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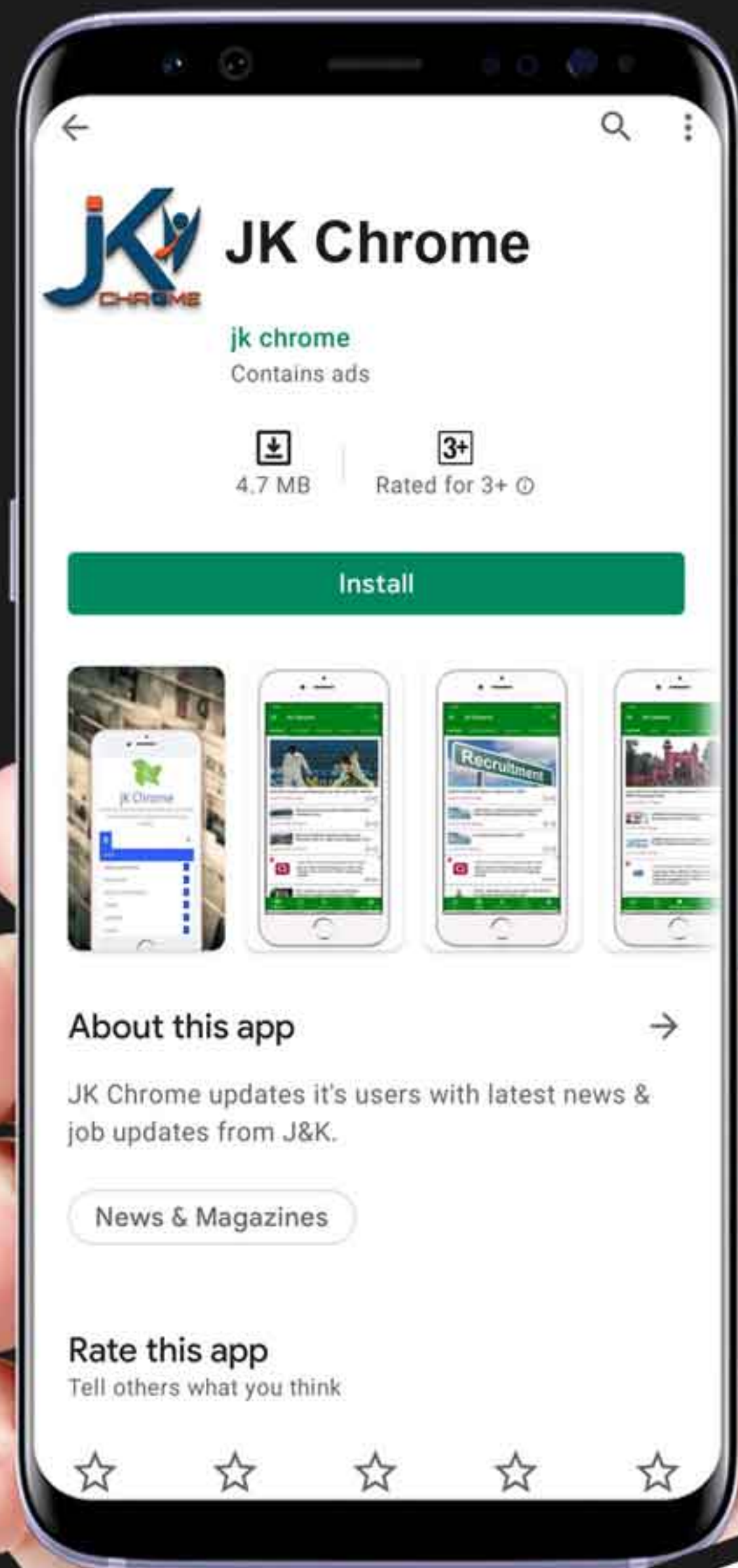
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Number System

Introduction

(1) Natural Numbers: Numbers starting from 1, 2, 3 and so on so forth are counted as Natural numbers. **They are 1, 2, 3, 4....**

Exceptions: Zero, negative and decimal numbers are not counted in this list.

(2) Whole numbers: Zero and all other natural numbers are known as natural numbers. **They are 0, 1, 2, 3, 4....**

(3) Integers: They are the numbers which include all the whole numbers and their negatives. **They are ...-4, -3, -2, -1, 0, 1, 2, 3, 4....**

(4) Rational Numbers: All the numbers which are terminating, repeating and can be written in the form p/q , where p and q are integers and q should not be equal to 0 are termed as rational numbers.

Example: 0.12121212....

(5) Irrational Numbers: All the numbers which are non-terminating, non-repeating and cannot be written in the form p/q , where p and q are integers and q should not be equal to 0 are termed as irrational numbers.

Example: pie, e

(6) Real numbers: All the numbers **existing on the number line** are real numbers. The group is made up of all rational and irrational numbers.

(7) Imaginary Numbers: Imaginary numbers are the numbers formed by the product of real numbers and imaginary unit 'i'.

This imaginary unit is defined as following:

$i^2 = -1$, multiplication of this 'i' is calculated according to the above value. **Example: 8i**

(8) Complex Number: The numbers formed by the combination of real numbers and imaginary numbers are called the complex number. Every complex number is written in the following form:

$A+iB$, where A is the real part of the number and B is the imaginary part.

(9) Prime numbers: All the numbers having only two divisors, 1 and the number itself is called prime number. Hence, a prime number can be written as the product of the number itself and 1.

Example: 2, 3, 5, 7 etc.

(10) Composite Numbers: All the numbers which are not prime are called composite numbers. This number has factors other than one and itself.

Example: 4, 10, 99, 105, 1782 etc.

(11) Even & Odd Numbers: All the numbers divided by 2 are even numbers. Whereas the ones not divisible by 2 are odd numbers.

Example: **4, 6, 64, 100, 10004 etc are all even** numbers.

3, 7, 11, 91, 99, 1003 are all odd numbers.

(12) Relative Prime Numbers/Co-prime Numbers: Numbers which do not have any common factor other than 1 are called co-prime numbers.

Example: **5 and 17 are co-primes.**

(13) Perfect Numbers: All the numbers are called perfect numbers if the sum of all the factors of that number, excluding the number itself and including 1, equalizes the to the number itself then the number is termed as a perfect number.

Example: 6 is a perfect number. As the factors of $6 = 2$ and 3 .

As per the rule of perfect numbers, $\text{sum} = 2 + 3 + 1 = 6$. Hence, 6 is a perfect number.

Some important properties of Numbers:

1. The number 1 is neither prime nor composite.
2. The only number which is even is 2.
3. All the prime numbers greater than 3 can be written in the form of $(6k+1)$ or $(6k-1)$ where k is an integer.
4. Square of every natural number can be written in the form $3n$ or $(3n+1)$ and $4n$ or $(4n+1)$.
5. The tens digit of every perfect square is even unless the square is ending in 6 in which case the tens digit is odd.
6. The product of n consecutive natural numbers is always divisible by $n!$, where $n! = 1 \times 2 \times 3 \times 4 \times \dots \times n$ (known as factorial n).

To test whether a given number is prime number or not

If you want to test whether any number is a prime number or not, take an integer larger than the approximate square root of that number. Let it be 'x'. test the divisibility of the given number by every prime number less than 'x'. if it not divisible by any of them then it is prime number; otherwise it is a composite number (other than prime).

Example: Is 349 a prime number?

Solution:

The square root of 349 is approximate 19. The prime numbers less than 19 are 2, 3, 5, 7, 11, 13, 17.

Clearly, 349 is not divisible by any of them. Therefore, 349 is a prime number.

Rules of Simplification

(i) In simplifying an expression, first of all vinculum or bar must be removed. For example: we known that $-8 - 10 = -18$

But, $-\overline{8-10} = -(-2) = 2$

(ii) After removing the bar, the brackets must be removed, strictly in the order $()$, $\{\}$ and $[\]$.

(iii) After removing the brackets, we must use the following operations strictly in the order given below. (a) of (b) division (c) multiplication (d) addition and (e) subtraction.

Note: The rule is also known as the rule of '**VBODMAS**' where V, B, O, D, M, A and S stand for Vinculum, Brackets, Of, Division, Multiplication, Addition and Subtraction respectively.

$$1 \div \frac{3}{7} \text{ of } (6 + 8 \times \overline{3-2}) + \left[\frac{1}{5} \div \frac{7}{25} - \left\{ \frac{3}{7} + \frac{8}{14} \right\} \right]$$

Example: Simplify

Solution:

$$\begin{aligned}
& 1 \div \frac{3}{7} \text{ of } (6 + 8 \times 1) + \left[\frac{1}{5} \div \frac{7}{25} - \left\{ \frac{3}{7} + \frac{8}{14} \right\} \right] \\
& = 1 \div \frac{3}{7} \text{ of } (6 + 8) + \left[\frac{1}{5} \times \frac{25}{7} - 1 \right] \\
& = 1 \div \frac{3}{7} \text{ of } 14 + \left[\frac{5}{7} - 1 \right] = 1 \div 6 + \left[-\frac{2}{7} \right] \\
& = \frac{1}{6} - \frac{2}{7} = \frac{7-12}{42} = -\frac{5}{42}
\end{aligned}$$

Ascending or Descending Order in Rational Numbers

Rule 1: When the numerator and the denominator of the fractions increase by a constant value, the last fraction is the biggest.

Example: Which of the following fractions is the greatest?

$$\frac{3}{4}, \frac{4}{5} \text{ and } \frac{5}{6}$$

Solution:

We see that the numerators as well as denominators of the above fraction

increase by 1, so the last fraction, i.e. $\frac{5}{6}$ is the greatest fraction.

Rule 2: The fraction whose numerator after cross-multiplication given the greater value is greater.

Example: Which is greater : $\frac{5}{8}$ or $\frac{9}{14}$?

Solution:

Students generally solve this questions by changing the fractions into decimal values or by equating the denominators. But, we suggest you a better method for getting the answer more quickly.

Step 1: Cross – multiply the two given fractions.

$$\frac{5}{8} \quad \begin{array}{l} \swarrow \searrow \\ \nwarrow \swarrow \end{array} \quad \frac{9}{14}$$

We have, $5 \times 14 = 70$ and $8 \times 9 = 72$

Step II. As 72 is greater than 70 and the numerator involved with the greater value is 9, the fraction $\frac{9}{14}$ is the greater of the two.

