

Table 24.8

Primitive Roots, Factorization of $p-1$

g , G denote the least positive and least negative (respectively) primitive roots of p . ϵ denotes whether 10, -10 both or neither are primitive roots.

| p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ |
|-----|-----------------------------------|-----|------|------------|-----|------------------------------------|-----|------|------------|------|------------------------------------|-----|------|------------|
| 3 | 2 | 2 | 1 | -10 | 359 | 2·179 | 7 | 2 | -10 | 821 | 2 ⁵ ·5·41 | 2 | 2 | ±10 |
| 5 | 2 ² | 2 | 2 | ----- | 367 | 2·3·61 | 6 | 2 | 10 | 823 | 2·3·137 | 3 | 2 | 10 |
| 7 | 2·3 | 3 | 2 | 10 | 373 | 2 ² ·3·31 | 2 | 2 | ----- | 827 | 2·7·59 | 2 | 3 | -10 |
| 11 | 2·5 | 2 | 3 | ----- | 379 | 2·3 ² ·7 | 2 | 4 | 10 | 829 | 2 ² ·3 ² ·23 | 2 | 2 | ----- |
| 13 | 2 ² ·3 | 2 | 2 | ----- | 383 | 2·191 | 5 | 2 | 10 | 839 | 2·419 | 11 | 2 | -10 |
| 17 | 2 ⁴ | 3 | 3 | ±10 | 389 | 2 ² ·97 | 2 | 2 | ±10 | 853 | 2 ² ·3·71 | 2 | 2 | ----- |
| 19 | 2·3 ² | 2 | 4 | 10 | 397 | 2 ² ·3 ² ·11 | 5 | 5 | ----- | 857 | 2 ³ ·107 | 3 | 5 | ±10 |
| 23 | 2·11 | 5 | 2 | 10 | 401 | 2 ⁴ ·5 ² | 3 | 3 | ----- | 859 | 2·3·11·13 | 2 | 4 | ----- |
| 29 | 2 ² ·7 | 2 | 2 | ±10 | 409 | 2 ² ·3·17 | 21 | 21 | ----- | 863 | 2·431 | 5 | 2 | 10 |
| 31 | 2·3·5 | 3 | 7 | -10 | 419 | 2·11·19 | 2 | 3 | 10 | 877 | 2 ² ·3·73 | 2 | 2 | ----- |
| 37 | 2 ² ·3 ² | 2 | 2 | ----- | 421 | 2 ² ·3·5·7 | 2 | 2 | ----- | 881 | 2 ⁴ ·5·11 | 3 | 3 | ----- |
| 41 | 2 ⁵ ·5 | 6 | 6 | ----- | 431 | 2·5·43 | 7 | 5 | -10 | 883 | 2·3 ² ·7 ² | 2 | 4 | -10 |
| 43 | 2·3·7 | 3 | 9 | -10 | 433 | 2 ⁴ ·3 ³ | 5 | 5 | ±10 | 887 | 2·443 | 5 | 2 | 10 |
| 47 | 2·23 | 5 | 2 | 10 | 439 | 2·3·73 | 15 | 5 | -10 | 907 | 2·3·151 | 2 | 4 | ----- |
| 53 | 2 ² ·13 | 2 | 2 | ----- | 443 | 2·13·17 | 2 | 3 | -10 | 911 | 2·5·7·13 | 17 | 3 | -10 |
| 59 | 2·29 | 2 | 3 | 10 | 449 | 2 ⁶ ·7 | 3 | 3 | ----- | 919 | 2·3 ² ·17 | 7 | 5 | -10 |
| 61 | 2 ² ·3·5 | 2 | 2 | ±10 | 457 | 2 ² ·3·19 | 13 | 13 | ----- | 929 | 2 ⁵ ·29 | 3 | 3 | ----- |
| 67 | 2·3·11 | 2 | 4 | -10 | 461 | 2 ² ·5·23 | 2 | 2 | ±10 | 937 | 2 ² ·3 ² ·13 | 5 | 5 | ±10 |
| 71 | 2·5·7 | 7 | 2 | -10 | 463 | 2·3·7·11 | 3 | 2 | ----- | 941 | 2 ² ·5·47 | 2 | 2 | ±10 |
| 73 | 2 ³ ·3 ² | 5 | 5 | ----- | 467 | 2·233 | 2 | 3 | -10 | 947 | 2·11·43 | 2 | 3 | -10 |
| 79 | 2·3·13 | 3 | 2 | ----- | 479 | 2·239 | 13 | 2 | -10 | 953 | 2 ² ·7·17 | 3 | 3 | ±10 |
| 83 | 2·41 | 2 | 3 | -10 | 487 | 2·3 ⁵ | 3 | 2 | 10 | 967 | 2·3·7·23 | 5 | 2 | ----- |
| 89 | 2 ³ ·11 | 3 | 3 | ----- | 491 | 2·5·7 ² | 2 | 4 | 10 | 971 | 2·5·97 | 6 | 3 | 10 |
| 97 | 2 ⁵ ·3 | 5 | 5 | ±10 | 499 | 2·3·83 | 7 | 5 | 10 | 977 | 2 ⁴ ·61 | 3 | 3 | ±10 |
| 101 | 2 ² ·5 ² | 2 | 2 | ----- | 503 | 2·251 | 5 | 2 | 10 | 983 | 2·491 | 5 | 2 | 10 |
| 103 | 2·3·17 | 5 | 2 | ----- | 509 | 2 ² ·127 | 2 | 2 | ±10 | 991 | 2·3 ² ·5·11 | 6 | 2 | -10 |
| 107 | 2·53 | 2 | 3 | -10 | 521 | 2 ² ·5·13 | 3 | 3 | ----- | 997 | 2 ² ·3·83 | 7 | 7 | ----- |
| 109 | 2 ² ·3 ³ | 6 | 6 | ±10 | 523 | 2·3 ² ·29 | 2 | 4 | -10 | 1009 | 2 ⁴ ·3 ² ·7 | 11 | 11 | ----- |
| 113 | 2 ⁴ ·7 | 3 | 3 | ±10 | 541 | 2 ² ·3 ² ·5 | 2 | 2 | ±10 | 1013 | 2 ² ·11·23 | 3 | 3 | ----- |
| 127 | 2·3 ² ·7 | 3 | 9 | ----- | 547 | 2·3·7·13 | 2 | 4 | ----- | 1019 | 2·509 | 2 | 3 | 10 |
| 131 | 2·5·13 | 2 | 3 | 10 | 557 | 2 ² ·139 | 2 | 2 | ----- | 1021 | 2 ² ·3·5·17 | 10 | 10 | ±10 |
| 137 | 2 ³ ·17 | 3 | 3 | ----- | 563 | 2·281 | 2 | 3 | -10 | 1031 | 2·5·103 | 14 | 2 | ----- |
| 139 | 2·3·23 | 2 | 4 | ----- | 569 | 2 ² ·71 | 3 | 3 | ----- | 1033 | 2 ² ·3·43 | 5 | 5 | ±10 |
| 149 | 2 ² ·37 | 2 | 2 | ±10 | 571 | 2·3·5·19 | 3 | 5 | 10 | 1039 | 2·3·173 | 3 | 2 | -10 |
| 151 | 2·3·5 ² | 6 | 5 | -10 | 577 | 2 ² ·3 ² | 5 | 5 | ±10 | 1049 | 2 ² ·131 | 3 | 3 | ----- |
| 157 | 2 ² ·3·13 | 5 | 5 | ----- | 587 | 2·293 | 2 | 3 | -10 | 1051 | 2·3·5 ² ·7 | 7 | 5 | 10 |
| 163 | 2·3 ⁴ | 2 | 4 | -10 | 593 | 2 ⁴ ·37 | 3 | 3 | ±10 | 1061 | 2 ² ·5·53 | 2 | 2 | ----- |
| 167 | 2·83 | 5 | 2 | 10 | 599 | 2·13·23 | 7 | 2 | -10 | 1063 | 2·3 ² ·59 | 3 | 2 | 10 |
| 173 | 2 ² ·43 | 2 | 2 | ----- | 601 | 2 ² ·3·5 ² | 7 | 7 | ----- | 1069 | 2 ² ·3·89 | 6 | 6 | ±10 |
| 179 | 2·89 | 2 | 3 | 10 | 607 | 2·3·101 | 3 | 2 | ----- | 1087 | 2·3·181 | 3 | 2 | 10 |
| 181 | 2 ² ·3 ² ·5 | 2 | 2 | ±10 | 613 | 2 ² ·3 ² ·17 | 2 | 2 | ----- | 1091 | 2·5·109 | 2 | 4 | 10 |
| 191 | 2·5·19 | 19 | 2 | -10 | 617 | 2 ² ·7·11 | 3 | 3 | ----- | 1093 | 2 ² ·3·7·13 | 5 | 5 | ----- |
| 193 | 2 ⁵ ·3 | 5 | 5 | ±10 | 619 | 2·3·103 | 2 | 4 | 10 | 1097 | 2 ² ·137 | 3 | 3 | ±10 |
| 197 | 2 ² ·7 ² | 2 | 2 | ----- | 631 | 2·3 ² ·5·7 | 3 | 9 | -10 | 1103 | 2·19·29 | 5 | 3 | 10 |
| 199 | 2·3 ² ·11 | 3 | 2 | -10 | 641 | 2 ⁷ ·5 | 3 | 3 | ----- | 1109 | 2 ² ·277 | 2 | 2 | ±10 |
| 211 | 2·3·5·7 | 2 | 4 | ----- | 643 | 2·3·107 | 11 | 7 | ----- | 1117 | 2 ² ·3 ² ·31 | 2 | 2 | ----- |
| 223 | 2·3·37 | 3 | 9 | 10 | 647 | 2·17·19 | 5 | 2 | 10 | 1123 | 2·3·11·17 | 2 | 4 | -10 |
| 227 | 2·113 | 2 | 3 | -10 | 653 | 2 ² ·163 | 2 | 2 | ----- | 1129 | 2 ² ·3·47 | 11 | 11 | ----- |
| 229 | 2 ² ·3·19 | 6 | 6 | ±10 | 659 | 2·7·47 | 2 | 3 | 10 | 1151 | 2·5 ² ·23 | 17 | 2 | -10 |
| 233 | 2 ² ·29 | 3 | 3 | ±10 | 661 | 2 ² ·3·5·11 | 2 | 2 | ----- | 1153 | 2 ² ·3 ² | 5 | 5 | ±10 |
| 239 | 2·7·17 | 7 | 2 | ----- | 673 | 2 ² ·3·7 | 5 | 5 | ----- | 1163 | 2·7·83 | 5 | 3 | -10 |
| 241 | 2 ⁴ ·3·5 | 7 | 7 | ----- | 677 | 2 ² ·13 ² | 2 | 2 | ----- | 1171 | 2·3 ² ·5·13 | 2 | 4 | 10 |
| 251 | 2·5 ³ | 6 | 3 | ----- | 683 | 2·11·31 | 5 | 10 | -10 | 1181 | 2 ² ·5·59 | 7 | 7 | ±10 |
| 257 | 2 ⁸ | 3 | 3 | ±10 | 691 | 2·3·5·23 | 3 | 6 | ----- | 1187 | 2·593 | 2 | 3 | -10 |
| 263 | 2·131 | 5 | 2 | 10 | 701 | 2 ² ·5 ² ·7 | 2 | 2 | ±10 | 1193 | 2 ² ·149 | 3 | 3 | ±10 |
| 269 | 2 ² ·67 | 2 | 2 | ±10 | 709 | 2 ² ·3·59 | 2 | 2 | ±10 | 1201 | 2 ² ·3·5 ² | 11 | 11 | ----- |
| 271 | 2·3 ² ·5 | 6 | 2 | ----- | 719 | 2·359 | 11 | 2 | -10 | 1213 | 2 ² ·3·101 | 2 | 2 | ----- |
| 277 | 2 ² ·3·23 | 5 | 5 | ----- | 727 | 2·3·11 ² | 5 | 7 | 10 | 1217 | 2 ² ·19 | 3 | 3 | ±10 |
| 281 | 2 ² ·5·7 | 3 | 3 | ----- | 733 | 2 ² ·3·61 | 6 | 6 | ----- | 1223 | 2·13·47 | 5 | 2 | 10 |
| 283 | 2·3·47 | 3 | 6 | -10 | 739 | 2·3 ² ·41 | 3 | 6 | ----- | 1229 | 2 ² ·307 | 2 | 2 | ±10 |
| 293 | 2 ² ·73 | 2 | 2 | ----- | 743 | 2·7·53 | 5 | 2 | 10 | 1231 | 2·3·5·41 | 3 | 2 | ----- |
| 307 | 2·3 ² ·17 | 5 | 7 | -10 | 751 | 2·3·5 ² | 3 | 2 | ----- | 1237 | 2 ² ·3·103 | 2 | 2 | ----- |
| 311 | 2·5·31 | 17 | 2 | -10 | 757 | 2 ² ·3 ² ·7 | 2 | 2 | ----- | 1249 | 2 ² ·3·13 | 7 | 7 | ----- |
| 313 | 2 ² ·3·13 | 10 | 10 | ±10 | 761 | 2 ² ·5·19 | 6 | 6 | ----- | 1259 | 2·17·37 | 2 | 3 | 10 |
| 317 | 2 ² ·79 | 2 | 2 | ----- | 769 | 2 ² ·3 | 11 | 11 | ----- | 1277 | 2 ² ·11·29 | 2 | 2 | ----- |
| 331 | 2·3·5·11 | 3 | 5 | ----- | 773 | 2 ² ·193 | 2 | 2 | ----- | 1279 | 2·3 ² ·71 | 3 | 2 | -10 |
| 337 | 2 ⁴ ·3·7 | 10 | 10 | ±10 | 787 | 2·3·131 | 2 | 4 | -10 | 1283 | 2·641 | 2 | 3 | -10 |
| 347 | 2·173 | 2 | 3 | -10 | 797 | 2 ² ·199 | 2 | 2 | ----- | 1289 | 2 ² ·7·23 | 6 | 6 | ----- |
| 349 | 2 ² ·3·29 | 2 | 2 | ----- | 809 | 2 ² ·101 | 3 | 3 | ----- | 1291 | 2·3·5·43 | 2 | 4 | 10 |
| 353 | 2 ⁵ ·11 | 3 | 3 | ----- | 811 | 2·3 ⁴ ·5 | 3 | 5 | 10 | 1297 | 2 ² ·3 ⁴ | 10 | 10 | ±10 |

