The intent of this survey is to approximately determine the extent of the knowledge of the people in black. Mark the items in these lists to which you have essentially no exposure.

Combinatorics

1. Binomial coefficients (Number of ways to choose k elements from an n element set).

2. Induction.

3. Invariants/monovariants.

4. Expected values.

5. Inclusion-exclusion.

6. Probabilistic method.

7. Double counting.

8. Extremal principle.

9. Burnside's lemma.

Analysis/Algebra

1. Fundamental theorem of algebra.

2. Fields, rings, groups.

3. Convexity.

4. Cauchy Schwarz, AM-GM, Jensen, etc.

5. Supremums, infimums.

6. Calculus (in $\mathbb{R}$).

Geometry

1. Similar triangles.

2. Coordinate bashing.

3. Complex bashing.

4. Cyclic quads.

5. Cross ratios.

6. Homothety.

7. Spiral similarity.

8. Inversion.

9. Radical axes.

10. Poles, polars.

Number theory

1. Working modulo n.

2. Fermat's little theorem.

3. Orders/primitive roots.

4. Euclidean algorithm.

5. Bezout's lemma.

6. Fundamental theorem of arithmetic in $\mathbb{Z}$.

7. Fundamental theorem of arithmetic in extensions of $\mathbb{Z}$.

8. Roots of unity.

    (a) Cyclotomic polynomials.
    (b) Automorphisms of $\mathbb{Q}(\zeta_n)$.

9. Hensel Lifting.

10. $\mathbb{Q}_p$.

11. Vieta jumping.

Miscellaneous

1. Infinite descent.