Example: Which is greater: $\frac{4}{15}$ or $\frac{6}{23}$?

Solution:

Step I: $4 \times 23 > 15 \times 6$

Step II: As the greater value has the numerator 4 involved with it, $\frac{4}{15}$ is greater.

You can see how quickly this method works. After good practice, you won't need to calculate before answering the question.

The arrangement of fractions into the ascending or descending order becomes easier now. Choose two fractions at a time. See which one is greater. This way you may get a quick arrangement of fractions.

Note: Sometimes, when the values are smaller (i.e., less than 10), the conventional method, i.e., changing the values into decimals or equating the denominators after getting LCM, will prove more convenient for some of you.

Example: Arrange the following in ascending order.

$$\frac{3}{7}, \frac{4}{5}, \frac{7}{9}, \frac{1}{2} \text{ and } \frac{3}{5}$$

Solution: Method I

The LCM of 7,5,9,2,5, is 630.

Now, to equate the denominators, we divide the LCM by the denominators and multiply the quotient by the respectively numerators.

Like for $\frac{3}{7}$, $630 \div 7 = 90$, so, multiply 3 by 90.

Thus, the fractions change to $\frac{270}{630}$, $\frac{504}{630}$, $\frac{490}{630}$, $\frac{315}{630}$ and $\frac{378}{630}$

The fraction which has larger numerator is naturally larger. So,

$$\frac{504}{630} > \frac{490}{630} > \frac{378}{630} > \frac{315}{630} > \frac{270}{630}$$

$$\text{or } \frac{4}{5} > \frac{7}{9} > \frac{3}{5} > \frac{1}{2} > \frac{3}{7}$$

Method II:

Change the fractions into decimals like

$$\frac{3}{7} = 0.428, \quad \frac{4}{5} = 0.8, \quad \frac{7}{9} = 0.777, \quad \frac{1}{2} = 0.5, \quad \frac{3}{5} = 0.6$$

Clearly,

$$\frac{4}{5} > \frac{7}{9} > \frac{3}{5} > \frac{1}{2} > \frac{3}{7}$$

Method III:

Rule of CM (cross-multiplication)

Step I: Take the first two fractions. Find the greater one by the rule of CM.

$$\frac{3}{7} \quad \frac{4}{5}$$

$$3 \times 5 < 7 \times 4$$

$$\therefore \frac{4}{5} > \frac{3}{7}$$

Step II: Take the third fraction. Apply CM with the third fraction and the larger value obtained in step I.

$$\frac{4}{5} \quad \frac{7}{9}$$

$$4 \times 9 > 5 \times 7$$

$$\therefore \frac{4}{5} > \frac{7}{9}$$

Now we see that $\frac{7}{9}$ can lie after $\frac{3}{7}$ or between $\frac{4}{5}$ and $\frac{3}{7}$.

Therefore, we apply CM with $\frac{3}{7}$ and $\frac{7}{9}$ see that $\frac{7}{9} > \frac{3}{7}$.

$$\therefore \frac{4}{5} > \frac{7}{9} > \frac{3}{7}$$

Step III: Take the next fraction. Apply CM with $\frac{3}{7}$ and $\frac{1}{2}$ and see that $\frac{1}{2} > \frac{3}{7}$.

Next, we apply CM with $\frac{7}{9}$ and $\frac{1}{2}$ and see that $\frac{7}{9} > \frac{1}{2}$.

Therefore,

$$\therefore \frac{4}{5} > \frac{7}{9} > \frac{3}{5} > \frac{1}{2} > \frac{3}{7}$$

Step IV: With similar applications, we get the final result as:

$$\therefore \frac{4}{5} > \frac{7}{9} > \frac{3}{5} > \frac{1}{2} > \frac{3}{7}$$

Note: This rule has some disadvantages also. But if you act fast, it gives faster results. Don't reject this method at once. This can prove to be the better method for you.

Formulas

1. Sum of all the first n natural numbers = $\frac{n(n+1)}{2}$

For example: $1 + 2 + 3 + \dots + 105 = \frac{105(105+1)}{2} = 5565$

2. Sum of first n odd numbers = n^2

For example: $1 + 3 + 5 + 7 = 4^2 = 16$ (as there are four odd numbers)

3. Sum of first n even numbers = $n(n+1)$

For example : $2 + 4 + 6 + 8 + \dots + 100$ (or 50^{th} even number) $= 50 \times (50+1) = 2550$

4. Sum of squares of first n natural numbers = $\frac{n(n+1)(2n+1)}{6}$

For example: $1^2 + 2^2 + 3^2 + \dots + 10^2 = \frac{10(10+1)(2 \times 10+1)}{6}$

$\frac{10 \times 11 \times 21}{6} = 385$

5. Sum of cubes of first n natural numbers = $\left[\frac{n(n+1)}{2} \right]^2$

For example :

$1^3 + 2^3 + \dots + 6^3 = \left[\frac{6(6+1)}{2} \right]^2 = (21)^2 = 441$

Example:

(1) What is the total of all the even numbers from 1 to 400?

Solution:

From 1 to 400, there are 400 numbers. So, there are $400/2 = 200$ even numbers.

Hence, sum = $200(200+1) = 40200$ (From Rule III)

(2) What is the total of all the even numbers from 1 to 361?

Solution:

From 1 to 361, there are 361 numbers; so there are

$\frac{360-1}{2} = \frac{360}{2} = 180$ even numbers. Thus, sum = $180(180+1) = 32580$

(3) What is the total of all the odd numbers from 1 to 180?

Solution:

Therefore are $180/2 = 90$ odd numbers between the given range. So, the sum = $(90)^2 = 8100$

(4) What is the total of all the odd numbers from 1 to 51?

Solution

There are $\frac{51+1}{2} = 26$ odd numbers between the given range. So, the sum = $(26)^2 = 676$

(5) Find the of all the odd numbers from 20 to 101.

Solution:

The required sum = Sum of all the odd numbers from 1 to 101.

Sum of all the odd numbers from 1 to 20

= Sum of first 51 odd numbers – Sum of first 10 odd numbers

= $(51)^2 - (10)^2 = 2601 - 100 = 2501$

Miscellaneous

1. In a division sum, we have four quantities – **Dividend, Divisor, Quotient and Remainder**. These are connected by the relation.

Dividend = (Divisor × Quotient) + Remainder

2. When the division is exact, the remainder is zero (0). In this case, the above relation becomes

Dividend = Divisor × Quotient

Example: 1: The quotient arising from the divisor of 24446 by a certain number is 79 and the remainder is 35; what is the divisor?

Solution:

Divisor × Quotient = Dividend - Remainder

$79 \times \text{Divisor} = 24446 - 35 = 24411$

Divisor = $24411 \div 79 = 309$.

Example: 2: A number when divided by 12 leaves a remainder 7. What remainder will be obtained by dividing the same number by 7?

Solution:

We see that in the above example, the first divisor 12 is not a multiple of the second divisor 7. Now, we take the two numbers 139 and 151, which when divided by 12, leave 7 as the remainder. But when we divide the above two numbers by 7, we get the respective remainder as 6 and 4. Thus, we conclude that the question is wrong.

Number system

1. Which of the following fraction is the smallest?
 $7/6, 7/9, 4/5, 5/7$
 (a) $7/6$ (b) $7/9$
 (c) $4/5$ (d) $5/7$
2. Which of the following fraction is smallest?
 $9/13, 17/26, 28/29, 33/52$
 (a) $33/52$ (b) $17/26$
 (c) $9/13$ (d) $28/29$
3. A number when divided by 899 gives a remainder 63. If the same number is divided by 29, the remainder will be:
 (a) 10 (b) 5
 (c) 4 (d) 2
4. $9^6 - 11$ when divided by 8 would leave a remainder of
 (a) 6 (b) 16
 (c) 1 (d) 2
5. $(49)^{15} - 1$ is exactly divisible by
 (a) 50 (b) 51
 (c) 29 (d) 8
6. If $5432 * 7$ is divisible by 9 then the digit in place of * is
 (a) 0 (b) 1
 (c) 6 (d) 9
7. One-fourth of a tank holds 135 liters of water. What part of the tank is fill if contains 180 liters of water?
 (a) $2/5$ (b) $2/3$
 (c) $1/3$ (d) $1/6$
8. What is two-third of half of 369?
 (a) 123 (b) 246
 (c) $1971/8$ (d) $2171/8$
9. $1/5$ of a number exceed $1/7$ of the same number by 10. The number is:
 (a) 25 (b) 150
 (c) 175 (d) 200
10. In a class, $3/5$ of the students are girls and rest is boys. If $2/9$ of the girls and $1/4$ of the boys are absent. What part of the total number of students are
 (a) $23/39$ (b) $23/36$
 (c) $18/49$ (d) $17/25$
11. A 85m long rod is divided into two parts. If one part is $2/3$ of the other part then the longer (parts in m) is :
 (a) 34 (b) $170/3$
 (c) 85 (d) 51
12. Fraction between $2/5$ and $4/9$
 (a) $3/7$ (b) $2/3$
 (c) $4/5$ (d) $1/2$
13. $2/3$ of three-fourth of a number is :
 (a) $1/2$ of the number (b) $1/3$ of the number
 (c) $8/9$ of the number (d) $17/12$ of the number
14. If 3 times a number exceeds its $3/5$ by 60, then what is the number?
 (a) 25 (b) 35
 (c) 45 (d) 60
15. A man spends $1/4^{\text{th}}$ of his income on food, $2/3^{\text{rd}}$ of it on house rent and the remaining income which is Rs. 630 on other commodities. Find his house rent,
 (a) Rs. 5040 (b) Rs. 3520
- (c) Rs. 4890 (d) Rs. 4458
16. $1 + 1/2 + 1/4 + 1/7 + 1/14 + 1/28$ is equal to :
 (a) 2 (b) 2.5
 (c) 3 (d) 3.5
17. Unit digit in $(264)^{102} \div (264)^{103}$ is :
 (a) 0 (b) 4
 (c) 6 (d) 8
18. The sum of three consecutive odd natural numbers is 147, Then the middle number is :
 (a) 47 (b) 48
 (c) 49 (d) 51
19. If we write 45 as sum of four numbers so that when 2 is added to first number, 2 subtracted from second number, third multiplied by 2 and fourth divided by 2, we get the same result, then the four number is
 (a) 1, 8, 15, 21 (b) 8, 7, 10, 20
 (c) 8, 12, 10, 15 (d) 2, 12, 5, 26
20. Sum of two number is 40 and their product is 375. What will be the sum of their reciprocals?
 (a) $8/75$ (b) $1/40$
 (c) $75/4$ (d) $75/8$
21. The sum of three consecutive odd natural numbers each divisible by 3 is 63. What is the largest among them?
 (a) 21 (b) 24
 (c) 27 (d) 36
22. A number is doubled and 9 is added. If the resultant is tripled, it becomes 75. What is that number?
 (a) 6 (b) 3.5
 (c) 8 (d) None of these
23. If the operation * is defined by $a * b = a + b - ab$, then $5 * 7$ equals
 (a) 12 (b) - 47
 (c) -23 (d) 35
24. The smallest possible three place decimal is
 (a) 0.012 (b) 0.123
 (c) 0.111 (d) none of the above
25. $1/0.04$ is equal to
 (a) $1/40$ (b) $2/5$
 (c) $5/2$ (d) 25
26. A six digit number is formatted by repeating a three digit number : for example, 256, 256 or 678, 678 etc. any number of this form is always exactly divisible by:
 (a) 7 only (b) 11 only
 (c) 13 only (d) 1001
27. The smallest number to be added
 (a) 35 (b) 80
 (c) 20 (d) 10
28. If 17^{200} is divided by 18, the remainder is :
 (a) 17 (b) 16
 (c) 1 (d) 2
29. If a number is divisible by both 11 and 13, then it must be necessarily:
 (a) divisible by $(11 + 13)$ (b) divisible by $(13 - 11)$
 (c) divisible by (11×13) (d) 429
30. If * is a digit such that $5824 * 8$ is divisible by 11, then * equals :
 (a) 2 (b) 3
 (c) 5 (d) 6
31. Half of 1 percent written as a decimal is :

