Operations with 0 and 1:

1. $X + 0 = X$	1D. $X·1 = X$
2. $X + 1 = 1$	2D. $X·0 = 0$

Idempotent Laws:

3. $X + X = X$	3D. $X·X = X$

Involution Law:

4. $(X´)´ = X$

Laws of Complementarity:

5. $X + X´ = 1$	5D. $X·X´ = 0$

Commutative Laws"

6. $X + Y = Y + X$	6D. $XY = YX$

Associative Laws:

7. $(X + Y) + Z = X + (Y + Z) = X + Y + Z$	7D. $(XY)Z = X(YZ) = XYZ$

Distributive Laws:

8. $X(Y + Z) = XY + XZ$	8D. $X + YZ = (X + Y)(X + Z)$

Simplification Theorems:

9. $XY + XY´ = X$	9D. $(X + Y)(X + Y´) = X$
10. $X + XY = X$	10D. $X(X + Y) = X$
11. $X(X´ + Y) = XY$	11D. $X + X´Y = X + Y$

Try these first.

DeMorgan's Laws:

12. $(X + Y + Z + . . .)´ = X´Y´Z´. . .$	12D. $(XYZ. . .)´ = X´ + Y´ + Z´ + . . .$

Duality:

13. $(X + Y + Z)^D = XYZ. . .$	13D. $(XYZ. . .)^D = X + Y + X + . . .$

Almost never used.

Multiplying Out & Factoring Theorem

14. $(X + Y)(X´ + Z) = XZ + X´Y$	14D. $XY + X´Z = (X + Z)(X´ + Y)$

Consensus Theorem:

15. $XY + YZ + X´Z = XY + YZ$	15D. $(X + Y)(Y + Z)(X´ + Z) = (X + Y)(X´ + Z)$

If Simplification Theorems don't work, try this.

XOR & XNAND

XOR: $X @ Y = X´Y + XY´$	XNAND: $(X @ Y)´ X = Y = X´Y´ + XY$