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g, G denote the least positive and least negative (respectively) primitive roots of p . ϵ denotes whether 10, -10 both or neither are primitive roots.

| p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ |
|------|--------------------------------|-----|------|------------|------|--------------------------------------|-----|------|------------|------|--------------------------------------|-----|------|------------|
| 1301 | $2^2 \cdot 5^2 \cdot 13$ | 2 | 2 | ± 10 | 1831 | $2 \cdot 3 \cdot 5 \cdot 61$ | 3 | 9 | ----- | 2377 | $2^3 \cdot 3^3 \cdot 11$ | 5 | 5 | ----- |
| 1303 | $2 \cdot 3 \cdot 7 \cdot 31$ | 6 | 2 | 10 | 1847 | $2 \cdot 13 \cdot 71$ | 5 | 2 | 10 | 2381 | $2^2 \cdot 5 \cdot 7 \cdot 17$ | 3 | 3 | ----- |
| 1307 | $2 \cdot 653$ | 2 | 3 | -10 | 1861 | $2^3 \cdot 3 \cdot 5 \cdot 31$ | 2 | 2 | ± 10 | 2383 | $2 \cdot 3 \cdot 397$ | 5 | 13 | 10 |
| 1319 | $2 \cdot 659$ | 13 | 2 | -10 | 1867 | $2 \cdot 3 \cdot 311$ | 2 | 4 | -10 | 2389 | $2^2 \cdot 3 \cdot 199$ | 2 | 2 | ± 10 |
| 1321 | $2^3 \cdot 3 \cdot 5 \cdot 11$ | 13 | 13 | ----- | 1871 | $2 \cdot 5 \cdot 11 \cdot 17$ | 14 | 2 | -10 | 2393 | $2^3 \cdot 13 \cdot 23$ | 3 | 3 | ----- |
| 1327 | $2 \cdot 3 \cdot 13 \cdot 17$ | 3 | 9 | 10 | 1873 | $2^4 \cdot 3^2 \cdot 13$ | 10 | 10 | ± 10 | 2399 | $2 \cdot 11 \cdot 109$ | 11 | 2 | -10 |
| 1361 | $2^4 \cdot 5 \cdot 17$ | 3 | 3 | ----- | 1877 | $2^2 \cdot 7 \cdot 67$ | 2 | 2 | ----- | 2411 | $2 \cdot 5 \cdot 241$ | 6 | 3 | 10 |
| 1367 | $2 \cdot 683$ | 5 | 2 | 10 | 1879 | $2 \cdot 3 \cdot 313$ | 6 | 2 | ----- | 2417 | $2^4 \cdot 151$ | 3 | 3 | ± 10 |
| 1373 | $2^2 \cdot 7^3$ | 2 | 2 | ----- | 1889 | $2^5 \cdot 59$ | 3 | 3 | ----- | 2423 | $2 \cdot 7 \cdot 173$ | 5 | 2 | 10 |
| 1381 | $2^3 \cdot 3 \cdot 5 \cdot 23$ | 2 | 2 | ± 10 | 1901 | $2^2 \cdot 5^2 \cdot 19$ | 2 | 2 | ----- | 2437 | $2^2 \cdot 3 \cdot 7 \cdot 29$ | 2 | 2 | ----- |
| 1399 | $2 \cdot 3 \cdot 233$ | 13 | 5 | -10 | 1907 | $2 \cdot 953$ | 2 | 3 | -10 | 2441 | $2^3 \cdot 5 \cdot 61$ | 6 | 6 | ----- |
| 1409 | $2^7 \cdot 11$ | 3 | 3 | ----- | 1913 | $2^3 \cdot 239$ | 3 | 3 | ± 10 | 2447 | $2 \cdot 1223$ | 5 | 2 | 10 |
| 1423 | $2 \cdot 3^2 \cdot 79$ | 3 | 9 | ----- | 1931 | $2 \cdot 5 \cdot 193$ | 2 | 3 | ----- | 2459 | $2 \cdot 1229$ | 2 | 3 | 10 |
| 1427 | $2 \cdot 23 \cdot 31$ | 2 | 3 | -10 | 1933 | $2^2 \cdot 3 \cdot 7 \cdot 23$ | 5 | 5 | ----- | 2467 | $2 \cdot 3^2 \cdot 137$ | 2 | 4 | ----- |
| 1429 | $2^2 \cdot 3 \cdot 7 \cdot 17$ | 6 | 6 | ± 10 | 1949 | $2^2 \cdot 487$ | 2 | 2 | ± 10 | 2473 | $2^3 \cdot 3 \cdot 103$ | 5 | 5 | ± 10 |
| 1433 | $2^3 \cdot 179$ | 3 | 3 | ± 10 | 1951 | $2 \cdot 3 \cdot 5^2 \cdot 13$ | 3 | 2 | ----- | 2477 | $2^2 \cdot 619$ | 2 | 2 | ----- |
| 1439 | $2 \cdot 719$ | 7 | 2 | -10 | 1973 | $2^2 \cdot 17 \cdot 29$ | 2 | 2 | ----- | 2503 | $2 \cdot 3^2 \cdot 139$ | 3 | 2 | ----- |
| 1447 | $2 \cdot 3 \cdot 241$ | 3 | 2 | 10 | 1979 | $2 \cdot 23 \cdot 43$ | 2 | 3 | 10 | 2521 | $2^3 \cdot 3^2 \cdot 5 \cdot 7$ | 17 | 17 | ----- |
| 1451 | $2 \cdot 5^2 \cdot 29$ | 2 | 3 | ----- | 1987 | $2 \cdot 3 \cdot 331$ | 2 | 4 | ----- | 2531 | $2 \cdot 5 \cdot 11 \cdot 23$ | 2 | 3 | ----- |
| 1453 | $2^2 \cdot 3 \cdot 11^2$ | 2 | 2 | ----- | 1993 | $2^3 \cdot 3 \cdot 83$ | 5 | 5 | ----- | 2539 | $2 \cdot 3^3 \cdot 47$ | 2 | 4 | 10 |
| 1459 | $2 \cdot 3^5$ | 3 | 6 | ----- | 1997 | $2^2 \cdot 499$ | 2 | 2 | ----- | 2543 | $2 \cdot 31 \cdot 41$ | 5 | 2 | 10 |
| 1471 | $2 \cdot 3 \cdot 5 \cdot 7^2$ | 6 | 5 | -10 | 1999 | $2 \cdot 3^3 \cdot 37$ | 3 | 5 | -10 | 2549 | $2^2 \cdot 7^2 \cdot 13$ | 2 | 2 | ± 10 |
| 1481 | $2^3 \cdot 5 \cdot 37$ | 3 | 3 | ----- | 2003 | $2 \cdot 7 \cdot 11 \cdot 13$ | 5 | 3 | -10 | 2551 | $2 \cdot 3 \cdot 5^2 \cdot 17$ | 6 | 2 | ----- |
| 1483 | $2 \cdot 3 \cdot 13 \cdot 19$ | 2 | 4 | ----- | 2011 | $2 \cdot 3 \cdot 5 \cdot 67$ | 3 | 5 | ----- | 2557 | $2^2 \cdot 3^2 \cdot 71$ | 2 | 2 | ----- |
| 1487 | $2 \cdot 743$ | 5 | 2 | 10 | 2017 | $2^3 \cdot 3^2 \cdot 7$ | 5 | 5 | ± 10 | 2579 | $2 \cdot 1289$ | 2 | 3 | 10 |
| 1489 | $2^4 \cdot 3 \cdot 31$ | 14 | 14 | ----- | 2027 | $2 \cdot 1013$ | 2 | 3 | -10 | 2591 | $2 \cdot 5 \cdot 7 \cdot 37$ | 7 | 2 | ----- |
| 1493 | $2^2 \cdot 373$ | 2 | 2 | ----- | 2029 | $2^2 \cdot 3 \cdot 13^2$ | 2 | 2 | ± 10 | 2593 | $2^5 \cdot 3^4$ | 7 | 7 | ± 10 |
| 1499 | $2 \cdot 7 \cdot 107$ | 2 | 3 | ----- | 2039 | $2 \cdot 1019$ | 7 | 2 | -10 | 2609 | $2^4 \cdot 163$ | 3 | 3 | ----- |
| 1511 | $2 \cdot 5 \cdot 151$ | 11 | 2 | -10 | 2053 | $2^2 \cdot 3^3 \cdot 19$ | 2 | 2 | ----- | 2617 | $2^3 \cdot 3 \cdot 109$ | 5 | 5 | ± 10 |
| 1523 | $2 \cdot 761$ | 2 | 3 | -10 | 2063 | $2 \cdot 1031$ | 5 | 2 | 10 | 2621 | $2^2 \cdot 5 \cdot 131$ | 2 | 2 | ± 10 |
| 1531 | $2 \cdot 3^2 \cdot 5 \cdot 17$ | 2 | 4 | 10 | 2069 | $2^2 \cdot 11 \cdot 47$ | 2 | 2 | ± 10 | 2633 | $2^3 \cdot 7 \cdot 47$ | 3 | 3 | ± 10 |
| 1543 | $2 \cdot 3 \cdot 257$ | 5 | 2 | 10 | 2081 | $2^5 \cdot 5 \cdot 13$ | 3 | 3 | ----- | 2647 | $2 \cdot 3^3 \cdot 7^2$ | 3 | 2 | ----- |
| 1549 | $2^2 \cdot 3^2 \cdot 43$ | 2 | 2 | ± 10 | 2083 | $2 \cdot 3 \cdot 347$ | 2 | 4 | -10 | 2657 | $2^5 \cdot 83$ | 3 | 3 | ± 10 |