- (a)0.2 (b)0.02
(c)0.05 (d)0.005
32. The runner runs $5/4$ laps of a 5 laps race what laps of the race remains to be run
(a) $15/4$ (b) $4/5$
(c) $5/6$ (d) $2/3$
33. Unit digit $[(251)^{98} + (21)^{29} - (106)^{100} + (705)^{35} - 16^4 + 259]$ is
(a)1 (b)4
(c)5(d)6
34. The sum of first 20 odd natural number is equal to:
(a)210 (b)300
(c)400 (d)420
35. The sum of all natural numbers from 75 to 97 is:
(a)1598 (b)1798
(c)1958 (d)1978
36. The sum of all natural numbers between 100 and 200, which are multiples of 3 is :
(a)5000 (b)4950
(c)4980 (d)4900
37. The sum of the squares of three consecutive natural numbers is 2030. Then, what is the middle number?
(a)25 (b)26
(c)27 (d)28
38. 12345679×72 is equal to
(a)88888888 (b)999999998
(c)888888888 (d)898989898
39. Given that $0.111\dots = 1/9$, 0.444 is equal to
(a) $1/90$ (b) $2/45$
(c) $1/99$ (d) $4/9$
40. The sum and product of two numbers are 12 and 35 respectively. What will be the sum of their reciprocals?
(a) $1/3$ (b) $1/5$
(c) $12/35$ (d) $35/12$
41. If the sum of two numbers is 3 and the sum of their squares is 12, then their product is equal to:
(a) $3/2$ (b) $2/3$
(c) $-3/2$ (d) $-2/3$
42. 800 chocolates were distributed among the students of a class. Each student got twice as many chocolates as the number of students in the class. The number of students in the class was: 800
(a)25 (b)30
(c)35 (d)20
43. The number 2, 4, 6, 8 ... 98, 100 are multiplied together. The number of zeros at the end of the product must be :
(a)13 (b)12
(c)11 (d)10
44. How many digits in all are required to write numbers from 1 to 50 ?
(a)100 (b)92
(c)91 (d)50
45. If doubling a number and adding 20 to the result gives the same answer as multiplying the number by 8 and taking away 4 from the product, the number is :
(a)2 (b)3
(c)4 (d)6
46. A number of friends decided to go on picnic and planned to spend Rs. 108 on eatables. Three of them however did not turn up. As a consequence each one of the remaining had to contribute Rs. 3 extra . the number of them who attended the picnic was
(a)15 (b)12
(c)9 (d)6
47. The numbers 1, 3, 5, 7 99 and 128 are multiplied together. The number of zeros at the end of the product must be :
(a)19 (b)22
(c)7 (d)Nil
48. The sum of the squares of two positive numbers is 100 and difference of their squares is 28. Find the sum of the numbers:
(a)12 (b)13
(c)14 (d)15
49. When simplified the $[1-1/3][1-1/4][1-1/5]\dots\dots\dots[1-1/n]$
(a) $1/n$ (b) $2/n$
(c) $2(n-1)/n$ (d) $2/n(n+1)$
50. Which of the following fraction is the smallest?
 $8/15, 14/33, 7/13, 11/13$
(a) $8/15$ (b) $7/13$
(c) $11/23$ (d) $14/53$
Which of the following is smallest fraction? $8/25, 7/23, 11/23, 14/53$ (a) $8/25$ (b) $7/23$
(c) $11/23$ (d) $14/53$
51. The divisor is 25 times the quotient and 5 times the remainder. If the quotient is 16, the dividend is
(a)6400 (b)6480
(c)400 (d)480
52. The product of two positive numbers is 11520 and their quotient is $9/5$. find the difference of two numbers
(a)60 (b)64
(c)74 (d)70
53. When a number is divided by 56, the remainder obtained is 29. What will be the remainder when the number is divided by 8?
(a)4(b)5
(c)3 (d)7
54. A student was asked to multiply a number by $3/2$ but he divided that number by $3/2$.his result was less than the correct answer . the no. was
(a)10 (b)12
(c)15 (d)20
55. A number being divided by 52 gives remainder 45. If the number is divided by 13, the remainder will be:
(a)5 (b)6
(c)12 (d)7
56. If $3/4$ of the difference of $9/4$ and $5/3$ is subtracted from $2/3$ of $13/4$ the result is:-
(a) $-48/83$ (b) $48/83$
(c) $-83/48$ (d) $83/48$
57. By which number should 0.022 be multiplied so that product becomes 166?
(a)3000 (b)3200
(c)4000 (d)3600
58. The value of $(0.3467 + 0.1333)$ is :
(a)0.48 (b)0.4801
(c)0.48 (d)0.48

59. A man engaged a servant on the condition that he would pay him Rs. 90 and a shirt after service of one year. He served only for nine months and received the shirt and an amount of Rs. 65. The price of shirt is:
- (a)12 (b)10
(c)2.5 (d)25
60. The product of two fractions is $14/15$ and their quotient is $35/24$. The greater fraction is :
- (a) $7/4$ (b) $7/6$
(c) $4/7$ (d) $4/5$
61. What part of $4/7$ must be added to itself to make the sum $15/14$.
- (a) $7/8$ (b) $1/2$
(c) $4/7$ (d) $15/14$
62. If $4/5$ of an estate be worth Rs. 16800, then the value of $3/7$ of it is:
- (a)Rs. 90000 (b)Rs. 9000
(c)Rs. 72000 (d)Rs.21000
63. A boy on being asked what $6/7$ of a certain fraction was made the mistake of dividing the fraction by $6/7$ and so got an answer which exceeded the correct answer by $13/70$. Find the fraction :
- (a) $2/3$ (b) $3/5$
(c) $4/5$ (d) $7/9$
64. $1/2$ of $3/4$ of a number is $5/2$ of 10. What is the number?
- (a)50 (b)60
(c)200/3 (d)56
65. If one third of one fourth of a number is 15, then three-tenth of the number is :
- (a)35 (b)36
(c)45 (d)54
66. Express 45 minutes as the fraction of one day.
- (a) $1/40$ (b) $1/32$
(c) $1/60$ (d) $1/24$
67. If 1 is added to the denominator of a fraction it becomes $1/2$. If 1 is added to the numerator it becomes 1. The product of numerator and denominator of the fraction is :
- (a)6 (b)10
(c)12 (d)14
68. A student was asked to find $5/16$ of a number. By mistake he found $5/6$ of that number and his answer was 250 more than the correct answer. Find the given number.
- (a)300 (b)480
(c)450 (d)500
69. $1/26 + 1/36 + 1/42 + 1/56 + 1/72 + 1/90 + 1/110 + 1/132$ is equal to
- (a) $1/8$ (b) $1/7$
(c) $1/6$ (d) $1/10$
70. Arrange $4/5, 7/8, 6/7, 5/6$ in the ascending order :
- (a) $4/5, 7/8, 6/7, 5/6$ (b) $5/6, 6/7, 7/8, 4/5,$
(c) $4/5, 5/6, 6/7, 7/8$ (d) $4/5, 7/8, 6/7, 5/6$
71. The sum of three consecutive odd natural numbers is 87. The smallest of these numbers is :
- (a)29 (b)31
(c)23 (d)27
72. Sum of three consecutive even integers is 54. Find the least among them.
- (a)18 (b)15
(c)14 (d)16
73. The sum of three consecutive numbers is 87. The middle number is:
- (a)27 (b)29
(c)30 (d)28
74. $8.31 + 0.6 + 0.002$ is equal to
- (a)8.912 (b)8.912
(c)30 (d)8.979
75. Find the sum of all positive multiples of 3 less than 50.
- (a)400 (b)408
(c)404 (d)412
76. The sum and product of two numbers are 10 and 24 respectively. The sum of their reciprocals is :
- (a) $1/2$ (b) $5/12$
(c) $7/12$ (d) $12/5$
77. 380 mangoes are distributed among some boys and girls who are 85 in numbers. Each boy gets four mangoes and each girl gets five. The number of boys is :
- (a)15 (b)38
(c)40 (d)45
78. The product of two positive numbers is 2500. If one number is four times the other, then the sum of the two numbers is :
- (a)25 (b)125
(c)225 (d)250
79. Which of the following is the largest fraction? $6/7, 5/6, 7/8, 4/5$
- (a) $6/7$ (b) $4/5$
(c) $5/6$ (d) $7/8$
80. A number when divided by 296 gives a remainder 75. When the same number is divided by 37 the remainder will be
- (a)1 (b)2
(c)8 (d)11
81. A number when divided successively by 4 and 5 leave the remainder 1 and 4 respectively. When it is successively divided by 5 and 4 the respective remainders will be :
- (a)4, 1 (b)3, 2
(c)2, 3 (d)1, 2
82. In a division problem, the divisor is 4 times the quotient and 3 times the remainder. If remainder is 4, the dividend is:
- (a)36 (b)40
(c)12 (d)30
83. Each number of a picnic party contributed twice as many rupees as the total number of members and the total collection was Rs. 3042. The number of members present in the party was :
- (a)2 (b)32
(c)40 (d)39
84. How many natural numbers divisible by 7 are there between 3 and 200
- (a)27 (b)28
(c)29 (d)36
85. The sum of first sixty numbers from one to sixty is divisible by
- (a)15 (b)59
(c)60 (d)61

