1. Basic Mathematics

**1.1H.C.F(Highest Common Factor) and L.C.M(Lowest Common Multiple)**

**1.1.A Concept of Power**

-Definition: When a number is multiplied by itself more than one.

Diagram

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-Index notation: expressions for 65 is ‘5th power of 6’

It means 6 multiplied itself by 5 times.

Hence ‘Base’ multiplied itself by number of exponent or index.

**1.1B. Prime Numbers and Composite Numbers**

-Prime numbers: Natural number has only 1 and itself

Ex.) 2, 3, 5, 7, 11 ..

Can 1 be prime number(?) nope!

-Composite Numbers: Natural number has factor other than 1 and itself

Ex.) 4, 6, 8, 9, 10, 12 ..

Prime factors

-Definition: Factors that are prime number.

Diagram, text

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-Divide the dividend until the quotient is prime number

**1.1C . H.C.F(Highest common factor)**

Objective: Use short division and prime factorization to get H.C.F faster

\*Short Division(H,C,F)

Timeline

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Steps

1. Find common factor(which is prime) for two quotients
2. Divide two quotients with that common factor until two quotients do not have common factor other than 1.
3. Finally, multiply all the divisors

\*Prime Factorization

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Steps

1. Use factorization tree method
2. Express them as a product of prime factors
3. Multiply all common prime factors

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Steps(Using index notation) -> which means having exponent

1. Use factorization tree method
2. Make product of prime factors with index notation
3. Find common factors and choose the one with lower index(exponent)

**1.1.D L.C.M(Least Common Multiple)**

Objective: Use short division or Prime Factorization to

\*Short division for two numbers

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Steps

1. Divide two quotients(numbers) by common prime factor until two quotients(numbers) have no common factor other than 1.
2. Multiply all divisors and the quotients in last row

\*Short division for three numbers

Table

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Steps

1. Find common factors for three quotients and divide
2. If any two of the quotient has common factor, only divide that two number with common factor until any two of the quotient do not have common factor
3. Multiply all divisors and quotient at the last row.

\*Find L.C.M by prime factorization

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Steps->(Important to know how to organize index notation as well)

1. Make product of prime factor using index notation for each number
2. For each prime factor, take one with larger index(exponent)

**1.2More about arithmetic operation**

**1.2.A Mixed Arithmetic Operation**

Arithemtic operations: +, -, X,

Type of brackets: round bracket(), square bracket[], curly bracket{}

\*Order of arithmetic operation

1.) Calculate the mathematical expressions in round bracket () .

2.) Calculate the mathematical expression in square bracket[].

3.) Calculate the mathematical expression in curly bracket{} .

Order of arithmetic expression within bracket or outside brackets

1. X,
2. +, -

1.2.BMixed Arithmetic Operations of Fractions and Decimals

-Need to know conversion