| 1553 | $2^4 \cdot 97$ | 3 | 3 | ± 10 | 2087 | $2 \cdot 7 \cdot 149$ | 5 | 2 | ----- | 2659 | $2 \cdot 3 \cdot 443$ | 2 | 4 | ----- |
| 1559 | $2 \cdot 19 \cdot 41$ | 19 | 2 | -10 | 2089 | $2^3 \cdot 3^2 \cdot 29$ | 7 | 7 | ----- | 2663 | $2 \cdot 11^3$ | 5 | 2 | 10 |
| 1567 | $2 \cdot 3^3 \cdot 29$ | 3 | 2 | 10 | 2099 | $2 \cdot 1049$ | 2 | 3 | 10 | 2671 | $2 \cdot 3 \cdot 5 \cdot 89$ | 7 | 5 | -10 |
| 1571 | $2 \cdot 5 \cdot 157$ | 2 | 3 | 10 | 2111 | $2 \cdot 5 \cdot 211$ | 7 | 2 | -10 | 2677 | $2^2 \cdot 3 \cdot 223$ | 2 | 2 | ----- |
| 1579 | $2 \cdot 3 \cdot 263$ | 3 | 5 | 10 | 2113 | $2^3 \cdot 3 \cdot 11$ | 5 | 5 | ± 10 | 2683 | $2 \cdot 3^2 \cdot 149$ | 2 | 4 | ----- |
| 1583 | $2 \cdot 7 \cdot 113$ | 5 | 2 | 10 | 2129 | $2^4 \cdot 7 \cdot 19$ | 3 | 3 | ----- | 2687 | $2 \cdot 17 \cdot 79$ | 5 | 3 | 10 |
| 1597 | $2^2 \cdot 3 \cdot 7 \cdot 19$ | 11 | 11 | ----- | 2131 | $2 \cdot 3 \cdot 5 \cdot 71$ | 2 | 4 | ----- | 2689 | $2^2 \cdot 3 \cdot 7$ | 19 | 19 | ----- |
| 1601 | $2^6 \cdot 5^2$ | 3 | 3 | ----- | 2137 | $2^3 \cdot 3 \cdot 89$ | 10 | 10 | ± 10 | 2693 | $2^2 \cdot 673$ | 2 | 2 | ----- |
| 1607 | $2 \cdot 11 \cdot 73$ | 5 | 2 | 10 | 2141 | $2^2 \cdot 5 \cdot 107$ | 2 | 2 | ± 10 | 2699 | $2 \cdot 19 \cdot 71$ | 2 | 3 | 10 |
| 1609 | $2^3 \cdot 67$ | 7 | 7 | ----- | 2143 | $2 \cdot 3^2 \cdot 7 \cdot 17$ | 3 | 9 | 10 | 2707 | $2 \cdot 3 \cdot 11 \cdot 41$ | 2 | 4 | -10 |
| 1613 | $2^2 \cdot 13 \cdot 31$ | 3 | 3 | ----- | 2153 | $2^2 \cdot 269$ | 3 | 3 | ± 10 | 2711 | $2 \cdot 5 \cdot 271$ | 7 | 2 | -10 |
| 1619 | $2 \cdot 809$ | 2 | 3 | 10 | 2161 | $2^4 \cdot 3^2 \cdot 5$ | 23 | 23 | ----- | 2713 | $2^3 \cdot 3 \cdot 113$ | 5 | 5 | ± 10 |
| 1621 | $2^3 \cdot 3^4 \cdot 5$ | 2 | 2 | ± 10 | 2179 | $2 \cdot 3^2 \cdot 11^2$ | 7 | 5 | 10 | 2719 | $2 \cdot 3^2 \cdot 151$ | 3 | 2 | -10 |
| 1627 | $2 \cdot 3 \cdot 271$ | 3 | 6 | ----- | 2203 | $2 \cdot 3 \cdot 367$ | 5 | 7 | -10 | 2729 | $2^3 \cdot 11 \cdot 31$ | 3 | 3 | ----- |
| 1637 | $2^2 \cdot 409$ | 2 | 2 | ----- | 2207 | $2 \cdot 1103$ | 5 | 2 | 10 | 2731 | $2 \cdot 3 \cdot 5 \cdot 7 \cdot 13$ | 3 | 5 | 10 |
| 1657 | $2^3 \cdot 3^2 \cdot 23$ | 11 | 11 | ----- | 2213 | $2^2 \cdot 7 \cdot 79$ | 2 | 2 | ----- | 2741 | $2^2 \cdot 5 \cdot 137$ | 2 | 2 | ± 10 |
| 1663 | $2 \cdot 3 \cdot 277$ | 3 | 2 | 10 | 2221 | $2^2 \cdot 3 \cdot 5 \cdot 37$ | 2 | 2 | ± 10 | 2749 | $2^2 \cdot 3 \cdot 229$ | 6 | 6 | ----- |
| 1667 | $2 \cdot 7^2 \cdot 17$ | 2 | 3 | -10 | 2237 | $2^2 \cdot 13 \cdot 43$ | 2 | 2 | ----- | 2753 | $2^6 \cdot 43$ | 3 | 3 | ± 10 |
| 1669 | $2^2 \cdot 3 \cdot 139$ | 2 | 2 | ----- | 2239 | $2 \cdot 3 \cdot 373$ | 3 | 2 | -10 | 2767 | $2 \cdot 3 \cdot 461$ | 3 | 9 | 10 |
| 1693 | $2^2 \cdot 3^2 \cdot 47$ | 2 | 2 | ----- | 2243 | $2 \cdot 19 \cdot 59$ | 2 | 3 | -10 | 2777 | $2^3 \cdot 347$ | 3 | 3 | ± 10 |
| 1697 | $2^3 \cdot 53$ | 3 | 3 | ± 10 | 2251 | $2 \cdot 3^2 \cdot 5^2$ | 7 | 5 | 10 | 2789 | $2^2 \cdot 17 \cdot 41$ | 2 | 2 | ± 10 |
| 1699 | $2 \cdot 3 \cdot 283$ | 3 | 6 | ----- | 2267 | $2 \cdot 11 \cdot 103$ | 2 | 3 | -10 | 2791 | $2 \cdot 3^2 \cdot 5 \cdot 31$ | 6 | 7 | ----- |
| 1709 | $2^2 \cdot 7 \cdot 61$ | 3 | 3 | ± 10 | 2269 | $2^2 \cdot 3^4 \cdot 7$ | 2 | 2 | ± 10 | 2797 | $2^2 \cdot 3 \cdot 233$ | 2 | 2 | ----- |
| 1721 | $2^3 \cdot 5 \cdot 43$ | 3 | 3 | ----- | 2273 | $2^5 \cdot 71$ | 3 | 3 | ± 10 | 2801 | $2^4 \cdot 5^2 \cdot 7$ | 3 | 3 | ----- |
| 1723 | $2 \cdot 3 \cdot 7 \cdot 41$ | 3 | 6 | ----- | 2281 | $2^3 \cdot 3 \cdot 5 \cdot 19$ | 7 | 7 | ----- | 2803 | $2 \cdot 3 \cdot 467$ | 2 | 4 | -10 |
| 1733 | $2^2 \cdot 433$ | 2 | 2 | ----- | 2287 | $2 \cdot 3^2 \cdot 127$ | 19 | 7 | ----- | 2819 | $2 \cdot 1409$ | 2 | 3 | 10 |
| 1741 | $2^3 \cdot 3 \cdot 5 \cdot 29$ | 2 | 2 | ± 10 | 2293 | $2^2 \cdot 3 \cdot 191$ | 2 | 2 | ----- | 2833 | $2^2 \cdot 3 \cdot 59$ | 5 | 5 | ± 10 |
| 1747 | $2 \cdot 3^2 \cdot 97$ | 2 | 4 | ----- | 2297 | $2^3 \cdot 7 \cdot 41$ | 5 | 5 | ± 10 | 2837 | $2^2 \cdot 709$ | 2 | 2 | ----- |
| 1753 | $2^3 \cdot 3 \cdot 73$ | 7 | 7 | ----- | 2309 | $2^2 \cdot 577$ | 2 | 2 | ± 10 | 2843 | $2 \cdot 7^2 \cdot 29$ | 2 | 4 | -10 |
| 1759 | $2 \cdot 3 \cdot 293$ | 6 | 2 | -10 | 2311 | $2 \cdot 3 \cdot 5 \cdot 7 \cdot 11$ | 3 | 2 | ----- | 2851 | $2 \cdot 3 \cdot 5^2 \cdot 19$ | 2 | 4 | 10 |
| 1777 | $2^4 \cdot 3 \cdot 37$ | 5 | 5 | ± 10 | 2333 | $2^3 \cdot 11 \cdot 53$ | 2 | 2 | ----- | 2857 | $2^3 \cdot 3 \cdot 7 \cdot 17$ | 11 | 11 | ----- |
| 1783 | $2 \cdot 3^4 \cdot 11$ | 10 | 2 | 10 | 2339 | $2 \cdot 7 \cdot 167$ | 2 | 3 | 10 | 2861 | $2^2 \cdot 5 \cdot 11 \cdot 13$ | 2 | 2 | ± 10 |
| 1787 | $2 \cdot 19 \cdot 47$ | 2 | 3 | -10 | 2341 | $2^2 \cdot 3^2 \cdot 5 \cdot 13$ | 7 | 7 | ± 10 | 2879 | $2 \cdot 1439$ | 7 | 2 | -10 |
| 1789 | $2^2 \cdot 3 \cdot 149$ | 6 | 6 | ± 10 | 2347 | $2 \cdot 3 \cdot 17 \cdot 23$ | 3 | 6 | -10 | 2887 | $2 \cdot 3 \cdot 13 \cdot 37$ | 5 | 2 | 10 |
| 1801 | $2^3 \cdot 3^2 \cdot 5^2$ | 11 | 11 | ----- | 2351 | $2 \cdot 5^2 \cdot 47$ | 13 | 3 | -10 | 2897 | $2^4 \cdot 181$ | 3 | 3 | ± 10 |
| 1811 | $2 \cdot 5 \cdot 181$ | 6 | 3 | 10 | 2357 | $2^2 \cdot 19 \cdot 31$ | 2 | 2 | ----- | 2903 | $2 \cdot 1451$ | 5 | 2 | 10 |
| 1823 | $2 \cdot 911$ | 5 | 2 | 10 | 2371 | $2 \cdot 3 \cdot 5 \cdot 79$ | 2 | 4 | 10 | 2909 | $2^2 \cdot 727$ | 2 | 2 | ± 10 |