86. Find the no. of prime factors in the product of $25^{12} \times 10^7 \times 14^7$
 (a)54 (b)52
 (c)50 (d)68
87. $4^{61} + 4^{62} + 4^{63} + 4^{64}$ is divisible by:
 (a)3 (b)10
 (c)11 (d)13
88. A number exceeds its one-fifth by 20. The number is :
 (a)100 (b)25
 (c)20 (d)5
89. Two-third of a positive number and $25/216$ of its reciprocal are equal number is:
 (a)25/144 (b)5/12
 (c)144/25 (d)12/5
90. 0.1 and $5/8$ of a bamboo are in mud and water respectively and the rest of length 2.75 m is above water what is the length of the bamboo ?
 (a)10m (b)20m
 (c)27.5 m (d)20 m
91. A man spends $1/3$ of his income on food, $2/5$ of his income on house rent and $1/5$ of his income on clothes. If he still has Rs. 400 left with him, his income is :
 (a)Rs. 4000 (b)Rs. 5000
 (c)Rs. 6000 (d)Rs. 7000
92. When 0.47 is converted as a fraction, the result is :
 (a)47/90 (b)46/90
 (c)46/99 (d)47/99
93. By how much does $6 / (7/8)$ exceed $(6/7)/8$?
 (a)49/8 (b)27/4
 (c)31/4 (d)47/6
94. Arrange the following fractions in decreasing order $3/5, 7/9, 11/13$
 (a) $3/5, 7/9, 11/13$ (b) $7/9, 3/5, 11/13$
 (c) $11/13, 7/9, 3/5$ (d) $11/13, 3/5, 7/9$
95. The digit in unit's place of the product $81 \times 82 \times 83 \times \dots \times 89$ is
 (a)0 (b)2
 (c)6 (d)8
96. The unit digit in the expansion of $(2137)^{754}$ is
 (a)1 (b)3
 (c)7 (d)9
97. What is the sum of two consecutive even numbers, the difference of whose square is 84?
 (a)38 (b)34
 (c)42 (d)46
98. If * means adding 6 times the second number to the first number then $(1*2)*3$ equals :
 (a)121 (b)31
 (c)93 (d)91
99. The value of $(998996 / 999) \times 999$
 (a)990809 (b)998996
 (c)999824 (d)998999
100. The simplified value is $[1-1/3] [1-1/4] [1-1/5] \dots [1-1/99] [1-1/100]$
 (a)2/99 (b)1/25
 (c)1/50 (d)1/100
101. In a two digit number if it is known that its unit digit exceeds its tens digit by 2 and that the product of the given number and the sum of its digits is equal to 144, then the number is
 (a)46 (b)42
 (c)26 (d)24
102. In a test, 1 mark is awarded for each correct answer and one mark is deducted for each wrong answer. If a boy answer all 20 questions of the test and gets 8 marks, the number of question answered correct by him was :
 (a)16 (b)14
 (c)12 (d)8
103. A number of boys raised Rs. 400 for a famine relief fund, each boy giving as many 25 paise coins as there were boys. The number of boys was :
 (a)40 (b)16
 (c)20 (d)100
104. Thrice the square of a natural number decreased by four times the number is equal to 50 more than the number. The number is :
 (a)4 (b)5
 (c)10 (d)6
105. The difference between two positive numbers is 3. If the sum of their squares is 369, the sum of numbers is :
 (a)81 (b)33
 (c)27 (d)25
106. On the three numbers, the second is twice the first and it is also thrice the third, If the average of three numbers is 44, the difference of the first number and the third number is:
 (a)24 (b)18
 (c)12 (d)6
107. The value of $[1+1/2][1+1/3][1+1/4] \dots [1+1/120]$
 (a)30 (b)40.5
 (c)60.5 (d)121
108. The product of two positive numbers is 2500, If one number is four times the other, the sum of the two numbers is :
 (a)25 (b)125
 (c)225 (d)250
109. The smallest number that must be added to 803642 in order to obtain a multiple of 11 is
 (a)1 (b)4
 (c)7 (d)9
110. Find the value $1/5 + (494999/495) \times 99$
 (a)90000 (b)99000
 (c)90900 (d)99990
111. The smallest number of five digits exactly divisible by 476
 (a)47600 (b)10000
 (c)10476 (d)10472
112. The largest number among $0.7 + \sqrt{0.16}$, $1.02 - (0.6/24)$, 1.2×0.83 and $\sqrt{1.44}$ is :
 (a) $0.7 + \sqrt{0.16}$ (b) $\sqrt{1.44}$
 (c) 1.2×0.83 (d) $1.02 - (0.6/24)$
113. The product of two numbers is 9375 and the quotient, when the larger one is divided by the smaller, is 15. The sum of the numbers is :
 (a)395 (b)380
 (c)400 (d)425
114. $(3^{25} + 3^{26} + 3^{27} + 3^{28})$ is divisible by :

- (a)11 (b)16
(c)25 (d)30
115. The least number, which must be added to 6709 to make it exactly divisible by 9, is
(a)5 (b)4
(c)7 (d)2
116. The total number of integers between 100 and 200, which are divisible by both 9 and 6, is
(a)5 (b)6
(c)7 (d)8
117. if $78*3945$ is divisible by 11 where * is a digit then is equal to :
(a)1 (b)0
(c)3 (d)5
118. If one-ninth of a certain number exceeds its one-tenth by 4, the number is :
(a)320 (b)360
(c)400 (d)440
119. $1/10$ of a rod is coloured, $1/20$ orange, $1/30$ yellow, $1/40$ green, $1/50$ blue, $1/60$ black and the rest is violet. If the length of the violet part of the rod is 12.08 metres, then the length of the rod is
(a)16 m (b)18 m
(c)20 m (d)30 m
120. The fractions $1/3$, $4/7$, and $2/5$ written in ascending order given by :
(a) $4/7 < 1/3 < 2/5$ (b) $2/5 < 4/7 < 1/3$
(c) $1/3 < 2/5 < 4/7$ (d) $4/7 < 1/3 < 2/5$
121. The digit in unit's place of the product $(2153)^{167}$ is :
(a)1 (b)3
(c)7 (d)9
122. The digit in unit's place of the product $(2464)^{1793} \times (615)^{317} \times (131)^{491}$ is
(a)0 (b)2
(c)3 (d)5
123. $(6994/7) + (6995/7) + (6996/7) + (6997/7) + (6998/7) + (6999/7)$ simplified to:
(a)5997 (b)5979
(c)5994 (d)2997
124. A number, when divided by 119, leaves a remainder of 19. If it is divided by 17, it will leave a remainder of :
(a)19 (b)10
(c)7 (d)2
125. $(7^{19} + 2)$ is divided by 6, the remainder is :
(a)5 (b)3
(c)2 (d)1
126. When a number is divided by 357 the remainder is 39. If that number is divided by 17, the remainder will be:
(a)0 (b)3
(c)5 (d)11
127. When a number divided by 68 gives the quotient 269 and remainder zero. If the same number is divided by 67, the remainder is :
(a)0 (b)1
(c)2 (d)3
128. A number when divided by 6 leaves remainder 3. When the square of the same number is divided by 6, the remainder is :
(a)0 (b)1
(c)2 (d)3
129. When a number is divided by 893, the remainder is 893, the remainder is 193. What will be remainder when it is divided by 47?
(a)3 (b)5
(c)25 (d)33
130. A number divided by 13 leaves a remainder 1 and if the quotient, thus obtained, is divided by 5, we get a remainder of 3. What will be the remainder if the number is divided by 65 ?
(a)28 (b)16
(c)18 (d)40
131. Which of the following number is NOT divisible by 18?
(a)54036 (b)50436
(c)34056 (d)65043
132. How many 3-digit numbers, in all, are divisible by 6?
(a)140 (b)150
(c)160 (d)170
133. If n is an integer, then $(n^3 - n)$ always divisible by :
(a)4 (b)5
(c)6 (d)7
134. If n is a whole number greater than 1, then $n^2(n^2 - 1)$ is always divisible by :
(a)16 (b)12
(c)10 (d)8
135. A digit number is formed by repeating 2 -digits number such as 2525, 3232, etc. any number of this form is always exactly divisible by:
(a)7 only (b)11 only
(c)13 only (d)smallest 3 digit prime number
136. 0.423 is equivalent to the fraction:
(a)491/990 (b)419/990
(c)49/99 (d)94/99
137. Which of the following fraction is greater than $3/4$ but less than $5/6$?
(a)2/3 (b)1/2
(c)4/5 (d)9/10
138. A tin of oil was $4/5$ full, When 6 bottles of oil was taken out and 4 bottles of oil was poured into it, it was $3/4$ full. How many bottles of oil can the tin contain
(a)10 (b)20
(c)30 (d)40
139. A candidate in an examination was asked to find $5/14$ of a certain number. by mistake he found $5/4$ of it. Thus his answer was 25 more than the correct answer. The number was:
(a)28 (b)56
(c)84 (d)140
140. In an examination, a student was asked to find $3/14$ of a certain number. By mistake, he found $3/4$ of it. His answer was 150 more than the correct answer. The given number is :
(a)500 (b)280

