

# Real Numbers

## Quick Study Guide

## HOW TO

## USE THIS GUIDE

HIGHLIGHTED TEXT SHOWS IMPORTANT POINTS

★ MARKS HIGH-FOCUS TOPICS

✍ INDICATES EXAM TIPS

⚠ SHOWS COMMON ERRORS

💡 GIVES QUICK TIPS

## EUCLID'S DIVISION LEMMA

Mnemonic: "DIVIDE KARO"

D Dividend given  
I Into divisor  
V Values find  
I Important rule  
D Divide properly  
E Equation form

### Remember As:

#### SAMOSAS RULE

If 23 samosas are divided among 4 friends:

- Dividend = 23 (samosas)
- Divisor = 4 (friends)
- Quotient = 5 (each gets)
- Remainder = 3 (left over)

Formula:  $\text{Dividend} = (\text{Divisor} \times \text{Quotient}) + \text{Remainder}$

K Key formula  
A Any number  
R Remainder < divisor  
O Order matters

### Common Errors

- Remainder  $\geq$  Divisor
- Negative remainder
- Wrong equation format
- Missing conditions

## HCF BY EUCLID

Mnemonic: "BHAG BHAG"

B Bada number  
H HCF nikalo  
A Apply division  
G Get remainder

B Baar baar divide  
H HCF will come  
A Again divide  
G Get zero remainder

### Example:

- HCF(60, 45)
- $60 = 45 \times 1 + 15$
- $45 = 15 \times 3 + 0$
- HCF = 15

### Steps Remember As:

#### DOSTI DIVIDE

- Divide larger by smaller
- Old divisor becomes dividend
- Remainder becomes divisor
- Till remainder zero
- Last divisor = HCF

## PRIME FACTORIZATION

Mnemonic: "PRIME TIME"

P Prime numbers  
R Root nikalo  
I Important factors  
M Multiply all  
E Express number

T Tree method  
I Important steps  
M Multiply end  
E Easy way

### Quick Method:

#### FACTOR TREE

- Like family tree:
- Start with number
- Break into factors
- Till prime numbers
- Multiply all primes

### Example: 84

- $84 = 2 \times 42$
- $42 = 2 \times 21$
- $21 = 3 \times 7$
- So,  $84 = 2^2 \times 3 \times 7$

## IRRATIONAL NUMBERS

Mnemonic: "ROOT WALA"

R Rational nahi hai  
O Or decimal infinite  
O Only non-repeating  
T Think decimal form

W Write as root  
A Always decimal  
L Long division  
A Always continues

### Remember Points:

#### SURD GANG

- $\sqrt{2}, \sqrt{3}, \sqrt{5}$  are irrational
- $\pi$  is irrational
- e is irrational
- Never perfect squares
- Never terminates/repeats

## RATIONAL NUMBERS

Mnemonic: "FRACTION BOSS"

F Form p/q  
R Repeating decimal  
A All integers  
C Convert to p/q  
T Terminating decimal  
I Important class  
O Or repeating  
N Number system

B Basic numbers  
O Or integers  
S Simple form  
S System clear

### Examples As:

#### DUKAN WALA

- Like shop calculations:
- $1/2 \text{ kg} = 0.5$
- $1/4 \text{ kg} = 0.25$
- $2/3 \text{ kg} = 0.666\ldots$

## DECIMAL FORMS

Mnemonic: "DECIMAL HERO"

D Divide karo  
E Exact division  
C Check pattern  
I Important steps  
M Mark repeat  
A Answer type  
L Look pattern

H Hundred tak  
E Exact ya repeat  
R Repeat find  
O Observe well

### Types Remember:

#### TYPE CAST

- Terminating:
  - $1/2 = 0.5$
  - $1/4 = 0.25$
  - $1/8 = 0.125$
- Repeating:
  - $1/3 = 0.333\ldots$
  - $2/3 = 0.666\ldots$
  - $1/7 = 0.142857\ldots$



## LCM & HCF RELATION

Mnemonic: "PRODUCT RULE"

- P Product of numbers
- R Relate to HCF
- O Or use LCM
- D Divide product
- U Use formula
- C Calculate both
- T Times both

Formula:

$$\text{Product} = \text{LCM} \times \text{HCF}$$

### Remember As:

1. Like two friends
2. Product of ages
3. Equals
4.  $\text{HCF} \times \text{LCM}$
5. Always true

## QUICK REVISION CHECKLIST

Before Exam:

- ✓ Division lemma
- ✓ Euclid's method
- ✓ Prime factorization
- ✓ Rational/Irrational
- ✓ Decimal forms
- ✓ HCF-LCM relation
- ✓ Applications

### Scoring Tips:

1. Show all steps
2. Check remainder condition
3. Draw factor trees
4. Mark recurring decimals properly
5. Verify HCF-LCM

### HIGH FOCUS AREAS

1. Division Lemma (4 marks)
2. HCF Method (4 marks)
3. Prime Factorization (4 marks)
4. Decimal Forms (4 marks)
5. Number Types (3 marks)

## PROBLEM SOLVING TIPS

Mnemonic: "SOLVE KARO"

- S Product of numbers
- O Relate to HCF
- L Or use LCM
- V Divide product
- E Use formula

- K Product of numbers
- A Relate to HCF
- R Or use LCM
- O Divide product

GOOD LUCK!