Table 24.8

Primitive Roots, Factorization of $p-1$

g, G denote the least positive and least negative (respectively) primitive roots of p . ϵ denotes whether 10, -10 both or neither are primitive roots.

| p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ |
|------|----------------------------------|-----|------|------------|------|--------------------------------------|-----|------|------------|------|--|-----|------|------------|
| 2917 | $2^3 \cdot 3^5$ | 5 | 5 | ----- | 3527 | $2 \cdot 41 \cdot 43$ | 5 | 2 | 10 | 4079 | $2 \cdot 2039$ | 11 | 2 | -10 |
| 2927 | $2 \cdot 7 \cdot 11 \cdot 19$ | 5 | 2 | 10 | 3529 | $2^3 \cdot 3^2 \cdot 7^2$ | 17 | 17 | ----- | 4091 | $2 \cdot 5 \cdot 409$ | 2 | 3 | 10 |
| 2939 | $2 \cdot 13 \cdot 113$ | 2 | 3 | 10 | 3533 | $2^2 \cdot 883$ | 2 | 2 | ----- | 4093 | $2^3 \cdot 3 \cdot 11 \cdot 31$ | 2 | 2 | ----- |
| 2953 | $2^3 \cdot 3^2 \cdot 41$ | 13 | 13 | ----- | 3539 | $2 \cdot 29 \cdot 61$ | 2 | 3 | 10 | 4099 | $2 \cdot 3 \cdot 683$ | 2 | 4 | 10 |
| 2957 | $2^2 \cdot 739$ | 2 | 2 | ----- | 3541 | $2^3 \cdot 3 \cdot 5 \cdot 59$ | 7 | 7 | ----- | 4111 | $2 \cdot 3 \cdot 5 \cdot 137$ | 12 | 2 | -10 |
| 2963 | $2 \cdot 1481$ | 2 | 3 | -10 | 3547 | $2 \cdot 3^2 \cdot 197$ | 2 | 4 | -10 | 4127 | $2 \cdot 2063$ | 5 | 2 | 10 |
| 2969 | $2^3 \cdot 7 \cdot 53$ | 3 | 3 | ----- | 3557 | $2^2 \cdot 7 \cdot 127$ | 2 | 2 | ----- | 4129 | $2^3 \cdot 3 \cdot 43$ | 13 | 13 | ----- |
| 2971 | $2 \cdot 3^2 \cdot 5 \cdot 11$ | 10 | 5 | 10 | 3559 | $2 \cdot 3 \cdot 593$ | 3 | 2 | -10 | 4133 | $2^2 \cdot 1033$ | 2 | 2 | ----- |
| 2999 | $2 \cdot 1499$ | 17 | 2 | -10 | 3571 | $2 \cdot 3 \cdot 5 \cdot 7 \cdot 17$ | 2 | 4 | 10 | 4139 | $2 \cdot 2069$ | 2 | 3 | 10 |
| 3001 | $2^3 \cdot 3 \cdot 5^2$ | 14 | 14 | ----- | 3581 | $2^2 \cdot 5 \cdot 179$ | 2 | 2 | ± 10 | 4153 | $2^3 \cdot 3 \cdot 173$ | 5 | 5 | ± 10 |
| 3011 | $2 \cdot 5 \cdot 7 \cdot 43$ | 2 | 3 | 10 | 3583 | $2 \cdot 3^2 \cdot 199$ | 3 | 2 | ----- | 4157 | $2^2 \cdot 1039$ | 2 | 2 | ----- |
| 3019 | $2 \cdot 3 \cdot 503$ | 2 | 4 | 10 | 3593 | $2^3 \cdot 449$ | 3 | 3 | ± 10 | 4159 | $2 \cdot 3^2 \cdot 7 \cdot 11$ | 3 | 2 | ----- |
| 3023 | $2 \cdot 1511$ | 5 | 2 | 10 | 3607 | $2 \cdot 3 \cdot 601$ | 5 | 11 | 10 | 4177 | $2 \cdot 3^2 \cdot 29$ | 5 | 5 | ± 10 |
| 3037 | $2^2 \cdot 3 \cdot 11 \cdot 23$ | 2 | 2 | ----- | 3613 | $2^3 \cdot 7 \cdot 43$ | 2 | 2 | ----- | 4201 | $2^3 \cdot 3 \cdot 5^2 \cdot 7$ | 11 | 11 | ----- |
| 3041 | $2^3 \cdot 5 \cdot 19$ | 3 | 3 | ----- | 3617 | $2^2 \cdot 113$ | 3 | 3 | ± 10 | 4211 | $2 \cdot 5 \cdot 421$ | 6 | 3 | 10 |
| 3049 | $2^3 \cdot 3 \cdot 127$ | 11 | 11 | ----- | 3623 | $2 \cdot 1811$ | 5 | 2 | 10 | 4217 | $2^3 \cdot 17 \cdot 31$ | 3 | 3 | ± 10 |
| 3061 | $2^2 \cdot 3^2 \cdot 5 \cdot 17$ | 6 | 6 | ----- | 3631 | $2 \cdot 3 \cdot 5 \cdot 11^2$ | 15 | 10 | -10 | 4219 | $2 \cdot 3 \cdot 19 \cdot 37$ | 2 | 4 | 10 |
| 3067 | $2 \cdot 3 \cdot 7 \cdot 73$ | 2 | 4 | -10 | 3637 | $2^2 \cdot 3^2 \cdot 101$ | 2 | 2 | ----- | 4229 | $2^2 \cdot 7 \cdot 151$ | 2 | 2 | ± 10 |
| 3079 | $2 \cdot 3^2 \cdot 19$ | 6 | 2 | -10 | 3643 | $2 \cdot 3 \cdot 607$ | 2 | 4 | -10 | 4231 | $2 \cdot 3^2 \cdot 5 \cdot 47$ | 3 | 2 | -10 |
| 3083 | $2 \cdot 23 \cdot 67$ | 2 | 3 | -10 | 3659 | $2 \cdot 31 \cdot 59$ | 2 | 3 | 10 | 4241 | $2^4 \cdot 5 \cdot 53$ | 3 | 3 | ----- |
| 3089 | $2^4 \cdot 193$ | 3 | 3 | ----- | 3671 | $2 \cdot 5 \cdot 367$ | 13 | 2 | ----- | 4243 | $2 \cdot 3 \cdot 7 \cdot 101$ | 2 | 4 | -10 |
| 3109 | $2^2 \cdot 3 \cdot 7 \cdot 37$ | 6 | 6 | ----- | 3673 | $2^3 \cdot 3^2 \cdot 17$ | 5 | 5 | ± 10 | 4253 | $2^2 \cdot 1063$ | 2 | 2 | ----- |
| 3119 | $2 \cdot 1559$ | 7 | 2 | -10 | 3677 | $2^2 \cdot 919$ | 2 | 2 | ----- | 4259 | $2 \cdot 2129$ | 2 | 3 | 10 |
| 3121 | $2^4 \cdot 3 \cdot 5 \cdot 13$ | 7 | 7 | ----- | 3691 | $2 \cdot 3^2 \cdot 5 \cdot 41$ | 2 | 4 | ----- | 4261 | $2^3 \cdot 3 \cdot 5 \cdot 71$ | 2 | 2 | ± 10 |
| 3137 | $2^3 \cdot 7^2$ | 3 | 3 | ± 10 | 3697 | $2 \cdot 43^2$ | 5 | 5 | ----- | 4271 | $2 \cdot 5 \cdot 7 \cdot 61$ | 7 | 3 | -10 |
| 3163 | $2 \cdot 3 \cdot 17 \cdot 31$ | 3 | 6 | -10 | 3701 | $2^2 \cdot 5^2 \cdot 37$ | 2 | 2 | ± 10 | 4273 | $2^4 \cdot 3 \cdot 89$ | 5 | 5 | ----- |
| 3167 | $2 \cdot 1583$ | 5 | 2 | 10 | 3709 | $2^2 \cdot 3^2 \cdot 103$ | 2 | 2 | ± 10 | 4283 | $2 \cdot 2141$ | 2 | 3 | -10 |
| 3169 | $2^3 \cdot 3^2 \cdot 11$ | 7 | 7 | ----- | 3719 | $2 \cdot 11 \cdot 13^2$ | 7 | 2 | -10 | 4289 | $2^2 \cdot 67$ | 3 | 3 | ----- |
| 3181 | $2^2 \cdot 3 \cdot 5 \cdot 53$ | 7 | 7 | ----- | 3727 | $2 \cdot 3^2 \cdot 23$ | 3 | 2 | 10 | 4297 | $2^3 \cdot 3 \cdot 179$ | 5 | 5 | ----- |
| 3187 | $2 \cdot 3^2 \cdot 59$ | 2 | 4 | ----- | 3733 | $2^2 \cdot 3 \cdot 311$ | 2 | 2 | ----- | 4327 | $2 \cdot 3 \cdot 7 \cdot 103$ | 3 | 2 | 10 |
| 3191 | $2 \cdot 5 \cdot 11 \cdot 29$ | 11 | 5 | ----- | 3739 | $2 \cdot 3 \cdot 7 \cdot 89$ | 7 | 5 | ----- | 4337 | $2^4 \cdot 271$ | 3 | 3 | ± 10 |
| 3203 | $2 \cdot 1601$ | 2 | 3 | -10 | 3761 | $2^2 \cdot 5 \cdot 47$ | 3 | 3 | ----- | 4339 | $2 \cdot 3^2 \cdot 241$ | 10 | 5 | 10 |
| 3209 | $2^3 \cdot 401$ | 3 | 3 | ----- | 3767 | $2 \cdot 7 \cdot 269$ | 5 | 2 | 10 | 4349 | $2^2 \cdot 1087$ | 2 | 2 | ± 10 |
| 3217 | $2^4 \cdot 3 \cdot 67$ | 5 | 5 | ----- | 3769 | $2^3 \cdot 3 \cdot 157$ | 7 | 7 | ----- | 4357 | $2^2 \cdot 3^2 \cdot 11^2$ | 2 | 2 | ----- |