- (c)240 (d)180
141. The product of two fractions is $14/15$ and their quotient is $35/24$. The greater of the fraction is :
 (a) $7/4$ (b) $7/6$
 (c) $7/3$ (d) $4/5$
142. What will be the unit digit in the product of 7^{105} ?
 (a)5 (b)7
 (c)9 (d)1
143. The sum of all the 2-digit numbers is:
 (a)4995 (b)4950
 (c)4945 (d)4905
144. what is the number of unit place in $(329)^{78}$
 (a)1 (b)7
 (c)9 (d)3
145. The value of $0.2+0.3+0.32$ is :
 (a)0.87 (b)0.77
 (c)0.82 (d)0.86
146. How many numbers less than 1000 are multiples of both 10 and 13.
 (a)9 (b)8
 (c)6 (d)7
147. The number 1, 2, 3, 4,..... 1000 are multiplied together. The number of zeros at the end (on the right) of the product must be :
 (a)30 (b)200
 (c)211 (d)249
148. If the difference of two numbers is 3 and the difference of their squares is 39, then the larger number is : (a)8 (b)9
 (c)12 (d)13
149. What is the least number of 5 digits is divisible is by 41 ?
 (a)10045 (b)10000
 (c)10041 (d)41000
150. If the difference between the reciprocal of a positive proper fraction and fraction itself be $9/20$ then the fraction is
 (a) $3/5$ (b) $3/10$
 (c) $4/5$ (d) $5/4$
151. 2.8768 is equal to
 (a) 14384 (b) $958/333$
 (c) $29/10$ (d) $2876/999$
152. On multiplying a number by 7 all the digits in the product appear as 3's, the smallest such number is :
 (a)47649 (b)47719
 (c)47619 (d)48619
153. 64329 is divided by a certain number, 175, 114 and 213 appear as three successive remainders, The divisor is:
 (a)184 (b)224
 (c)234 (d)296
154. In a question on division, the divisor is 7 times the quotient and 3 times the remainder. if the remainder is 28, then the dividend is :
 (a)588 (b)484
 (c)823 (d)1036
155. If two numbers are each divided by the same divisor, the remainder are respectively 3 and 4. If the sum of the two number be divided by the same divisor, the remainder is 2. The divisor is :
 (a)9 (b)7
- (c)5 (d)3
156. it is given that $(2^{32} + 1)$ is exactly divisible by a certain number, which one of the following is also definitely divisible by the same number ?
 (a) $2^{96} + 1$ (b) 7×2^{33}
 (c) $2^{16} - 1$ (d) $2^{16} + 1$
157. The greatest whole number, by which the expression $n^4 + 6n^3 + 11n^2 + 6n + 24$ is divisible for every natural number, is :
 (a)6 (b)24
 (c)12 (d)48
158. If the difference between the reciprocal of a positive proper fraction and fraction itself be $17/72$ then the fraction is :
 (a) $9/8$ (b) $8/9$
 (c) $5/8$ (d) $7/9$
159. $0.393939.....$ is equal to
 (a) $39/100$ (b) $13/33$
 (c) $93/100$ (d) $39/990$
160. Given that $3.718 = 1/0.2689$, then $1/0.0003718$ is equal to
 (a)2689 (b)2.689
 (c)26890 (d)0.2689
161. If a and b are two distinct natural numbers, which one of the following is true?
 (a) $\sqrt{a+b} > \sqrt{a} + \sqrt{b}$ (b) $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$
 (c) $\sqrt{a+b} < \sqrt{a} + \sqrt{b}$ (d) $ab = 1$
162. $0.142857 \div 0.285714$ is equal to
 (a)10 (b)2
 (c) $1/2$ (d) $1/3$
163. A 2-digit number is 3 times the sum of its digits. If 45 is added to the number, its digits are interchanged, The sum of digits of the number is:
 (a)11 (b)9
 (c)7 (d)5
164. The number 2272 and 875 are divided by a 3 digit number N, giving the same remainders. The sum of the digits of N is :
 (a)10 (b)11
 (c)12 (d)13
165. Find the least no. of five digits is divisible by 333.
 (a)10328 (b)10323
 (c)10333 (d)10332
166. Of the three numbers, the second is twice the first and is also thrice the third. If the average of these three numbers is 44, the largest number is:
 (a)24 (b)36
 (c)72 (d)108
167. $[999 \frac{999}{1000}] \times 7$ is equal to:
 (a) $6993007/1000$ (b) $7000007/1000$
 (c) $6633007/1000$ (d) $6999993/1000$
168. A number consists of two digits. If the number formed by interchanging the digits is added to the original number, the resulting number (i.e. the sum) must be divisible by
 (a)11 (b)9
 (c)5 (d)3
169. A number when divided by 5 leaves remainder 3. What is the remainder when the square of the same number is divided by 5 ?

- (a)1 (b)2
(c)3 (d)4
170. If the number $48327*8$ is divisible by 11, then the missing digit (*) is
(a)5 (b)3
(c)2 (d)1
171. How many number between 1000 and 5000 are exactly divisible by 225 ?
(a)16 (b)18
(c)19 (d)12
172. Find the largest number, which exactly divides every number of the form $(n^3 - n)(n - 2)$ where n is a natural number greater than 2.
(a)6 (b)12
(c)24 (d)48
173. A boy was asked to find $3/5$ of a fraction. Instead of this he divided the fraction by $3/5$ and got an answer which exceeded the correct answer by $32/75$. The correct answer is
(a) $3/25$ (b) $6/25$
(c) $2/25$ (d) $2/15$
174. The rational number between $1/2$ and $3/5$ is ?
(a) $2/5$ (b) $4/7$
(c) $2/3$ (d) $1/3$
175. Unit digit of the number $(22)^{23}$ is :
(a)4 (b)6
(c)5 (d)8
176. The sum of first 50 odd natural number is :
(a)1000 (b)1250
(c)5200 (d)2500
177. Which one of the following numbers is not a square of any natural number?
(a)7361 (b)18225
(c)63592 (d)53361
178. Number 2, 4, 6, 8, 10 ..., 196, 198, 200 are multiplied together. The number of zeros at the end of the product on the right will be equal to:
(a)21 (b)22
(c)24 (d)25
179. If two numbers x and y separately divided by a number d, remainders obtained are 375 and 2986 respectively. If the sum of the numbers are $(x + y)$ is divided by the same number d remainder obtained is 2361. The value of number d is:
(a)7361 (b)5000
(c)4000 (d)2542
180. A farmer divides his herd of r cows among his four sons so that the first son gets one - half the herd, the second son gets one - fourth, the third son gets one - fifth and the fourth son gets 7 cows. The value of n is :
(a)80 (b)100
(c)140 (d)180
181. The product of two numbers is 120 and the sum of their squares is 289. The sum of the two numbers is :
(a)23 (b)7
(c)13 (d)169
182. The sum of all the 3-digit numbers, each of which on divide by 5 leaves remainder 3, is
(a)180 (b)1550
(c)6995 (d)99090
183. The sum of all the 3 digit numbers is
(a)98901 (b)494550
(c)8991 (d)899
184. A number when divided by 192 gives a remainder of 54. What remainder would be obtained on dividing the same number by 16 ?
(a)2 (b)4
(c)6 (d)8
185. A man read $2/5$ th of a book on the first day. He read $1/3$ rd more on second day than he read on the first day. 15 pages were left for the third day. The number of pages in the book is :
(a)100 (b)105
(c)225 (d)250
186. The sum of the digits of a two digit number is 10. The number formed by reversing the digit is 18 less than the original number, Find the original number.
(a)81 (b)46
(c)64 (d)60
187. Five times of a positive integer is 3 less than twice the square of that number. The number is
(a)3 (b)13
(c)23 (d)33
188. The product of two number is 24 times the difference of these two numbers. If the sum of these numbers is 14, the larger number is:
(a)9 (b)8
(c)7 (d)10
189. The sum and product of two number are 11 and 18 respectively. The sum of their reciprocal is :
(a) $2/11$ (b) $11/2$
(c) $18/11$ (d) $11/18$
190. A man ate 100 grapes in 5 days, Each day, he ate 6 more grapes than those he ate on the earlier day. How many grapes did he eat on the first day?
(a)8 (b)12
(c)54 (d)76
191. Instead of multiplying a number by 0.72, but student multiplied it by 7.2. If his answer was 2592 more than the correct answer, the original number was :
(a)400 (b)420
(c)500 (d)560
192. The value of $(9896/99) \times 99$ is :
(a)9798 (b)9997
(c)9898 (d)9896
193. $7, 77, 777, 7777 \div 77$ equals
(a)1111 (b)101001
(c)10101 (d)1010101
194. The least among the fractions $15/16, 19/20, 24/25, 34/35$ is
(a) $34/35$ (b) $15/35$
(c) $19/20$ (d) $24/25$
195. Largest fraction among $2/5, 5/6, 11/15,$ and $7/8$ is
(a) $7/8$ (b) $11/15$
(c) $5/6$ (d) $2/3$
196. Which of the following number is the greatest of all **0.9, 0.9, 0.09, 0.09?**
(a)0.9 (b)0.9
(c)0.09 (d)0.09

