
- (d) 2





NUMBER SYSTEM

Q 14 B. Find the remainder when 2^{70} is divided by 96.

- (a) 64
- (b) 63
- (c) 1
- (d) 2





NUMBER SYSTEM

Q 14 B. Find the remainder when 2^{70} is divided by 96.

- (a) 64
- (b) 63
- (c) 1
- (d) 2





NUMBER SYSTEM

Q 15. What will be the remainder when $(67^{67} + 67)$ is divided by 68?

- (a) 1
- (b) 66
- (c) 67
- (d) 60



NUMBER SYSTEM

Q 15. What will be the remainder when $(67^{67} + 67)$ is divided by 68?

- (a) 1
- (b) 66
- (c) 67
- (d) 60



NUMBER SYSTEM

Q 16. Which of the following number will completely divide (49¹⁵ –1)?

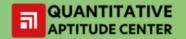
- (a) 8
- (b) 14
- (c) 51
- (d) 50



NUMBER SYSTEM

Q 16. Which of the following number will completely divide (49¹⁵ –1)?

- (a) 8
- (b) 14
- (c) 51
- (d) 50



NUMBER SYSTEM

Q 17. A number when divided by 6 leaves a remainder of 3. When the square of the number is divided by 6, the remainder is:

- (a) 0
- (b) 1
- (c) 3
- (d) 2



NUMBER SYSTEM

Q 17. A number when divided by 6 leaves a remainder of 3. When the square of the number is divided by 6, the remainder is:

- (a) 0
- (b) 1
- (c) 3
- (d) 2



- **Q** 18. A number when divided successively by 4 and 5 leaves remainders 1 and 4 respectively. When it is successively divided by 5 and 4, then the respective remainders will be:
- (a) 1, 2
- (b) 2, 3
- (c) 3, 2
- (d) 4, 1



- **Q** 18. A number when divided successively by 4 and 5 leaves remainders 1 and 4 respectively. When it is successively divided by 5 and 4, then the respective remainders will be:
- (a) 1, 2
- (b) 2, 3
- (c) 3, 2
- (d) 4, 1



NUMBER SYSTEM

Q 19. A number was divided successively in order by 4, 5, and 6. The remainder were respectively 2, 3, and 4. The number is:

- (a) 214
- (b) 476
- (c) 954
- (d) 1908



NUMBER SYSTEM

Q 19. A number was divided successively in order by 4, 5, and 6. The remainder were respectively 2, 3, and 4. The number is:

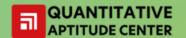
- (a) 214
- (b) 476
- (c) 954
- (d) 1908



NUMBER SYSTEM

Q 20. Which one of the following numbers will completely divide $(4^{61} + 4^{62} + 4^{63} + 4^{64})$?

- (a) 3
- (b) 9
- (c) 11
- (d) 17



NUMBER SYSTEM

Q 20. Which one of the following numbers will completely divide $(4^{61} + 4^{62} + 4^{63} + 4^{64})$?

- (a) 3
- (b) 9
- (c) 11
- (d) 17



NUMBER SYSTEM

Q 21. Which one of the following numbers will completely divide $5^{51} + 5^{52} + 5^{53}$?

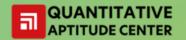
- (a) 11
- (b) 12
- (c) 31
- (d) 32



NUMBER SYSTEM

Q 21. Which one of the following numbers will completely divide $5^{51} + 5^{52} + 5^{53}$

- (a) 11
- (b) 12
- (c) 31
- (d) 32



NUMBER SYSTEM

Q 22. Which one of the following is the common factor of $(47^{43} + 43^{43})$ and

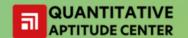
$$(47^{47} + 43^{47})$$
?

(a)
$$47 - 43$$

(b)
$$47 + 43$$

(c)
$$47^{43} + 43^{43}$$

(d)
$$47^{47} + 43^{47}$$



NUMBER SYSTEM

Q 22. Which one of the following is the common factor of $(47^{43} + 43^{43})$ and

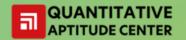
$$(47^{47} + 43^{47})$$
?

(a)
$$47 - 43$$

(b)
$$47 + 43$$

(c)
$$47^{43} + 43^{43}$$

(d)
$$47^{47} + 43^{47}$$

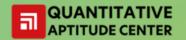


NUMBER SYSTEM

Q 23. Which one of the following numbers is completely divisible by 99?

- (a) 3572
- (b) 13595
- (c) 913464
- (d) 114345





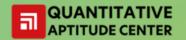
NUMBER SYSTEM

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- (a) 3572
- (b) 13595
- (c) 913464
- (d) 114345





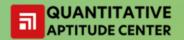


NUMBER SYSTEM

Q 24. Which one of the following numbers is completely divisible by 45?