| 3221 | $2^2 \cdot 5 \cdot 7 \cdot 23$ | 10 | 10 | ± 10 | 3779 | $2 \cdot 1889$ | 2 | 3 | 10 | 4363 | $2 \cdot 3 \cdot 727$ | 2 | 4 | -10 |
| 3229 | $2^2 \cdot 3 \cdot 269$ | 6 | 6 | ----- | 3793 | $2^4 \cdot 3 \cdot 79$ | 5 | 5 | ----- | 4373 | $2^2 \cdot 1093$ | 2 | 2 | ----- |
| 3251 | $2 \cdot 5^2 \cdot 13$ | 6 | 3 | 10 | 3797 | $2^2 \cdot 13 \cdot 73$ | 2 | 2 | ----- | 4391 | $2 \cdot 5 \cdot 439$ | 14 | 2 | -10 |
| 3253 | $2^2 \cdot 3 \cdot 271$ | 2 | 2 | ----- | 3803 | $2 \cdot 1901$ | 2 | 3 | -10 | 4397 | $2^2 \cdot 7 \cdot 157$ | 2 | 2 | ----- |
| 3257 | $2^2 \cdot 11 \cdot 37$ | 3 | 3 | ± 10 | 3821 | $2^2 \cdot 5 \cdot 191$ | 3 | 3 | ± 10 | 4409 | $2^3 \cdot 19 \cdot 29$ | 3 | 3 | ----- |
| 3259 | $2 \cdot 3^2 \cdot 181$ | 3 | 5 | 10 | 3823 | $2 \cdot 3 \cdot 7^2 \cdot 13$ | 3 | 9 | ----- | 4421 | $2^2 \cdot 5 \cdot 13 \cdot 17$ | 3 | 3 | ± 10 |
| 3271 | $2 \cdot 3 \cdot 5 \cdot 109$ | 3 | 5 | -10 | 3833 | $2^2 \cdot 479$ | 3 | 3 | ± 10 | 4423 | $2 \cdot 3 \cdot 11 \cdot 67$ | 3 | 7 | 10 |
| 3299 | $2 \cdot 17 \cdot 97$ | 2 | 3 | 10 | 3847 | $2 \cdot 3 \cdot 641$ | 5 | 2 | 10 | 4441 | $2^3 \cdot 3 \cdot 5 \cdot 37$ | 21 | 21 | ----- |
| 3301 | $2^2 \cdot 3 \cdot 5^2 \cdot 11$ | 6 | 6 | ± 10 | 3851 | $2 \cdot 5^2 \cdot 7 \cdot 11$ | 2 | 4 | ----- | 4447 | $2 \cdot 3^2 \cdot 13 \cdot 19$ | 3 | 2 | 10 |
| 3307 | $2 \cdot 3 \cdot 19 \cdot 29$ | 2 | 4 | -10 | 3853 | $2^2 \cdot 3^2 \cdot 107$ | 2 | 2 | ----- | 4451 | $2 \cdot 5^2 \cdot 89$ | 2 | 3 | 10 |
| 3313 | $2^4 \cdot 3^2 \cdot 23$ | 10 | 10 | ± 10 | 3863 | $2 \cdot 1931$ | 5 | 2 | 10 | 4457 | $2^2 \cdot 557$ | 3 | 3 | ± 10 |
| 3319 | $2 \cdot 3 \cdot 7 \cdot 79$ | 6 | 2 | ----- | 3877 | $2^2 \cdot 3 \cdot 17 \cdot 19$ | 2 | 2 | ----- | 4463 | $2 \cdot 23 \cdot 97$ | 5 | 2 | 10 |
| 3323 | $2 \cdot 11 \cdot 151$ | 2 | 3 | -10 | 3881 | $2^2 \cdot 5 \cdot 97$ | 13 | 13 | ----- | 4481 | $2^2 \cdot 5 \cdot 7$ | 3 | 3 | ----- |
| 3329 | $2^3 \cdot 13$ | 3 | 3 | ----- | 3889 | $2^4 \cdot 3^2$ | 11 | 11 | ----- | 4483 | $2 \cdot 3^2 \cdot 83$ | 2 | 4 | ----- |
| 3331 | $2 \cdot 3^2 \cdot 5 \cdot 37$ | 3 | 5 | 10 | 3907 | $2 \cdot 3^2 \cdot 7 \cdot 31$ | 2 | 4 | -10 | 4493 | $2^2 \cdot 1123$ | 2 | 2 | ----- |
| 3343 | $2 \cdot 3 \cdot 557$ | 5 | 11 | 10 | 3911 | $2 \cdot 5 \cdot 17 \cdot 23$ | 13 | 2 | -10 | 4507 | $2 \cdot 3 \cdot 751$ | 2 | 4 | ----- |
| 3347 | $2 \cdot 7 \cdot 239$ | 2 | 3 | -10 | 3917 | $2^2 \cdot 11 \cdot 89$ | 2 | 2 | ----- | 4513 | $2^3 \cdot 3 \cdot 47$ | 7 | 7 | ----- |
| 3359 | $2 \cdot 23 \cdot 73$ | 11 | 2 | -10 | 3919 | $2 \cdot 3 \cdot 653$ | 3 | 2 | ----- | 4517 | $2^2 \cdot 1129$ | 2 | 2 | ----- |
| 3361 | $2^2 \cdot 3 \cdot 5 \cdot 7$ | 22 | 22 | ----- | 3923 | $2 \cdot 37 \cdot 53$ | 2 | 3 | -10 | 4519 | $2 \cdot 3^2 \cdot 251$ | 3 | 9 | ----- |
| 3371 | $2 \cdot 5 \cdot 337$ | 2 | 3 | 10 | 3929 | $2^2 \cdot 491$ | 3 | 3 | ----- | 4523 | $2 \cdot 7 \cdot 17 \cdot 19$ | 5 | 3 | -10 |
| 3373 | $2^2 \cdot 3 \cdot 281$ | 5 | 5 | ----- | 3931 | $2 \cdot 3 \cdot 5 \cdot 131$ | 2 | 4 | ----- | 4547 | $2 \cdot 2273$ | 2 | 3 | -10 |
| 3389 | $2^2 \cdot 7 \cdot 11^2$ | 3 | 3 | ± 10 | 3943 | $2 \cdot 3^2 \cdot 73$ | 3 | 9 | 10 | 4549 | $2^2 \cdot 3 \cdot 379$ | 6 | 6 | ----- |
| 3391 | $2 \cdot 3 \cdot 5 \cdot 113$ | 3 | 5 | -10 | 3947 | $2 \cdot 1973$ | 2 | 3 | -10 | 4561 | $2^2 \cdot 3 \cdot 5 \cdot 19$ | 11 | 11 | ----- |
| 3407 | $2 \cdot 13 \cdot 131$ | 5 | 2 | 10 | 3967 | $2 \cdot 3 \cdot 661$ | 6 | 2 | 10 | 4567 | $2 \cdot 3 \cdot 761$ | 3 | 7 | 10 |
| 3413 | $2^2 \cdot 853$ | 2 | 2 | ----- | 3989 | $2^2 \cdot 997$ | 2 | 2 | ± 10 | 4583 | $2 \cdot 29 \cdot 79$ | 5 | 2 | 10 |
| 3433 | $2^3 \cdot 3 \cdot 11 \cdot 13$ | 5 | 5 | ± 10 | 4001 | $2^2 \cdot 5^2$ | 3 | 3 | ----- | 4591 | $2 \cdot 3^2 \cdot 5 \cdot 17$ | 11 | 2 | -10 |
| 3449 | $2^2 \cdot 431$ | 3 | 3 | ----- | 4003 | $2 \cdot 3 \cdot 23 \cdot 29$ | 2 | 4 | ----- | 4597 | $2^2 \cdot 3 \cdot 383$ | 5 | 5 | ----- |
| 3457 | $2^2 \cdot 3^2$ | 7 | 7 | ----- | 4007 | $2 \cdot 2003$ | 5 | 2 | 10 | 4603 | $2 \cdot 3 \cdot 13 \cdot 59$ | 2 | 4 | -10 |
| 3461 | $2^2 \cdot 5 \cdot 173$ | 2 | 2 | ± 10 | 4013 | $2^2 \cdot 17 \cdot 59$ | 2 | 2 | ----- | 4621 | $2^2 \cdot 3 \cdot 5 \cdot 7 \cdot 11$ | 2 | 2 | ----- |
| 3463 | $2 \cdot 3 \cdot 577$ | 3 | 9 | 10 | 4019 | $2 \cdot 7^2 \cdot 41$ | 2 | 4 | 10 | 4637 | $2^2 \cdot 19 \cdot 61$ | 2 | 2 | ----- |
| 3467 | $2 \cdot 1733$ | 2 | 3 | -10 | 4021 | $2^2 \cdot 3 \cdot 5 \cdot 67$ | 2 | 2 | ----- | 4639 | $2 \cdot 3 \cdot 773$ | 3 | 2 | -10 |
| 3469 | $2^2 \cdot 3 \cdot 17^2$ | 2 | 2 | ± 10 | 4027 | $2 \cdot 3 \cdot 11 \cdot 61$ | 3 | 6 | -10 | 4643 | $2 \cdot 11 \cdot 211$ | 5 | 3 | -10 |
| 3491 | $2 \cdot 5 \cdot 349$ | 2 | 3 | ----- | 4049 | $2^2 \cdot 11 \cdot 23$ | 3 | 3 | ----- | 4649 | $2^2 \cdot 7 \cdot 83$ | 3 | 3 | ----- |
| 3499 | $2 \cdot 3 \cdot 11 \cdot 53$ | 2 | 4 | ----- | 4051 | $2 \cdot 3 \cdot 5^2$ | 10 | 5 | 10 | 4651 | $2 \cdot 3 \cdot 5^2 \cdot 31$ | 3 | 5 | 10 |
| 3511 | $2 \cdot 3^2 \cdot 5 \cdot 13$ | 7 | 2 | -10 | 4057 | $2^2 \cdot 3 \cdot 13^2$ | 5 | 5 | ± 10 | 4657 | $2^4 \cdot 3 \cdot 97$ | 15 | 15 | ----- |
| 3517 | $2^2 \cdot 3 \cdot 293$ | 2 | 2 | ----- | 4073 | $2^2 \cdot 509$ | 3 | 3 | ± 10 | 4663 | $2 \cdot 3^2 \cdot 7 \cdot 37$ | 3 | 9 | ----- |