197. A number, when divided by 136, leaves remainder 36. If the same number is divided by 17, the remainder will be
(a)9 (b)7
(c)3 (d)2
198. Two numbers, when divided by 17, leaves remainder 13 and 11 respectively. If the sum of those two numbers is divided by 17, the remainder will be :
(a)13 (b)11
(c)7 (d)4
199. A number, when divided by 221, leaves a remainder 64. What is the remainder if the same number is divided by 13 ?
(a)0 (b)1
(c)11 (d)12
200. When a number is divided by 387, the remainder obtained is 48. If the same number is divided by 43, the remainder obtained will be
(a)0 (b)3
(c)5 (d)35
201. When two number are separately divided by 33, the remainders are 21 and 28 respectively. If the sum of the two number is divided by 33, the remainder will be :
(a)10 (b)12
(c)14 (d)16
202. $(998999/999)999$ is equal to
(a)998999 (b)999899
(c)989999 (d)999989
203. $(2^{71}+2^{72}+2^{73}+2^{74})$ is divisible by :
(a)9 (b)10
(c)11 (d)13
204. If 'n' be any natural number, then by which number $(n^4 - n)$ is always divisible ?
(a)3 (b)2
(c)6 (d)5
205. The greatest number less than 1500, which is divisible by both 16 and 18, is
(a)1440 (b)1404
(c)1386 (d)1368
206. The number 0.121212 in the form p/q is equal to
(a)4/11 (b)2/11
(c)4/33 (d)2/33
207. 0.001 is equal to
(a)1/1000 (b)1/999
(c)1/99 (d)1/9
208. 1.27 in the form p/q is equal to
(a)127/100 (b)73/100
(c)14/11 (d)11/14
209. How many $1/6$ of together make $125/3$?
(a)125 (b)150
(c)250 (d)350
210. A fraction having denominator 30 and lying between $5/8$ and $7/11$ is :
(a)18/30 (b)19/30
(c)20/30 (d)21/30
211. Out of six consecutive natural numbers, if the sum of first three is 27, what is the sum of the other three?
(a)36 (b)35
(c)25 (d)24
212. Which one if the following is a factor of the sum of first twenty five natural numbers ?
(a)26 (b)24
(c)13 (d)12
213. The sum of all even numbers between 21 and 51 is :
(a)518 (b)540
(c)560 (d)596
214. The sum of four consecutive even numbers is 748. The smallest among then is :
(a)188 (b)186
(c)184 (d)174
215. $(0.11 + 0.22) \times 3$ is equal to
(a)3 (b)1.9
(c)1 (d)0.3
The difference of 5.76 and 2.3 is (a)2.54
(b)3.73 (d)3.46 (d)3.43
216. $[694/7 + 695/7 + 696/7 + 694/7 + 698/7 + 699/7]$ is equal to
(a)603 (b)600
(c)598 (d)597
217. The product of two number is 0.008. one of the number is $1/5$ of the other, the smaller number is :
(a)0.2 (b)0.4
(c)0.02 (d)0.04
218. In an examination, a student scores 4 marks for every correct answer and losses 1 mark for every wrong answer. A student attempted all the 200 questions and scored in all 200 marks. The number of questions, he answered correctly was:
(a)82 (b)80
(c)68 (d)60
219. $(98999/99)99$ is equal to
(a)98999 (b)99899 (d)99998
(c)99989
220. The sum of two number is 8 and their product is 15. The sum of their reciprocals is :
(a)8/15 (b)15/8
(c)23 (d)7
221. The greatest value among the fractions $2/7, 1/3, 5/6, 3/4$ is:
(a)3/4 (b)5/6
(c)1/3 (d)2/7
222. When 'n' is divisible by 5 the remainder is 2. What is the remainder when n^2 is divided by 5?
(a)2 (b)3
(c)1 (d)4
223. The remainder when 3^{21} is divided by 5 is:
(a)1 (b)2
(c)3 (d)4
224. A number when divided by 49 leaves 32 as remainder. The number when divided by 7 will have the remainder as :
(a)4 (b)3
(c)2 (d)5
225. When a number is divided by 36, the remainder is 19. What will be the remainder when the number is divided by 12?
(a)7 (b)5
(c)3 (d)0
226. When 2^{31} is divided by 5 the remainder is :
(a)4 (b)3
(c)2 (d)1

- 227.** A student was asked to divide a number by 6 and add 12 to the quotient. He, however, first added 12 to the number and then divided it by 6, getting 112 as the answer. The correct answer should have been
(a)124 (b)122
(c)118 (d)114
- 228.** In a division sum, the divisor is 10 times the quotient and 5 times the remainder. If the remainder is 46, then the dividend is :
(a)4236 (b)4306
(c)4336 (d)5336
- 229.** When a number is divided by 24, the remainder is 16. The remainder when the same number is divided by 12 is :
(a)3 (b)4
(c)6 (d)8
- 230.** The expression $8^n - 4^n$, where n is a natural number is always divisible by
(a)15 (b)18
(c)36 (d)48
- 231.** $(4^{61} + 4^{62} + 4^{63})$ is divisible by
(a)3 (b)11
(c)13 (d)17
- 232.** 47 is added to the product of 71 and an unknown number. The new number is divisible by 7 giving the quotient 98. The unknown number is a multiple of
(a)2 (b)5
(c)7 (d)3
- 233.** When an integer K is divided by 3, the remainder is 1, and when K + 1 is divided by 5, the remainder is 0. Of the following, a possible value of K is:
(a)62 (b)63
(c)64 (d)65
- 234.** A number when divided by 91 gives a remainder 17. When the same number is divided by 13, the remainder will be :
(a)0 (b)4
(c)6 (d)3
- 235.** If the sum of the two numbers is 120 and their quotient is 5, then the difference of the two numbers is:
(a)115 (b)100
(c)80 (d)72
- 236.** A number when divided by 280 leaves 115 as remainder, When the same number is divided by 35, the remainder is :
(a)15 (b)10
(c)20 (d)17
- 237.** A certain number when divided by 175 leaves a remainder 132. When the same number is divided by 25, the remainder is :
(a)6 (b)7
(c)8 (d)9
- 238.** $2^{16} - 1$ is divisible by
(a)11 (b)13
(c)17 (d)19
- 239.** Which of the following will completely divided by $5^{71} + 5^{72} + 5^{73}$?
(a)150 (b)160
(c)155 (d)30
- 240.** The least number which is to be added to the greatest number of 4 digits so that the sum may be divisible by 345, is
(a)50 (b)6
(c)60 (d)5
- 241.** Find the number, one seventh of which exceeds its eleventh part by 100.
(a)1925 (b)1825
(c)1540 (d)1340
- 242.** The sum of the numerator and denominator of a positive fraction is 11. If 2 are added to both numerator and denominator, the fraction is increased by $\frac{1}{24}$. The difference of numerator and denominator of the fraction is :
(a)5 (b)3
(c)1 (d)9
- 243.** The denominator of a fraction is 3 more than its numerator. If the numerator is increased by 7 and the denominator is decreased by 3, we obtain 2. The sum of numerator and denominator of the fraction is
(a)5 (b)13
(c)17 (d)9
- 244.** A fraction becomes $\frac{1}{3}$ when 1 is subtracted from both the numerator and the denominator. The same fraction becomes $\frac{1}{2}$ when 1 is added to both the numerator and denominator of the fraction is :
(a)10 (b)18
(c)7 (d)16
- 245.** A girl was asked to multiply a number by $\frac{17}{8}$, instead she divided the number by $\frac{7}{8}$ and got the result 15 more than the correct result. the sum of the digits of the number was:
(a)4 (b)8
(c)6 (d)11
- 246.** A student was asked to multiply a given number by $\frac{8}{17}$. Instead, he divided the given number by $\frac{8}{17}$ His answer was 225 more than the correct answer. The given number was
(a)64 (b)289
(c)136 (d)225
- 247.** If 1 is added to both the numerator and denominator of the fraction it becomes $\frac{1}{4}$. If 2 is added to both the numerator and denominator of the fraction it becomes $\frac{1}{3}$. The sum of the numerator and the denominator of the fraction is :
(a)8 (b)13
(c)22 (d)27
- 248.** A number whose one-fifth part increased by 4 is equal to its one fourth part diminished by 10 is :
(a)260 (b)280
(c)240 (d)270
- 249.** The unit digit in the product $(122)^{172}$ is:
(a)2 (b)4
(c)6 (d)8
- 250.** The unit digit in the sum of $(124)^{372} + (124)^{373}$ is
(a)5 (b)4
(c)2 (d)0
- 251.** The last digit of $(1001)^{2005} + (1002)$ is:
(a)0 (b)3
(c)4 (d)6
- 252.** The unit digit of the expression $25^{6251} + 36^{528} + 73^{54}$ is

- (a)6 (b)5
(c)4 (d)0
253. The unit's digit in the product $7^{71} \times 6^{63} \times 3^{65}$ is
(a)1 (b)2
(c)3 (d)4
254. If the sum of five consecutive integers is S, then the largest of those integers in term of S is :
(a) $(S-10)/4$ (b) $(S+4)/4$
(c) $(S+5)/4$ (d) $(S+10)/4$
255. The sum of the squares of 3 consecutive positive numbers is 365, the sum of the number is :
(a)30 (b)35
(c)36 (d)45
256. A natural number is multiplied by 18 and another by 21 and added the products. Which one of the following could be the sum
(a)2007 (b)2008
(c)2006 (d)2002
257. If the sum of two numbers be multiplied by each number separately, the products so obtained are 247 and 114. The sum of the number is :
(a)19 (b)20
(c)21 (d)23
258. If a and b are odd numbers, then which of the following is even ?
(a) $a + b + ab$ (b) $a + b - 1$
(c) $a + b + 1$ (d) $a + b + 2ab$
259. In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 75 questions and secures 125 marks, the number of questions he attempts correctly is :
(a)35 (b)40
(c)42 (d)46
260. Of the three numbers the sum of the first two is 55, some of the second and third is 65 and sum of third and thrice of the first is 110, the third number is:
(a)25 (b)30
(c)35 (d)28
261. A number consists of two digits and the digit in the ten's place exceeds that in the units place by 5. If 5 times the sum of the digits be subtracted from the number the digits of the number are reversed then the sum of digits of the number is
(a)11 (b)7
(c)9 (d)13
262. In a three-digit number, the digit at the hundred's place is two times the digit at the unit's place and the sum of the digits is 18. If the digits are reversed, the number is reduced by 396. The difference of hundred's and ten's digit of the number is
(a)1 (b)2
(c)3 (d)5
263. If the digits in the unit and the ten's places of a two-digit number are interchanged, a new number is formed, which is greater than the original number by 63. Suppose the digit in the unit place of the original number is x. Then, all the possible values of x are
(a)7, 8, 9 (b)2, 7, 9
(c)0, 1, 2 (d)1, 2, 8
264. The sum of a two-digit number and the number obtained by reversing its digits is a square number. How many such numbers are there ? (a)5 (b)6
(c)7 (d)8
265. Which of the following numbers will always divide a six-digit number of the form $xyxyxy$ (where $1 \leq x \leq 9, 1 \leq y \leq 9$)?
(a)1010 (b)10101
(c)11011 (d)11010
266. The least number of five digits which has 123 as a factor is :
(a)10037 (b)10086
(c)10081 (d)10063
267. The largest among the numbers $(0.1)^2, \sqrt{0.0121}, 0.12$ and $\sqrt{0.0004}$ is
(a) $(0.1)^2$ (b) $\sqrt{0.0121}$
(c)0.12 (d) $\sqrt{0.0004}$
268. The number of integers in between 100 and 600, which are divisible is
(a)40 (b)42
(c)41 (d)50
269. The value of λ for which the expression $x^3 + x^3 - 5x + \lambda$ will be divisible by $(x-2)$ is
(a)2 (b)-2
(c)-3 (d)4
270. If m and n are positive integers and $(m-n)$ is an even number, then $(m^2 - n^2)$ will be always divisible by:
(a)4 (b)6
(c)8 (d)12
271. Both the end digits of a 99-digit number N are 2. N is divisible by 11, then all the middle digits are :
(a)1 (b)2
(c)3 (d)4
272. The value of $1/15 + 1/35 + 1/63 + 1/99 + 1/143$ is
(a)5/39 (b)4/39
(c)2/39 (d)7/39
273. A tree increases annually by $1/8$ th of its height. By how much will it increase after 2 years, if it stands today 64 cm high?
(a)72 cm (b)74 cm
(c)75 cm (d)81 cm
274. A person gives $1/4$ of his property to his daughter $1/2$ to his sons and $1/5$ for charity. How much has he given away?
(a) $1/20$ (b) $19/20$
(c) $1/10$ (d) $9/10$
275. 0.123 is equal to
(a) $14/333$ (b) $41/333$
(c) $123/1000$ (d) $441/333$
276. The decimal fraction 2.349 is equal to
(a) $2326/999$ (b) $2326/990$
(c) $2347/999$ (d) $2347/990$
277. The last digit of 3^{40} is
(a)1 (b)3
(c)7 (d)9
278. The digit in the unit's place of the number $(1570)^2 + (1571)^2 + (1572)^2 + (1573)^2$ is :
(a)4 (b)1
(c)2 (d)3

