Note: This is a concise, exam-focused collection of key formulas as per the latest Class 10 CBSE syllabus.

1. Real Numbers

- Euclid's Division Lemma: For integers a,b ($b \neq 0$), $\exists$ q,r such that $a = bq + r$, $0 \leq r < b$.
- HCF×LCM = Product of two numbers (for positive integers).
- Fundamental Theorem of Arithmetic: Every integer >1 can be expressed uniquely (apart from order) as a product of primes.
- Terminating decimal $\Leftrightarrow$ Denominator (in lowest form) has only 2's and/or 3's? No — only 2's and/or 5's.
- Non-terminating repeating decimal $\Leftrightarrow$ Denominator (in lowest form) has primes other than 2 or 5.

2. Polynomials

- Polynomial division: Dividend = Divisor×Quotient + Remainder.
- Zeroes and coefficients:
- Quadratic ax^2+bx+c: Sum of zeroes $\alpha+\beta = -b/a$, Product $\alpha\beta = c/a$.
- Cubic ax^3+bx^2+cx+d: $\alpha+\beta+\gamma = -b/a$, $\alpha\beta+\beta\gamma+\gamma\alpha = c/a$, $\alpha\beta\gamma = -d/a$.
- Remainder Theorem: Remainder when f(x) divided by $(x-a)$ is f(a).
- Factor Theorem: If $f(a)=0$, then $(x-a)$ is a factor of f(x).

3. Pair of Linear Equations in Two Variables

- General form: $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$.
- Consistency:
- $a_1/a_2 \neq b_1/b_2 \Rightarrow$ unique solution.
- $a_1/a_2 = b_1/b_2 \neq c_1/c_2 \Rightarrow$ no solution.
- $a_1/a_2 = b_1/b_2 = c_1/c_2 \Rightarrow$ infinitely many solutions.
- Solutions (Cramer's Rule):
- $x = (b_1c_2 - b_2c_1)/(a_1b_2 - a_2b_1)$
- $y = (c_1a_2 - c_2a_1)/(a_1b_2 - a_2b_1)$
- Elimination/Substitution/Cross-multiplication methods as standard techniques.

4. Quadratic Equations

- Standard form: $ax^2+bx+c=0$, $a\neq0$.
- Discriminant: $D = b^2 - 4ac$.
- Nature of roots:
- $D>0$: real, distinct.