Primitive Roots, Factorization of $p-1$

Table 24.8

g , G denote the least positive and least negative (respectively) primitive roots of p . ϵ denotes whether 10, -10 both or neither are primitive roots.

| p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ |
|------|--------------------------------------|-----|------|------------|------|----------------------------------|-----|------|------------|------|---------------------------------------|-----|------|------------|
| 4673 | $2^8 \cdot 73$ | 3 | 3 | ± 10 | 5297 | $2^4 \cdot 331$ | 3 | 3 | ± 10 | 5867 | $2 \cdot 7 \cdot 419$ | 5 | 3 | -10 |
| 4679 | $2 \cdot 2339$ | 11 | 2 | -10 | 5303 | $2 \cdot 11 \cdot 241$ | 5 | 2 | -10 | 5869 | $2^2 \cdot 3^2 \cdot 163$ | 2 | 2 | ± 10 |
| 4691 | $2 \cdot 5 \cdot 7 \cdot 67$ | 2 | 3 | 10 | 5309 | $2^2 \cdot 1327$ | 2 | 2 | ± 10 | 5879 | $2 \cdot 2939$ | 11 | 2 | -10 |
| 4703 | $2 \cdot 2351$ | 5 | 2 | 10 | 5323 | $2 \cdot 3 \cdot 887$ | 5 | 10 | -10 | 5881 | $2^3 \cdot 3 \cdot 5 \cdot 7^2$ | 31 | 31 | ----- |
| 4721 | $2^4 \cdot 5 \cdot 59$ | 6 | 6 | ----- | 5333 | $2^2 \cdot 31 \cdot 43$ | 2 | 2 | ----- | 5897 | $2^3 \cdot 11 \cdot 67$ | 3 | 3 | ± 10 |
| 4723 | $2 \cdot 3 \cdot 787$ | 2 | 4 | -10 | 5347 | $2 \cdot 3^5 \cdot 11$ | 3 | 6 | -10 | 5903 | $2 \cdot 3 \cdot 227$ | 5 | 2 | 10 |
| 4729 | $2^3 \cdot 3 \cdot 197$ | 17 | 17 | ----- | 5351 | $2 \cdot 5^2 \cdot 107$ | 11 | 2 | -10 | 5923 | $2 \cdot 3^2 \cdot 7 \cdot 47$ | 2 | 4 | -10 |
| 4733 | $2^2 \cdot 7 \cdot 13^2$ | 5 | 5 | ----- | 5381 | $2^2 \cdot 5 \cdot 269$ | 3 | 3 | ± 10 | 5927 | $2 \cdot 2963$ | 5 | 2 | 10 |
| 4751 | $2 \cdot 5^2 \cdot 19$ | 19 | 3 | -10 | 5387 | $2 \cdot 2693$ | 2 | 3 | -10 | 5939 | $2 \cdot 2969$ | 2 | 3 | 10 |
| 4759 | $2 \cdot 3 \cdot 13 \cdot 61$ | 3 | 5 | -10 | 5393 | $2^4 \cdot 337$ | 3 | 3 | ± 10 | 5953 | $2^3 \cdot 3 \cdot 31$ | 7 | 7 | ----- |
| 4783 | $2 \cdot 3 \cdot 797$ | 6 | 2 | 10 | 5399 | $2 \cdot 2699$ | 7 | 2 | -10 | 5981 | $2^2 \cdot 5 \cdot 13 \cdot 23$ | 3 | 3 | ± 10 |
| 4787 | $2 \cdot 2393$ | 2 | 3 | -10 | 5407 | $2 \cdot 3 \cdot 17 \cdot 53$ | 3 | 2 | ----- | 5987 | $2 \cdot 41 \cdot 73$ | 2 | 3 | -10 |
| 4789 | $2^2 \cdot 3^2 \cdot 7 \cdot 19$ | 2 | 2 | ----- | 5413 | $2^2 \cdot 3 \cdot 11 \cdot 41$ | 5 | 5 | ----- | 6007 | $2 \cdot 3 \cdot 7 \cdot 11 \cdot 13$ | 3 | 9 | ----- |
| 4793 | $2^3 \cdot 599$ | 3 | 3 | ± 10 | 5417 | $2^3 \cdot 677$ | 3 | 3 | ± 10 | 6011 | $2 \cdot 5 \cdot 601$ | 2 | 4 | 10 |
| 4799 | $2 \cdot 2399$ | 7 | 2 | -10 | 5419 | $2 \cdot 3^2 \cdot 7 \cdot 43$ | 3 | 5 | 10 | 6029 | $2^2 \cdot 11 \cdot 137$ | 2 | 2 | ± 10 |
| 4801 | $2^6 \cdot 3 \cdot 5^2$ | 7 | 7 | ----- | 5431 | $2 \cdot 3 \cdot 5 \cdot 181$ | 3 | 2 | -10 | 6037 | $2^2 \cdot 3 \cdot 503$ | 5 | 5 | ----- |
| 4813 | $2^2 \cdot 3 \cdot 401$ | 2 | 2 | ----- | 5437 | $2^2 \cdot 3^2 \cdot 151$ | 5 | 5 | ----- | 6043 | $2 \cdot 3 \cdot 19 \cdot 53$ | 5 | 6 | -10 |
| 4817 | $2^4 \cdot 7 \cdot 43$ | 3 | 3 | ± 10 | 5441 | $2^6 \cdot 5 \cdot 17$ | 3 | 3 | ----- | 6047 | $2 \cdot 3023$ | 5 | 2 | 10 |
| 4831 | $2 \cdot 3 \cdot 5 \cdot 7 \cdot 23$ | 3 | 2 | ----- | 5443 | $2 \cdot 3 \cdot 907$ | 2 | 4 | ----- | 6053 | $2^2 \cdot 17 \cdot 89$ | 2 | 2 | ----- |
| 4861 | $2^2 \cdot 3^5 \cdot 5$ | 11 | 11 | ----- | 5449 | $2^3 \cdot 3 \cdot 227$ | 7 | 7 | ----- | 6067 | $2 \cdot 3^2 \cdot 337$ | 2 | 4 | -10 |
| 4871 | $2 \cdot 5 \cdot 487$ | 11 | 3 | -10 | 5471 | $2 \cdot 5 \cdot 547$ | 7 | 3 | ----- | 6073 | $2^3 \cdot 3 \cdot 11 \cdot 23$ | 10 | 10 | ± 10 |
| 4877 | $2^2 \cdot 23 \cdot 53$ | 2 | 2 | ----- | 5477 | $2^2 \cdot 37^2$ | 2 | 2 | ----- | 6079 | $2 \cdot 3 \cdot 1013$ | 17 | 7 | ----- |
| 4889 | $2^3 \cdot 13 \cdot 47$ | 3 | 3 | ----- | 5479 | $2 \cdot 3 \cdot 11 \cdot 83$ | 3 | 2 | -10 | 6089 | $2^2 \cdot 761$ | 3 | 3 | ----- |
| 4903 | $2 \cdot 3 \cdot 19 \cdot 43$ | 3 | 2 | ----- | 5483 | $2 \cdot 2741$ | 2 | 3 | -10 | 6091 | $2 \cdot 3 \cdot 5 \cdot 7 \cdot 29$ | 7 | 11 | ----- |
| 4909 | $2^2 \cdot 3 \cdot 409$ | 6 | 6 | ----- | 5501 | $2^2 \cdot 5^3 \cdot 11$ | 2 | 2 | ± 10 | 6101 | $2^2 \cdot 5^2 \cdot 61$ | 2 | 2 | ----- |
| 4919 | $2 \cdot 2459$ | 13 | 2 | -10 | 5503 | $2 \cdot 3 \cdot 7 \cdot 131$ | 3 | 9 | 10 | 6113 | $2^2 \cdot 191$ | 3 | 3 | ± 10 |
| 4931 | $2 \cdot 5 \cdot 17 \cdot 29$ | 6 | 3 | 10 | 5507 | $2 \cdot 2753$ | 2 | 3 | -10 | 6121 | $2^3 \cdot 3^2 \cdot 5 \cdot 17$ | 7 | 7 | ----- |
| 4933 | $2^2 \cdot 3^2 \cdot 137$ | 2 | 2 | ----- | 5519 | $2 \cdot 31 \cdot 89$ | 13 | 2 | -10 | 6131 | $2^2 \cdot 5 \cdot 613$ | 2 | 3 | 10 |
| 4937 | $2^3 \cdot 617$ | 3 | 3 | ± 10 | 5521 | $2^4 \cdot 3 \cdot 5 \cdot 23$ | 11 | 11 | ----- | 6133 | $2^2 \cdot 3 \cdot 7 \cdot 73$ | 5 | 5 | ----- |
| 4943 | $2 \cdot 7 \cdot 353$ | 7 | 2 | 10 | 5527 | $2 \cdot 3^2 \cdot 307$ | 5 | 2 | 10 | 6143 | $2 \cdot 37 \cdot 83$ | 5 | 2 | 10 |
| 4951 | $2 \cdot 3^2 \cdot 5^2 \cdot 11$ | 6 | 2 | -10 | 5531 | $2 \cdot 5 \cdot 7 \cdot 79$ | 10 | 5 | 10 | 6151 | $2 \cdot 3 \cdot 5^2 \cdot 41$ | 3 | 7 | ----- |
| 4957 | $2^2 \cdot 3 \cdot 7 \cdot 59$ | 2 | 2 | ----- | 5557 | $2^2 \cdot 3 \cdot 463$ | 2 | 2 | ----- | 6163 | $2 \cdot 3 \cdot 13 \cdot 79$ | 3 | 6 | ----- |
| 4967 | $2 \cdot 13 \cdot 191$ | 5 | 2 | 10 | 5563 | $2 \cdot 3^3 \cdot 103$ | 2 | 4 | -10 | 6173 | $2^2 \cdot 1543$ | 2 | 2 | ----- |
| 4969 | $2^3 \cdot 3^2 \cdot 23$ | 11 | 11 | ----- | 5569 | $2^3 \cdot 3 \cdot 29$ | 13 | 13 | ----- | 6197 | $2^2 \cdot 1549$ | 2 | 2 | ----- |
