Classification of Numbers

DIVISIBILITY Rules

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Classification of Numbers

- Detail classification of numbers
- Problem on types of Number(Integers, Natural, Even-Odd)
- Problem based on Prime Numbers
- Word Problem on Numbers
- Decimal to fraction Conversion

DIVISIBILITY Rules

- Division algorithm
- Divisibility Rules
- Concept of factors of 1001 & Practice from PPT
- Problem on divisibility
- Data Sufficiency on related topic

Classification of Numbers
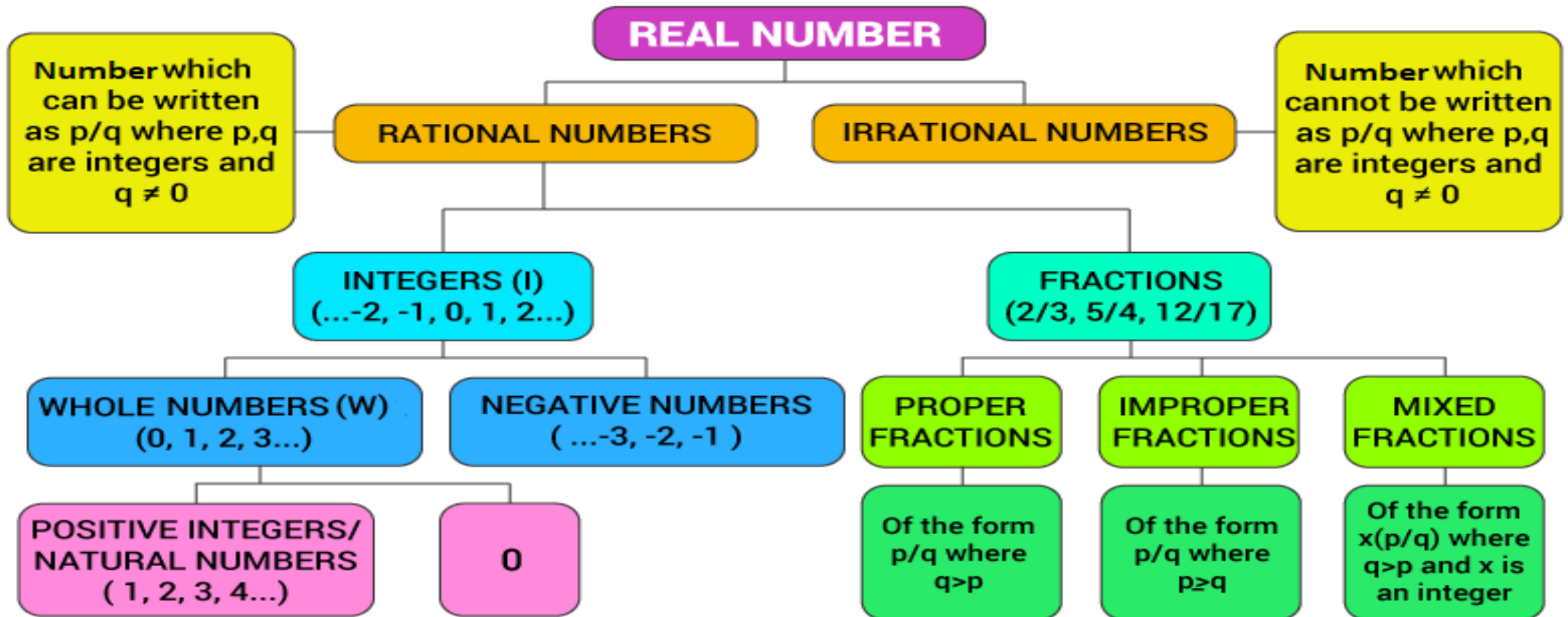
Classification of Numbers

Important Formulas:

Sum of natural numbers	$$\sum_{n=1}^{n} n = \frac{1}{2} n(n+1)$$
Sum of squares	$$\sum_{n=1}^{n} n^2 = \frac{1}{6} n(n+1)(2n+1)$$
Sum of cubes	$$\sum_{n=1}^{n} n^3 = \frac{1}{4} n^2 (n+1)^2$$

Classification of Numbers

Q1. The sum of first 12 natural numbers is:

A) 78   B) 98   C) 68   D) 88

Q2. For how many integer values of P will the value of the expression 4P+ 7 be an integer greater than 1 and less than 230?

A) 50   B) 58   C) 57   D) 56

Classification of Numbers

Q3. **a** is positive even integer and **b** is positive odd integer then which of the following is odd?

A) a*b   B) (a+b)a   C) $a^2b/2$ D) a+b

Classification of Numbers

Q4. The sum of three consecutive odd numbers is 579. What is the middle number?

A) 189   B) 193   C) 169   D) 213

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Q5. If N^2-33, N^2-31 and N^2-29 are prime numbers, then what is the number of possible values of N, where N is an integer?

a) 1   b) 2   c) 3   d) None of these

Q6. a , b, c and d are prime numbers such that a<b<c<d<16. In how, many cases (a+b+c) also be a prime number?

a) 1   b) 2   c) 3   d) 4

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Q7. The product of a number and thrice of its multiplicative inverse is:

A) 3   B) 0   C) -1   D) Infinity

Classification of Numbers

Q8. The difference of two numbers is 14 and (1/5)th of their sum is 8. The larger number is:

A) 27   B)13   C)18   D)19

Q9. There are two numbers such that the sum of twice the first number and thrice the second number is 120 and sum of thrice the first number and twice the second number is 100. Which is the smaller number ?

