IMPORTANT QA FORMULA SHEET (ARITHMETIC)

1. PROFIT & LOSS

S.No.	Formulas
1.	Profit = Selling Price (SP) - Cost Price (CP)
2	Loss = Cost Price (CP) - Selling Price (SP)
3	Profit Percentage = (Profit / Cost Price) * 100
4	Loss Percentage = (Loss / Cost Price) * 100
5	Selling Price = (100 + Profit Percentage) / 100 * Cost Price
6	Selling Price = (100 - Loss Percentage) / 100 * Cost Price
7	Cost Price = 100 / (100 + Profit Percentage) * Selling Price
8	Cost Price = 100 / (100 - Loss Percentage) * Selling Price
9	Discount = Marked Price - Selling Price
10	Discount Percentage = (Discount / Marked Price) * 100

2. PERCENTAGES

S.No.	Formulas
1	Percentage= (Part / Whole) * 100
2	Percentage Increase= [(New Value - Old Value) / Old Value] * 100
3	Percentage Decrease= [(Old Value - New Value) / Old Value] * 100
4	Profit Percentage = (Profit / Cost Price) * 100
5	Loss Percentage = (Loss / Cost Price) * 100
6	Markup Percentage = (Markup / Cost Price) * 100
7	Discount Percentage = (Discount / Marked Price) * 100

3. SIMPLE & COMPOUND INTEREST

S.No.	Formulas
1	Simple Interest = (P * R * T) / 100
2	Amount in Simple Interest = P + SI

3	Compound Interest (Annual Compounding) = P [(1 + R/100)^T - 1]
4	Amount in Compound Interest (Annual Compounding) = P (1 + R/100)^T
5	Compound Interest (Periodic Compounding) = P [(1 + R/n)^(nt) - 1]
6	Amount in Compound Interest (Periodic Compounding)= P (1 + R/n)^(nt)

4. TIME, SPEED & DISTANCE

Category	Formulas
Speed	Speed = Distance / Time
Distance	Distance = Speed * Time
Time	Time = Distance / Speed
Average Speed (constant distance)	Average Speed = 2xy / (x + y)
Work	Work Done = Time Taken * Rate of Work
Work	Rate of Work = 1 / Time Taken
Work	Time Taken = 1 / Rate of Work

5. TIME & WORK

S.No.	Formulas
1.	Work Done = Time Taken × Rate of Work
2.	Rate of Work = 1 / Time Taken
3.	Time Taken = 1 / Rate of Work
4.	Total Work = Number of Days × Efficiency
5.	Efficiency = Work / Time
6.	M1D1H1W2 = M1D2H2W1

6. MIXTURES & ALLIGATIONS

The basic formula which is used to find the ratio in which the ingredients are mixed is

$$\frac{\text{Quantity of Cheaper}}{\text{Qunatity of Dearer}} = \frac{\text{CP of Dearer - Mean Price}}{\text{Mean Price - CP of Cheaper}}$$

It is also called the **rule of alligation** and can also be represented as