| 4973 | $2^2 \cdot 11 \cdot 113$ | 2 | 2 | ----- | 5573 | $2^2 \cdot 7 \cdot 199$ | 2 | 2 | ----- | 6199 | $2 \cdot 3 \cdot 1033$ | 3 | 2 | -10 |
| 4987 | $2 \cdot 3^2 \cdot 277$ | 2 | 4 | -10 | 5581 | $2^2 \cdot 3^2 \cdot 5 \cdot 31$ | 6 | 6 | ± 10 | 6203 | $2 \cdot 7 \cdot 443$ | 2 | 3 | ----- |
| 4993 | $2^2 \cdot 3 \cdot 13$ | 5 | 5 | ----- | 5591 | $2 \cdot 5 \cdot 13 \cdot 43$ | 11 | 2 | -10 | 6211 | $2 \cdot 3^2 \cdot 5 \cdot 23$ | 2 | 4 | 10 |
| 4999 | $2 \cdot 3 \cdot 7^2 \cdot 17$ | 3 | 9 | ----- | 5623 | $2 \cdot 3 \cdot 937$ | 5 | 2 | 10 | 6217 | $2^3 \cdot 3 \cdot 7 \cdot 37$ | 5 | 5 | ± 10 |
| 5003 | $2 \cdot 41 \cdot 61$ | 2 | 3 | -10 | 5639 | $2 \cdot 2819$ | 7 | 2 | -10 | 6221 | $2^2 \cdot 5 \cdot 311$ | 3 | 3 | ± 10 |
| 5009 | $2^4 \cdot 313$ | 3 | 3 | ----- | 5641 | $2^2 \cdot 3 \cdot 5 \cdot 47$ | 14 | 14 | ----- | 6229 | $2^2 \cdot 3^2 \cdot 173$ | 2 | 2 | ----- |
| 5011 | $2 \cdot 3 \cdot 5 \cdot 167$ | 2 | 4 | ----- | 5647 | $2 \cdot 3 \cdot 941$ | 3 | 2 | ----- | 6247 | $2 \cdot 3^2 \cdot 347$ | 5 | 2 | 10 |
| 5021 | $2^2 \cdot 5 \cdot 251$ | 3 | 3 | ± 10 | 5651 | $2 \cdot 5^2 \cdot 113$ | 2 | 3 | 10 | 6257 | $2^4 \cdot 17 \cdot 23$ | 3 | 3 | ± 10 |
| 5023 | $2^2 \cdot 3^2 \cdot 31$ | 3 | 2 | ----- | 5653 | $2^2 \cdot 3^2 \cdot 157$ | 5 | 5 | ----- | 6263 | $2 \cdot 31 \cdot 101$ | 5 | 2 | 10 |
| 5039 | $2 \cdot 11 \cdot 229$ | 11 | 2 | -10 | 5657 | $2^2 \cdot 7 \cdot 101$ | 3 | 3 | ± 10 | 6269 | $2^2 \cdot 1567$ | 2 | 2 | ± 10 |
| 5051 | $2 \cdot 5^2 \cdot 101$ | 2 | 3 | ----- | 5659 | $2 \cdot 3 \cdot 23 \cdot 41$ | 2 | 4 | 10 | 6271 | $2 \cdot 3 \cdot 5 \cdot 11 \cdot 19$ | 11 | 17 | ----- |
| 5059 | $2 \cdot 3^2 \cdot 281$ | 2 | 4 | 10 | 5669 | $2^2 \cdot 13 \cdot 109$ | 3 | 3 | ± 10 | 6277 | $2^2 \cdot 3 \cdot 523$ | 2 | 2 | ----- |
| 5077 | $2^2 \cdot 3^2 \cdot 47$ | 2 | 2 | ----- | 5683 | $2 \cdot 3 \cdot 947$ | 2 | 4 | -10 | 6287 | $2 \cdot 7 \cdot 449$ | 7 | 2 | 10 |
| 5081 | $2^3 \cdot 5 \cdot 127$ | 3 | 3 | ----- | 5689 | $2^3 \cdot 3^2 \cdot 79$ | 11 | 11 | ----- | 6299 | $2 \cdot 47 \cdot 67$ | 2 | 3 | ----- |
| 5087 | $2 \cdot 2543$ | 5 | 2 | 10 | 5693 | $2^2 \cdot 1423$ | 2 | 2 | ----- | 6301 | $2^2 \cdot 3^2 \cdot 5^2 \cdot 7$ | 10 | 10 | ± 10 |
| 5099 | $2 \cdot 2549$ | 2 | 3 | 10 | 5701 | $2^2 \cdot 3 \cdot 5^2 \cdot 19$ | 2 | 2 | ± 10 | 6311 | $2 \cdot 5 \cdot 631$ | 7 | 2 | -10 |
| 5101 | $2^2 \cdot 3 \cdot 5^2 \cdot 17$ | 6 | 6 | ----- | 5711 | $2 \cdot 5 \cdot 571$ | 19 | 3 | ----- | 6317 | $2^2 \cdot 1579$ | 2 | 2 | ----- |
| 5107 | $2 \cdot 3 \cdot 23 \cdot 37$ | 2 | 4 | -10 | 5717 | $2^2 \cdot 1429$ | 2 | 2 | ----- | 6323 | $2 \cdot 29 \cdot 109$ | 2 | 3 | -10 |
| 5113 | $2^3 \cdot 3^2 \cdot 71$ | 19 | 19 | ----- | 5737 | $2^3 \cdot 3 \cdot 239$ | 5 | 5 | ± 10 | 6329 | $2^2 \cdot 7 \cdot 113$ | 3 | 3 | ----- |
| 5119 | $2 \cdot 3 \cdot 853$ | 3 | 2 | ----- | 5741 | $2^2 \cdot 5 \cdot 7 \cdot 41$ | 2 | 2 | ± 10 | 6337 | $2^2 \cdot 3 \cdot 11$ | 10 | 10 | ± 10 |
| 5147 | $2 \cdot 31 \cdot 83$ | 2 | 3 | -10 | 5743 | $2 \cdot 3^2 \cdot 11 \cdot 29$ | 10 | 2 | 10 | 6343 | $2 \cdot 3 \cdot 7 \cdot 151$ | 3 | 2 | 10 |
| 5153 | $2^5 \cdot 7 \cdot 23$ | 5 | 5 | ± 10 | 5749 | $2^2 \cdot 3 \cdot 479$ | 2 | 2 | ± 10 | 6353 | $2^4 \cdot 397$ | 3 | 3 | ± 10 |
| 5167 | $2 \cdot 3^2 \cdot 7 \cdot 41$ | 6 | 11 | 10 | 5779 | $2 \cdot 3^2 \cdot 107$ | 2 | 4 | 10 | 6359 | $2 \cdot 11 \cdot 17^2$ | 13 | 2 | -10 |
| 5171 | $2 \cdot 5 \cdot 11 \cdot 47$ | 2 | 4 | ----- | 5783 | $2 \cdot 7^2 \cdot 59$ | 7 | 2 | 10 | 6361 | $2^3 \cdot 3 \cdot 5 \cdot 53$ | 19 | 19 | ----- |
| 5179 | $2 \cdot 3 \cdot 863$ | 2 | 4 | 10 | 5791 | $2 \cdot 3 \cdot 5 \cdot 193$ | 6 | 2 | ----- | 6367 | $2 \cdot 3 \cdot 1061$ | 3 | 2 | 10 |
| 5189 | $2^2 \cdot 1297$ | 2 | 2 | ± 10 | 5801 | $2^2 \cdot 5^2 \cdot 29$ | 3 | 3 | ----- | 6373 | $2^2 \cdot 3^2 \cdot 59$ | 2 | 2 | ----- |
| 5197 | $2^2 \cdot 3 \cdot 433$ | 7 | 7 | ----- | 5807 | $2 \cdot 2903$ | 5 | 2 | 10 | 6379 | $2 \cdot 3 \cdot 1063$ | 2 | 4 | ----- |
| 5209 | $2^3 \cdot 3 \cdot 7 \cdot 31$ | 17 | 17 | ----- | 5813 | $2^2 \cdot 1453$ | 2 | 2 | ----- | 6389 | $2^2 \cdot 1597$ | 2 | 2 | ± 10 |
| 5227 | $2 \cdot 3 \cdot 13 \cdot 67$ | 2 | 4 | -10 | 5821 | $2^2 \cdot 3 \cdot 5 \cdot 97$ | 6 | 6 | ± 10 | 6397 | $2^2 \cdot 3 \cdot 13 \cdot 41$ | 2 | 2 | ----- |
| 5231 | $2 \cdot 5 \cdot 523$ | 7 | 2 | -10 | 5827 | $2 \cdot 3 \cdot 971$ | 2 | 4 | -10 | 6421 | $2^2 \cdot 3 \cdot 5 \cdot 107$ | 6 | 6 | ----- |
| 5233 | $2^4 \cdot 3 \cdot 109$ | 10 | 10 | ± 10 | 5839 | $2 \cdot 3 \cdot 7 \cdot 139$ | 6 | 2 | -10 | 6427 | $2 \cdot 3^2 \cdot 7 \cdot 17$ | 3 | 6 | ----- |
| 5237 | $2^2 \cdot 7 \cdot 11 \cdot 17$ | 3 | 3 | ----- | 5843 | $2 \cdot 23 \cdot 127$ | 2 | 4 | -10 | 6449 | $2^4 \cdot 13 \cdot 31$ | 3 | 3 | ----- |
| 5261 | $2^2 \cdot 5 \cdot 263$ | 2 | 2 | ----- | 5849 | $2^2 \cdot 17 \cdot 43$ | 3 | 3 | ----- | 6451 | $2 \cdot 3 \cdot 5^2 \cdot 43$ | 3 | 6 | ----- |
| 5273 | $2^3 \cdot 659$ | 3 | 3 | ± 10 | 5851 | $2 \cdot 3^2 \cdot 5^2 \cdot 13$ | 2 | 4 | ----- | 6469 | $2^2 \cdot 3 \cdot 7^2 \cdot 11$ | 2 | 2 | ----- |
| 5279 | $2 \cdot 7 \cdot 13 \cdot 29$ | 7 | 3 | -10 | 5857 | $2^2 \cdot 3 \cdot 61$ | 7 | 7 | ± 10 | 6473 | $2^3 \cdot 809$ | 3 | 3 | ± 10 |
| 5281 | $2^5 \cdot 3 \cdot 5 \cdot 11$ | 7 | 7 | ----- | 5861 | $2^2 \cdot 5 \cdot 293$ | 3 | 3 | ± 10 | 6481 | $2^4 \cdot 3^2 \cdot 5$ | 7 | 7 | ----- |