279. The sum of all those prime numbers which are not greater than 17 is
(a)59 (b)58
(c)41 (d)42
280. The value of $(0.63 + 0.37)$ is
(a)1 (b)100/99
(c)99/100 (d)100/33
281. If $51.84/4.32 = 12$ then the value of $0.005184/0.432$ is
(a)0.12 (b)0.012
(c)0.0012 (d)1.2
282. The sum of a natural number and its square equals the product of the first three prime numbers. The number is :
(a)2 (b)3
(c)5 (d)6
283. A man has some hens and cows. If the number of heads : number of feet = 12 : 35, find out the number of hens, if the number of heads alone is 48.
(a)28 (b)26
(c)24 (d)22
284. The length of a road is one kilometer. The number of plants required for plantation at a gap of 20 metres in both sides of the road is:
(a)102 (b)100
(c)51 (d)50
285. The greatest among the following numbers $(3)^{1/3}$, $(2)^{1/2}$, 1, $(6)^{1/6}$ is :
(a) $(2)^{1/2}$ (b)1
(c) $(6)^{1/6}$ (d) $(3)^{1/3}$
286. When 335 is added to 5A7, the result is 8B2. 8B2 is divisible by 3. What is the largest possible value of A ?
(a)8 (b)5
(c)1 (d)4
287. If a number is as much greater than 31 as it is less than 75, then the number is :
(a)106 (b)44
(c)74 (d)53
288. If the number formed by the last two digits of a three digit integer is an integral multiple of 6, the original integer itself will always be divisible by
(a)6 (b)3
(c)2 (d)12
289. Divide 37 into two parts so that 5 times one part and 11 times the other are together 227.
(a)15, 22 (b)20, 17
(c)25, 12 (d)30, 7
290. $1 + 1/2 + 1/4 + 1/7 + 1/14 + 1/28$ is equal to
(a)2 (b)2.5
(c)3 (d)3.5
291. How many numbers between 400 and 800 are divisible by 4, 5 and 6?
(a)7 (b)8
(c)11 (d)10
292. A positive integer when divided by 425 gives a remainder 45. When the same number is divided by 17, the remainder will be
(a)7 (b)8
(c)11 (d)10
293. A number x when divided by 289 leaves 18 as the remainder. The same number when divided by 17 leaves y as a remainder. The value of y is
(a)5 (b)2
(c)3 (d)1
294. when n is divided by 6, the remainder is 4. When 2n is divided by 6, the remainder is :
(a)2 (b)0
(c)4 (d)1
295. Two numbers 11284 and 7655, when divided by a certain number of three digits, leaves the same remainder. The sum of digits of such a three-digits number is :
(a)8 (b)9
(c)10 (d)11
296. In a division sum, the divisor is 3 times the quotient and 6 times the remainder. If the remainder is 2, then the dividend is:
(a)50 (b)48
(c)36 (d)28
297. $1/7 + (692999/693) \times 99$ is equal to
(a)1 (b)99000
(c)99800 (d)99900
298. The sum of the digits of any integer lying between 100 and 1000 is subtracted from the number the result always is
(a)divisible by 6 (b)divisible by 2
(c)divisible by 9 (d)divisible by 5
299. The difference of a number consisting of two digits from the number formed by interchanging the digits is always divisible by :
(a)10 (b)9
(c)11 (d)6
300. The least number which must be added to the greatest number of 4 digits in order that the sum may be exactly divisible by 307 is:
(a)132 (b)32
(c)43 (d)75
301. In an office, there are 108 tables and 132 chairs. If 1/6 of the tables and 1/4 of the chairs are broken. How many people can work in the office if each person requires one table and one chair ?
(a)86 (b)90
(c)92 (d)99
302. A, B, C and D the purchase a gift worth Rs. 60. A pays 1/2 of what others are paying. B pays 1/3 of what others are paying and C pays 1/4 of what other are paying. what is the amount paid by D ?
(a)13 (b)15
(c)12 (d)14
303. In a school 1/10 of the boys are same number as 1/4 of the girls and s of the girls are same in number as 1/4 of the boys, The ratio of the boys to girls in that school is:
(a)2 : 1 (b)5 : 2
(c)4 : 3 (d)3 : 2
A rational number between 3/4 and 3/8 is :
(a)7/9 (b)7/3

(c)5/9 (d)25/16

304. The numerator of a fraction is 4 less than its denominator, If the numerator is decreased by 2 and the denominator is increased by 1, the denominator becomes eight times the numerator. Find the fraction.

(a)3/8 (b)3/7
(c)4/8 (d)2/7

305. In a class, there are z students. Out of them 'x' are boys. What part of the class is composed of girls ?

(a)x/z (b)z/x
(c)1 - (x-z) (d)(x + z)-1

306. Divide 50 into two parts so that the sum of their reciprocals is 1/12

(a)35, 15 (b)20, 30
(c)24, 36 (d)28, 22

307. The unit digit in $3 \times 38 \times 537 \times 1256$ is

(a)4 (b)2
(c)6 (d)8

308. In a two-digit number, the digit at the unit's place is 1 less than twice the digit at the ten's place. If the digits at unit's and ten's place are interchanged, the difference between the new and the original number is less than the original number by 20. The original number is:

(a)59 (b)23
(c)35 (d)47

309. Find three consecutive numbers such that twice the first, three times the second and four times the third together make 191.

(a)19, 20, 21 (b)21, 22, 23
(c)20, 21, 22 (d)22, 23, 24

310. There are 50 boxes and 50 persons, Person 1 keeps 1 marble in every box, person 2 keeps 2 marbles in every 2nd box, person 3 keeps 3 marbles in every third box. This process goes on till person 50 keeps 50 marbles in the 50th box. Find the total number of marbles kept in the 50th box.

(a)43 (b)78
(c)6 (d)93

311. 252 m of pant cloth and 141 m of shirt cloth are available in a cloth store, to stitch one pant and one shirt $5/2$ m and $7/4$ m cloth are needed respectively then the approximate number of pants and shirt that can be made out of it are:

(a)80, 100 (b)100, 80
(c)100, 90 (d)90, 80

312. The number of prime factors of 323 has

(a)three prime factors (b)five prime factors
(c)two prime factors (d)no prime factor

313. Mohan gets 3 marks for each correct sum and loses 2 marks for each wrong sum. He attempts 30 sums and obtains 40 marks. The number of sums solved correctly is:

(a)15 (b)20
(c)25 (d)10

314. If $a * b = a + b + (a/b)$ then the value of $12 * 4$ is

(a)20 (b)21
(c)48 (d)19

315. Find the maximum number of trees which can be planted, 20 metres apart, on the two sides of a straight road 1760 metres long

(a)180 (b)178

(c)174 (d)176

316. A and B have together three times. "what B and C have, while A, B, C together have thirty rupees more than that of A. If B has 5 times, that of C, then A has

(a)Rs. 60 (b)Rs. 65
(c)Rs.75 (d)Rs. 45

317. if sum of two numbers be a and their product be b, then the sum of their reciprocals is :

(a)(1/a + 1/b) (b)b/a
(c)a/b (d)1/ab

318. in a factory one out of every 9 is a female worker If the number of female workers is 125, the total number of workers is :

(a)1250 (b)1125 has
(c)1025 (d)1000

319. 'a' divides 228 leaving a remainder 18. The biggest two-digit value of 'a' is

(a)70 (b)21
(c)35 (d)30

320. In a division Sum, the divisor is 12 times the quotient and 5 times the remainder. If the remainder is 36, then the dividend is :

(a)2706 (b)2726
(c)2736 (d)2826

321. Which is the largest of the following fractions? $2/8, 3/5, 8/11, 11/17$

(a)8/11 (b)3/5
(c)11/17 (d)2/8

322. If $a = 4011$ and $b = 3989$, then the value of $ab = ?$

(a)15999879 (b)15899879
(c)15989979 (d)15998879

323. For any integral value of n, $3^{2n} + 9n + 5$ when divided by 3 will leave the remainder

(a)1 (b)2
(c)0 (d)5

324. The solution to the inequality $12x - 66 \leq 6$ is

(a) $x \leq 6$ (b) $0 \leq x \leq 6$
(c) $-6 \leq x \leq 6$ (d) $-6 \leq x \leq 0$

325. 5349 is added to 3957. Then 7062 is subtracted from the sum, The result is not divisible by

(a)4 (b)3
(c)7 (d)11

326. The product of all the prime numbers between 80 and 90 is

(a)83 (b)89
(c)7387 (d)598347

327. Find the sum of all positive multiples of 3 less than 50

(a)400
(c)408 (b)404 (d)412

328. If the operation '*' is defined by $a * b = a + b - ab$, then $5 * 7$ equals

(a)12 (b)- 47
(c)- 23 (d)35

329. A man engaged a servant on the condition that he would pay him Rs. 90 and a turban after service of one year, he served only for nine months and

received the turban and an amount of Rs. 65, The price of turban is :

- (a)25 (b)18.75 (c)10 (d)2.50

330. If $\frac{3}{4}$ of a number is 7 more than $\frac{1}{6}$ of the number then $\frac{5}{3}$ of the number is :

- (a)12 (b)18 (c)15 (d)20

331. If $x = (1/\sqrt{2}+1)$ then $(x + 1)$ equal to

- (a) $\sqrt{2} + 1$ (b) $\sqrt{2} - 1$
(c) $\sqrt{2}$ (d)2

332. Find the square root of

- (a) $2/3$ (b) $1/3$
(c)3 (d) $3/2$

333. If the cube root of 79507 is 43, then the value of $\sqrt[3]{79.507} + \sqrt[3]{0.079507} + \sqrt[3]{0.00079507}$ is

- (a)4.773 (b)47.73
(c)0.4773 (d)477.3

334. A number exceeds its two fifth by 75. The number is:

- (a)125 (b)100
(c)112 (d)150

335. The simplified value of $(0.0539 - 0.002) \times 0.4 + 0.56 \times 0.07 / 0.04 \times 0.25$

- (a)599.6 (b)0.5996
(c)5.996 (d)59.96

336. The smallest whole number that is to be multiplied with 59535 to make a perfect square number is x.

The sum of digits of x is ?