A) 32   B) 24   C) 12   D) 38

Classification of Numbers

Q10. what is the simplified fraction value of

(i) $0.0\overline{45}$

A) 45/99   B) 9/11   C) 5/11   D) None of these

(ii) $0.01\overline{2}$

A) 121/99   B) 11/900   C)121/990   D) 11/90

Division Algorithms

1) If a and b are integers   ; b>0
then there exist unique integer q and r satisfying
$$a=qb+r;\ \ 0\le r \le b$$

where q and r are called quotient and remainders in the division of a by b.

2) If a and b are integers   ; b<0
then there exist unique integer q and r satisfying
$$a=qb+r;\ \ 0\le r \le |b|$$

where q and r are called quotient and remainders in the division of a by b.

Divisibility rules of 2,4,8

2 – Last digit is even (0,2,4,6,8)

4- Last two digits are divisible by 4 (124, 123456, 23468)

8- Last three digits are divisible by 8 (123488, 1234888)

Divisibility rules of 3, 9

3 – Sum of the digits is divisibly by 3

9 – Sum of the digits is divisible by 9

Divisibility rules of 6

Divisibility rule of 6:

If a number is divisible by 2 and 3,it is divisible by 6

Divisibility rules of 6

Ex: 246

a.2+4+6= 12, 12 is divisible by 3,so 246 is divisible by 3

b.246 ends in 6,so 246 is divisible by 2

246 is divisible by 2 and 3 .so 246 is divisible by 6

Divisibility rules of 7

Take the last digit and double it, subtract that from the remaining digits, continue until you get a number that is divisible by 7.

Example: 442

Take the last digit and double it, $2*2 = 4$

$44 - 4 = 40$

Is 40 a multiple of 7?No, hence , 442 is not divisible by 7

Divisibility rules of 11

Division rule for number "11"

RULE	ANALYSIS
1. According to the **divisibility rule** of 11, we must subtract.	1. Example-10813 /11=983
2. Add the digits in odd places.	2. 10813
3. Add the digits in even places.	3. Odd place sum=1+8+3=12
4. Find difference between both of them.	4. Even place sum=0+1=1
5. If answer is either 0 or divisible by 11, then it is divisible	5. Difference=12-1=11

Divisibility rules of Prime Numbers: 13

Take the last digit and multiply by 4 , Add the product to the rest of the number

Example: 442
Take the last digit and double it, 2*4 =8

44 + 8 = 52

Is 52 a multiple of 13? Yes, hence ,442 is divisible by 13.

Divisibility rules of Prime Numbers: 17

Take the last digit and multiply by 5 , Subtract the product to the rest of the number

Example: 15181
Take the last digit and multiply it by 5, 1*5 =5

1518- 5 = 1513

Take the last digit again and multiply it by 5, 3*5 =15

151-15=136

Is 136 a multiple of 17? Yes, hence ,15181 is divisible by 17.

Divisibility Rule :Practice Questions

Q11. On dividing 4356 by a certain number , the quotient is 55 and the remainder is 11, the divisor is

A) 79   B) 78   C) 76   D) 75

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Divisibility Rule :Practice Questions

Q12. N is a whole number which when divided by 8 gives 5 as remainder. What will be the remainder when 2×N is divided by 4?

A) 3   B) 2   C) 1   D) 0

Q13. Find the least value of * for which 5822*18 is divisible by 11?

A] 5   B] 3   C] 7   D] 11

Q14. Which of the number is divisible by 3,7 and 9 all three?

A. 4371   B. 4359   C. 5673   D. 4473

Q15. If Y is natural number , then $(8Y^2+8Y)$ is always divisible by:

A) 6 only   B) 6 and 12 both

C) 12 only   D) by 16 only

Q16. If 9A4146B is divisible by 88, then what is the value of A x B?

A) 10   B) 15   C) 12   D) 16

Divisibility Rule :Practice Questions

Q17. There is a 24 digit number consist of only one digit from 1,2,3,4,5 or 6, e.g. 22222222…………22, 555555……55. Such number is always divisible by:-

A) 7

B) 11

C) 13

D) All of the above

Divisibility Rule :Practice Questions

Q18. A six-digit number is formed by repeating a three-digit number; for example, 808808 or 416416 etc. Any number of this form is always exactly divisible by:

A) 7   B) 11   C) 13   D) 1001   E) All of these

Divisibility Rule :Practice Questions

Q19. A number 41678 is divisible by:

A) 7 only   B) 11only

C) 13 only   D) 7 and 13 both

E) All of these

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Divisibility Rule:Practice Questions

Q20. Which of the following number is divisible by 17?

A) 19654   B) 14324   C) 14357   D) 14399

Numbers , Divisibility Rules

Directions: In each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and

Give answer

(A) If the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question

(B) If the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question

(C) If the data either in statement I alone or in statement II alone are sufficient to answer the question

(D) If the data given in both statements I and II together are not sufficient to answer the question and

(E) If the data in both statements I and II together are necessary to answer the question

Q21. Is x an even number?

Statement I: 6x + 5y is an even number.

Statement II: 3x + 6y is an even number.