- (a) 181560
- (b) 331145
- (c) 202860
- (d) 203350





NUMBER SYSTEM

Q 24. Which one of the following numbers is completely divisible by 45?

- (a) 181560
- (b) 331145
- (c) 202860
- (d) 203350





- **Q** 25. The sum of digits of a two-digit number is 7. If the digits of the number are interchanged, the number so formed is greater than the original number by 27. Find the original number:
- (a) 29
- (b) 25
- (c) 79
- (d) 32
- (e) None of these



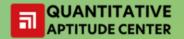
- **Q** 25. The sum of digits of a two-digit number is 7. If the digits of the number are interchanged, the number so formed is greater than the original number by 27. Find the original number:
- (a) 29
- (b) 25
- (c) 79
- (d) 32
- (e) None of these



NUMBER SYSTEM

Q 26. What is the digit in the blank space of the number 34*7 so that the number is divisible by 11?

- (a) 3
- (b) 6
- (c) 7
- (d) 8



NUMBER SYSTEM

Q 26. What is the digit in the blank space of the number 34*7 so that the number is divisible by 11?

- (a) 3
- (b) 6
- (c) 7
- (d) 8



- **Q 27.** If the sum of, the digits of a two-digit number and the number formed by reversing its digit is 99, what is the sum of the digits of the original number?
- (a) 9
- (b) 8
- (c) 11
- (d) 10



NUMBER SYSTEM

Q 27. If the sum of, the digits of a two-digit number and the number formed by reversing its digit is 99, what is the sum of the digits of the original number?

- (a) 9
- (b) 8
- (c) 11
- (d) 10



- **Q 28.** If the sum of, the digits of a two-digit number and the number formed by reversing its digits is N, Which one of the following numbers will completely divide N?
- (a) 9
- (b) 7
- (c) 11
- (d) 18



NUMBER SYSTEM

Q 28. If the sum of, the digits of a two-digit number and the number formed by reversing its digits is N, Which one of the following numbers will completely divide N?

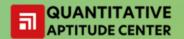
- (a) 9
- (b) 7
- (c) 11
- (d) 18



- **Q 29.** If the difference between, a two-digit number and a number formed by reversing its digit is N, Which one of the following numbers will completely divide N:
- (a) 9
- (b) 7
- (c) 11
- (d) 5

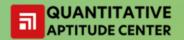


- **Q 29.** If the difference between, a two-digit number and a number formed by reversing its digit is N, Which one of the following numbers will completely divide N:
- (a) 9
- (b) 7
- (c) 11
- (d) 5

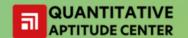


- **Q 30.** If the difference between a two digit number and the number formed by reversing its digit is 45, what is the difference between the digits of the original number:
- (a) 9
- (b) 2
- (c) 5
- (d) 1



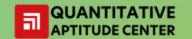


- **Q 30.** If the difference between a two digit number and the number formed by reversing its digit is 45, what is the difference between the digits of the original number:
- (a) 9
- (b) 2
- (c) 5
- (d) 1

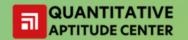


- **Q 31.** A 4-digit number is formed by repeating a 2-digit number such as 2525, 3232, etc. Any number of this form is always divisible by :
- (a) Smallest two-digit prime number
- (b) 7
- (c) 13
- (d) smallest three-digit prime number





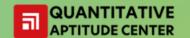
- **Q 31.** A 4-digit number is formed by repeating a 2-digit number such as 2525, 3232, etc. Any number of this form is always divisible by :
- (a) Smallest two-digit prime number
- (b) 7
- (c) 13
- (d) smallest three-digit prime number



NUMBER SYSTEM

Q 32. 7^{12} - 4^{12} is exactly divisibly by which of the following?

- (a) 36
- (b) 35
- (c) 34
- (d) 33



NUMBER SYSTEM

Q 32. 7^{12} - 4^{12} is exactly divisibly by which of the following?