- (a)6 (b)5
(c)7 (d)9

337. When Simplified the product $[2 - (1/3)][2 - (3/5)][2 - (5/7)] \dots [2 - (997/999)]$ equals

- (a) $1001/3$ (b) $5/3$
(c) $5/999$ (d) $1001/999$

338. The value of $(.87)^2 + (0.13)^2 + (0.87 \times (0.26))^{2013}$

- (a)0 (b)1
(c)-1 (d)2013

339. The simplified value of $\frac{4}{15}$ of $(\frac{5}{8}) \times 6 + 15 - 10$

- (a)3 (b)5
(c)6 (d)4

340. The maximum value of F in the following equation $5E9 + 2F8 + 3G7 = 1114$ is

- (a)8 (b)5
(c)9 (d)7

341. The unit digit in the product $(2467)^{153} \times (341)^{72}$ is

- (a)1 (b)3
(c)7 (d)9

342. The greatest number among 3^{50} , 4^{40} , 5^{30} , and 6^{20} is

- (a) 4^{40} (b) 5^{30}
(c) 6^{20} (d) 3^{50}

343. While solving a problem, by mistake, Anita squared a number and then subtracted 25 from it rather than first subtracting 25 from the number, and then squaring it. But she got the right answer. What was the give number?

- (a)48 (b)cannot be determined
(c)13 (d)38

344. In a farm there are cows and hens. If heads are counted there are 180, if legs are counted there are 420, The number of cows in the farm is

- (a)130 (b)50
(c)150 (d)30

345. The number which can be written in the form of $n(n + 1)(n + 2)$, where n is a natural number, is

- (a)7 (b)5
(c)3 (d)6

346. A school group charters three identical buses and occupies $\frac{4}{5}$ of the of the passengers leave, the remaining passengers use only two of the buses, The fraction of the seats on the two buses that are now occupied is

- (a) $8/9$ (b) $7/9$
(c) $7/10$ (d) $9/10$

347. If the product of two positive numbers be 1575 and their ratio is 7 : 9, then the greater number is

- (a)45 (b)135
(c)35 (d)63

348. If the arithmetic mean of 3a and 4b is greater than 50, and a is twice b, then the smallest possible intergervalue of a is

- (a)20 (b)21
(c)18 (d)19

349. The weight of a container completely filled with water is 2.25 kg. The container weights 0.77 kg when its 0.2 part is filled with water. The weight (in kg) of the container when 0.4 part of its is filled with water is

- (a)0.40 (b)1.14
(c)0.74 (d)1.88

350. The difference between the greatest and the least four digit numbers that begins with 3 and ends with 5 is :

- (a)900 (b)999
(c)909 (d)990

351. The greatest four digits number which is exactly divisible by each one of the numbers 12,18,21 and 28.

- (a)9828 (b)9882
(c)9928 (d)9288

352. The sum of two numbers is 37 and the difference of their squares is 185, then the difference of the two numbers is:

- (a)10 (b)5
(c)4 (d)3

353. The sun of two numbers is 75 and their difference is 25. The product of the two numbers is:

- (a)1350 (b)1250
(c)125 (d)1000

354. A number x is divisible by 7 When this number is divided by 8,12 and16, if leaves a remainder 3 in each ease. The least value of x is :

- (a)149 (b)150
(c)147 (b)148

355. The quotient when 10^{100} is divided by 5^{75} is :

- (a) 10^{25} (b) 2^{75}
(c) $2^{75} \times 10^{25}$ (d) $2^{25} \times 10^{75}$

356. The smallest five digit number which is divisible by 12, 18 and 21 is:

- (a)10080 (b)30256
(c)10224 (d)50321

357. Two positive whole numbers are such that the sum of the first and twice the second number is 8 and their difference is 2. The numbers are:

- (a)7,5 (b)3,5
(c)6,4 (d)4,2

358. If $1^3 + 2^3 + \dots + 10^3 = 3025$, then the value of $2^3 + 4^3 + \dots + 20^3$ is:
(a) 7590 (b) 5060
(c) 24200 (d) 12100
359. In an exam the sum of the scores of A and B is 120, that of B and C is 130 and that of C and A is 140. Then the score of C is :
(a) 70 (b) 75
(c) 60 (d) 65
360. If $p = -0.12$, $q = -0.01$ & $r = -0.015$, then the correct relationship among the three is : $q > p > r$
(a) $p < r < q$ (b) $p > r > q$
(c) $p < q < r$ (d) $q > p > r$
361. Arrangement of the fractions $4/3, 2/9, -7/8, 5/12$ into ascending order are
(a) $-1/2, -7/8, 4/3, 5/12$ (b) $-7/8, -2/9, 5/12, 4/3$
(c) $-7/8, -2/9, 4/3, 5/12$ (d) $-2/9, -7/8, 5/12, 4/3$
362. The difference between the greatest and least prime numbers which are less than 100 is
(a) 95 (b) 96
(c) 97 (d) 94
363. Two numbers are in ratio 5 : 8, if their difference is 48, then the smallest numbers is
(a) 64 (b) 80
(c) 96 (d) 128
364. The number $142^2 - 1$ is divisible by:
(a) 19 (b) 7
(c) 9 (d) 13



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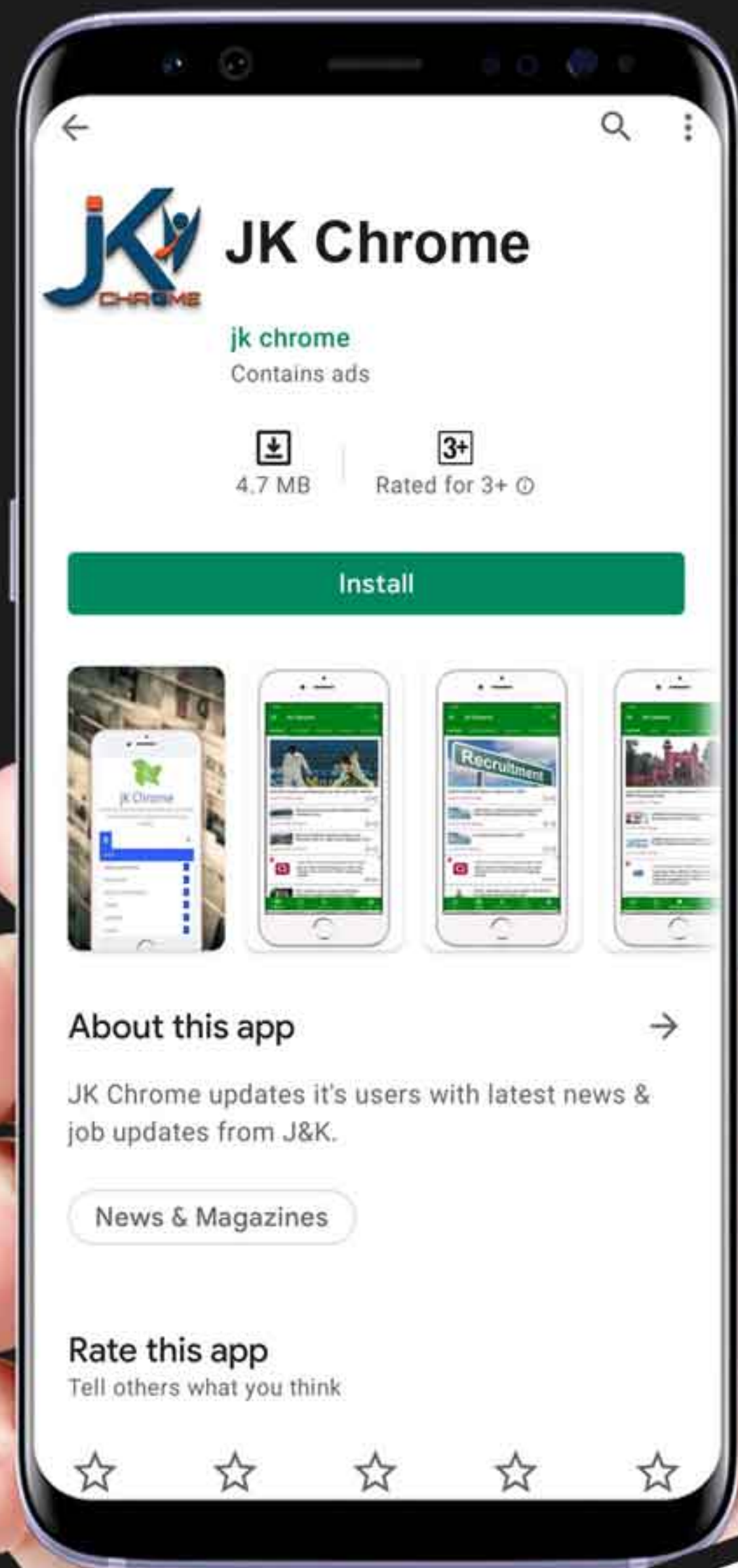
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