

722, 652-654, 1038, 1537
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TABLE I

THE NUMBER OF INVERTIBLE BOOLEAN FUNCTIONS UNDER THE EQUIVALENCE OF VARIOUS GROUP OPERATIONS ON THE INPUT AND OUTPUT VARIABLES

| Variables | n | 1 | 2 | 3 | 4 | 5 |
|---|---|---|----|--------|--------------------|---|
| Number of Invertible Boolean Functions | 2^{2^n} A722 | 2 | 24 | 40,320 | 20,922,789,888,000 | 263,130,836,933,693,530,167,218,012,160,000,000 |
| Complementation Equivalence | $\frac{2^{n!} + (2^n - 1)2^{2^{n-1}}2^{2^{n-1}}}{2^{2^n}}$ A652 | 1 | 6 | 924 | 81,738,720,000 | 256,963,707,943,061,374,889,193,111,552,000 |
| Lower Bound on Complementation Equivalence | $\frac{2^{n!}}{2^{2^n}}$ A46856 | 1 | 2 | 630 | 81,729,648,000 | 256,963,707,943,060,088,053,923,840,000,000 |
| Permutation Equivalence | $2^{n!}$ A653 | 2 | 7 | 1,172 | 36,325,278,240 | 18,272,974,787,063,551,687,986,348,306,336 |
| Lower Bound on Permutation Equivalence | $\frac{2^{n!}}{(n!)^2}$ A46857 | 2 | 6 | 1,120 | 36,324,288,000 | 18,272,974,787,062,050,706,056,806,400,000 |
| Complementation and Permutation Equivalence | $2^{n!}$ A654 | 1 | 2 | 52 | 142,090,700 | 17,844,701,940,501,123,640,681,816,160 |
| Lower Bounds on Complementation and Permutation Equivalence | $\frac{2^{n!} + (2^n - 1)2^{2^{n-1}}2^{2^{n-1}}}{2^{2^n(n!)^2}}$ A259326 | 1 | 2 | 26 | 141,907,500 | 17,844,701,940,495,245,941,483,438,080 |
| | $\frac{2^{n!}}{2^{2^n(n!)^2}}$ A259327 | 1 | 1 | 18 | 141,891,750 | 17,844,701,940,490,283,892,633,600,000 |
| Linear Transformation Equivalence | $2^{n!}$ A1038 | 2 | 2 | 10 | 52,246 | 2,631,645,209,645,100,680,142 |
| Lower Bound on Linear Transformation Equivalence | $\frac{2^{n!}}{2^{n(n-1) \prod_{i=1}^n (2^i - 1)^2}}$ A259328 | 2 | 1 | 2 | 51,480 | 2,631,645,209,144,487,019,355 |
| Lower Bound on Linear Transformation Equivalence | $\frac{2^{n!}}{2^{2n^2}}$ A259329 | 1 | 1 | 1 | 4,872 | 233,707,130,922,139,265,799 |
| Affine Transformation Equivalence | $2^{n!}$ A1537 | 1 | 1 | 4 | 302 | 2,569,966,041,123,963,092 |
| Lower Bound on Affine Transformation Equivalence | $\frac{2^{n!}}{2^{n(n+1) \prod_{i=1}^n (2^i - 1)^2}}$ A259330 | 1 | 1 | 1 | 202 | 2,569,966,024,555,163,105 |
| Lower Bound on Affine Transformation Equivalence | $\frac{2^{n!}}{2^{2n2^{2n^2}}}$ A259331 | 1 | 1 | 1 | 20 | 228,229,620,041,151,627 |

C.S. LORENZ, Invertible Boolean functions, IEEE Trans. Electronic Computers, EC-13 (1964), 529-541.