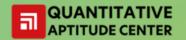
- (a) 36
- (b) 35
- (c) 34
- (d) 33



NUMBER SYSTEM

Q 33. Find the sum of the first fifty natural numbers :

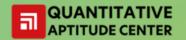
- (a) 1144
- (b) 1275
- (c) 1325
- (d) 1075



NUMBER SYSTEM

Q 33. Find the sum of the first fifty natural numbers :

- (a) 1144
- (b) 1275
- (c) 1325
- (d) 1075



NUMBER SYSTEM

Q 34. Find the value of 51+52+53+54+.....+100:

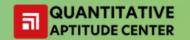
- (a) 2443
- (b) 1754
- (c) 2673
- (d) 3775



NUMBER SYSTEM

Q 34. Find the value of 51+52+53+54+.....+100:

- (a) 2443
- (b) 1754
- (c) 2673
- (d) 3775



NUMBER SYSTEM

Q 35. Find the sum of the squares of the first 30 natural numbers :

- (a) 9455
- (b) 8372
- (c) 7849
- (d) 6973



NUMBER SYSTEM

Q 35. Find the sum of the squares of the first 30 natural numbers :

- (a) 9455
- (b) 8372
- (c) 7849
- (d) 6973



NUMBER SYSTEM

Q 36. Find the value of $2^2 + 4^2 + 6^2 + 8^2 + \dots + 20^2$:

- (a) 2870
- (b) 1321
- (c) 1540
- (d) 1550



NUMBER SYSTEM

Q 36. Find the value of $2^2 + 4^2 + 6^2 + 8^2 + \dots + 20^2$:

- (a) 2870
- (b) 1321
- (c) 1540
- (d) 1550



NUMBER SYSTEM

Q37. Find the value of $1^2 + 3^2 + 5^2 + 7^2 + \dots + 19^2$:

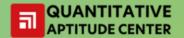
- (a) 1335
- (b) 1330
- (c) 1332
- (d) 1334



NUMBER SYSTEM

Q37. Find the value of $1^2 + 3^2 + 5^2 + 7^2 + \dots + 19^2$:

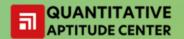
- (a) 1335
- (b) 1330
- (c) 1332
- (d) 1334



NUMBER SYSTEM

Q38. If $1^2 + 2^2 + 3^2 + 4^2 + \dots + 10^2 = 385$, find the value of $2^2 + 4^2 + 6^2 + \dots + 20^2$:

- (a) 1250
- (b) 1540
- (c) 1190
- (d) 1375



NUMBER SYSTEM

Q38. If $1^2 + 2^2 + 3^2 + 4^2 + \dots + 10^2 = 385$, find the value of $2^2 + 4^2 + 6^2 + \dots + 20^2$:

- (a) 1250
- (b) 1540
- (c) 1190
- (d) 1375



NUMBER SYSTEM

Q 39. Find the value of $11^2 + 12^2 + 13^2 + 14^2 + \dots + 20^2$:

- (a) 2870
- (b) 2485
- (c) 2670
- (d) 2495



NUMBER SYSTEM

Q 39. Find the value of $11^2 + 12^2 + 13^2 + 14^2 + \dots + 20^2$:

- (a) 2870
- (b) 2485
- (c) 2670
- (d) 2495

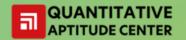


NUMBER SYSTEM

Q 40. Find the value of $1^3 + 3^3 + 5^3 + 7^3 + \dots + 29^3$:

- (a) 36100
- (b) 101025
- (c) 32500
- (d) 44700



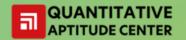


NUMBER SYSTEM

Q 40. Find the value of $1^3 + 3^3 + 5^3 + 7^3 + \dots + 29^3$:

- (a) 36100
- (b) 101025
- (c) 32500
- (d) 44700





NUMBER SYSTEM

Q 41. If $1^3 + 2^3 + 3^3 + 4^3 + \dots + 10^3 = 3025$, find the value of

$$2^3 + 4^3 + 6^3 + \dots + 20^3$$
:

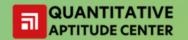
- (a) 2875
- (b) 24200
- (c) 3080
- (d) 39400



Q 41. If
$$1^3 + 2^3 + 3^3 + 4^3 + \dots + 10^3 = 3025$$
, find the value of

$$2^3 + 4^3 + 6^3 + \dots + 20^3$$
:

- (a) 2875
- (b) 24200
- (c) 3080
- (d) 39400



NUMBER SYSTEM

Q 42. Find the sum of all even numbers up to 100:

- (a) 2295
- (b) 2425
- (c) 2495
- (d) 2550





NUMBER SYSTEM

Q 42. Find the sum of all even numbers up to 100:

- (a) 2295
- (b) 2425
- (c) 2495
- (d) 2550





- **Q 43.** Find the sum of the all odd number up to 100:
- (a) 2100
- (b) 2500
- (c) 2300
- (d) 2200





- **Q 43.** Find the sum of the all odd number up to 100:
- (a) 2100
- (b) 2500
- (c) 2300
- (d) 2200



NUMBER SYSTEM

Q 44. Find the number of prime factors of $6^{20} \cdot 11^{11} \cdot 21^{21}$:

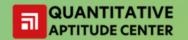
- (a) 83
- (b) 93
- (c) 103
- (d) 113



NUMBER SYSTEM

Q 44. Find the number of prime factors of $6^{20} \cdot 11^{11} \cdot 21^{21}$:

- (a) 83
- (b) 93
- (c) 103
- (d) 113



NUMBER SYSTEM

Q 45. Find the number of prime factors of $14^{14} \cdot 15^{15}$:

- (a) 48
- (b) 58
- (c) 68
- (d) 78



NUMBER SYSTEM

Q 45. Find the number of prime factors of $14^{14} \cdot 15^{15}$:

- (a) 48
- (b) 58
- (c) 68
- (d) 78



NUMBER SYSTEM

Q 46. What will be the remainder when $(27^{27} + 17^{27})$ is divided by 11?

- (a) 27
- (b) 17
- (c) 0
- (d) 1



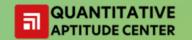
NUMBER SYSTEM

Q 46. What will be the remainder when $(27^{27} + 17^{27})$ is divided by 11?

- (a) 27
- (b) 17
- (c) 0
- (d) 1

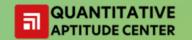






- **Q 47.** If n is a natural number, (n³ n) will always be divisible by:
- (a) 6 only
- (b) 6 and 12 both
- (c) 12 only
- (d) by 18 only





- **Q 47.** If n is a natural number, (n³ n) will always be divisible by:
- (a) 6 only
- (b) 6 and 12 both
- (c) 12 only
- (d) by 18 only



- **Q 48.** ($x^n a^n$) is completely divisible by (x a), when
- (a) n is any natural number
- (b) n is an even natural number
- (c) n is an odd natural number
- (d) n is a prime number



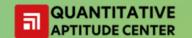
- **Q 48.** ($x^n a^n$) is completely divisible by (x a), when
- (a) n is any natural number
- (b) n is an even natural number
- (c) n is an odd natural number
- (d) n is a prime number



- **Q 49.** ($x^n a^n$) is completely divisible by (x + a), when
- (a) n is any natural number
- (b) n is an even natural number
- (c) n is an odd natural number
- (d) n is a prime number



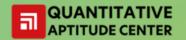
- **Q 49.** ($x^n a^n$) is completely divisible by (x + a), when
- (a) n is any natural number
- (b) n is an even natural number
- (c) n is an odd natural number
- (d) n is a prime number



- **Q 50.** ($x^n + a^n$) is completely divisible by (x + a), when
- (a) n is any natural number
- (b) n is an even natural number
- (c) n is an odd natural number
- (d) n is a prime number



- **Q 50.** ($x^n + a^n$) is completely divisible by (x + a), when
- (a) n is any natural number
- (b) n is an even natural number
- (c) n is an odd natural number
- (d) n is a prime number



NUMBER SYSTEM

Q 51. Which one of the following is a prime number?

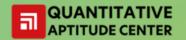
- (a) 161
- (b) 221
- (c) 373
- (d) 437



NUMBER SYSTEM

Q 51. Which one of the following is a prime number?

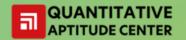
- (a) 161
- (b) 221
- (c) 373
- (d) 437



NUMBER SYSTEM

Q 52. Which one of the following is a prime number?

- (a) 119
- (b) 187
- (c) 247
- (d) 71



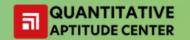
NUMBER SYSTEM

Q 52. Which one of the following is a prime number?

- (a) 119
- (b) 187
- (c) 247
- (d) 71





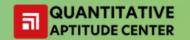


NUMBER SYSTEM

Q 53. Find the largest four-digit number which is divisible by 88 :

- (a) 9944
- (b) 9768
- (c) 9988
- (d) 8888





NUMBER SYSTEM

Q 53. Find the largest four-digit number which is divisible by 88:

- (a) 9944
- (b) 9768
- (c) 9988
- (d) 8888



NUMBER SYSTEM

Q 54. If a number is divided by 111, the remainder is 31. What will be the remainder if it is divided by 37?

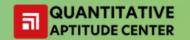
- (a) 31
- (b) 32
- (c) 33
- (d) 0



NUMBER SYSTEM

Q 54. If a number is divided by 111, the remainder is 31. What will be the remainder if it is divided by 37?

- (a) 31
- (b) 32
- (c) 33
- (d) 0



- **Q 55.** On multiplying a number by 7, the product is a number made of only the digit 3. The smallest such number is:
- (a) 47619
- (b) 47719
- (c) 48619
- (d) 47649



NUMBER SYSTEM

Q 55. On multiplying a number by 7, the product is a number made of only the digit 3. The smallest such number is:

- (a) 47619
- (b) 47719
- (c) 48619
- (d) 47649