Table 24.8

Primitive Roots, Factorization of $p-1$

g, G denote the least positive and least negative (respectively) primitive roots of p . ϵ denotes whether 10, -10 both or neither are primitive roots.

| p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ |
|------|--|-----|------|------------|------|--------------------------------------|-----|------|------------|------|--|-----|------|------------|
| 6491 | 2.5.11.59 | 2 | 3 | ----- | 7121 | 2 ⁴ .5.89 | 3 | 3 | ----- | 7741 | 2 ² .3 ² .5.43 | 7 | 7 | ----- |
| 6521 | 2 ⁴ .5.163 | 6 | 6 | ----- | 7127 | 2.7.509 | 5 | 2 | ----- | 7753 | 2 ³ .3.17.19 | 10 | 10 | ± 10 |
| 6529 | 2 ⁷ .3.17 | 7 | 7 | ----- | 7129 | 2 ³ .3 ⁴ .11 | 7 | 7 | ----- | 7757 | 2 ² .7.277 | 2 | 2 | ----- |
| 6547 | 2.3.1091 | 2 | 4 | ----- | 7151 | 2.5 ² .11.13 | 7 | 3 | ----- | 7759 | 2.3 ² .431 | 3 | 2 | -10 |
| 6551 | 2.5 ² .131 | 17 | 2 | -10 | 7159 | 2.3.1193 | 3 | 2 | -10 | 7789 | 2 ² .3.11.59 | 2 | 2 | ----- |
| 6553 | 2 ³ .3 ² .7.13 | 10 | 10 | ± 10 | 7177 | 2 ³ .3.13.23 | 10 | 10 | ± 10 | 7793 | 2 ⁴ .487 | 3 | 3 | ± 10 |
| 6563 | 2.17.193 | 5 | 10 | -10 | 7187 | 2.3593 | 2 | 3 | -10 | 7817 | 2 ² .977 | 3 | 3 | ± 10 |
| 6569 | 2 ³ .821 | 3 | 3 | ----- | 7193 | 2 ³ .29.31 | 3 | 3 | ± 10 | 7823 | 2.3911 | 5 | 2 | 10 |
| 6571 | 2.3 ² .5.73 | 3 | 7 | 10 | 7207 | 2.3.1201 | 3 | 2 | 10 | 7829 | 2 ² .19.103 | 2 | 2 | ± 10 |
| 6577 | 2 ⁴ .3.137 | 5 | 5 | ----- | 7211 | 2.5.7.103 | 2 | 3 | ----- | 7841 | 2 ⁵ .5.7 ² | 12 | 12 | ----- |
| 6581 | 2 ² .5.7.47 | 14 | 14 | ----- | 7213 | 2 ³ .3.601 | 5 | 5 | ----- | 7853 | 2 ² .13.151 | 2 | 2 | ----- |
| 6599 | 2.3299 | 13 | 2 | -10 | 7219 | 2 ³ .3.401 | 2 | 4 | 10 | 7867 | 2.3 ² .19.23 | 3 | 6 | -10 |
| 6607 | 2.3 ² .367 | 3 | 2 | ----- | 7229 | 2 ² .13.139 | 2 | 2 | ± 10 | 7873 | 2 ² .3.41 | 5 | 5 | ± 10 |
| 6619 | 2.3.1103 | 2 | 4 | 10 | 7237 | 2 ³ .3 ² .67 | 2 | 2 | ----- | 7877 | 2 ² .11.179 | 2 | 2 | ----- |
| 6637 | 2 ³ .3.7.79 | 2 | 2 | ----- | 7243 | 2.3.17.71 | 2 | 4 | -10 | 7879 | 2.3.13.101 | 3 | 2 | -10 |
| 6653 | 2 ² .1663 | 2 | 2 | ----- | 7247 | 2.3623 | 5 | 2 | 10 | 7883 | 2.7.563 | 2 | 3 | -10 |
| 6659 | 2.3329 | 2 | 3 | 10 | 7253 | 2 ² .7 ² .37 | 2 | 2 | ----- | 7901 | 2 ² .5 ² .79 | 2 | 2 | ± 10 |
| 6661 | 2 ² .3 ² .5.37 | 6 | 6 | ± 10 | 7283 | 2.11.331 | 2 | 3 | -10 | 7907 | 2.59.67 | 2 | 3 | -10 |
| 6673 | 2 ⁴ .3.139 | 5 | 5 | ± 10 | 7297 | 2 ⁷ .3.19 | 5 | 5 | ----- | 7919 | 2.37.107 | 7 | 2 | -10 |
| 6679 | 2.3 ² .7.53 | 7 | 5 | -10 | 7307 | 2.13.281 | 2 | 3 | -10 | 7927 | 2.3.1321 | 3 | 7 | 10 |
| 6689 | 2 ⁵ .11.19 | 3 | 3 | ----- | 7309 | 2 ² .3 ² .7.29 | 6 | 6 | ± 10 | 7933 | 2 ³ .3.661 | 2 | 2 | ----- |
| 6691 | 2.3.5.223 | 2 | 4 | 10 | 7321 | 2 ³ .3.5.61 | 7 | 7 | ----- | 7937 | 2 ² .31 | 3 | 3 | ± 10 |
| 6701 | 2 ² .5 ² .67 | 2 | 2 | ± 10 | 7331 | 2.5.733 | 2 | 4 | ----- | 7949 | 2 ² .1987 | 2 | 2 | ± 10 |
| 6703 | 2.3.1117 | 5 | 2 | 10 | 7333 | 2 ² .3.13.47 | 6 | 6 | ----- | 7951 | 2.3.5 ² .53 | 6 | 2 | -10 |
| 6709 | 2 ² .3.13.43 | 2 | 2 | ± 10 | 7349 | 2 ² .11.167 | 2 | 2 | ± 10 | 7963 | 2.3.1327 | 5 | 10 | -10 |
| 6719 | 2.3359 | 11 | 2 | -10 | 7351 | 2.3.5 ² .7 ² | 6 | 5 | ----- | 7993 | 2 ² .3 ² .37 | 5 | 5 | ----- |
| 6733 | 2 ² .3 ² .11.17 | 2 | 2 | ----- | 7369 | 2 ³ .3.307 | 7 | 7 | ----- | 8009 | 2 ² .7.11.13 | 3 | 3 | ----- |
| 6737 | 2 ⁴ .421 | 3 | 3 | ± 10 | 7393 | 2 ⁵ .3.7.11 | 5 | 5 | ± 10 | 8011 | 2.3 ² .5.89 | 14 | 7 | ----- |
| 6761 | 2 ⁵ .5.13 ² | 3 | 3 | ----- | 7411 | 2.3.5.13.19 | 2 | 4 | 10 | 8017 | 2 ⁴ .3.167 | 5 | 5 | ± 10 |
| 6763 | 2.3.7 ² .23 | 2 | 4 | ----- | 7417 | 2 ³ .3 ² .103 | 5 | 5 | ----- | 8039 | 2.4019 | 11 | 2 | -10 |
| 6779 | 2.3389 | 2 | 3 | 10 | 7433 | 2 ² .929 | 3 | 3 | ± 10 | 8053 | 2 ² .3.11.61 | 2 | 2 | ----- |
| 6781 | 2 ² .3.5.113 | 2 | 2 | ----- | 7451 | 2.5 ² .149 | 2 | 4 | 10 | 8059 | 2.3.17.79 | 3 | 5 | 10 |
| 6791 | 2.5.7.97 | 7 | 3 | ----- | 7457 | 2 ⁵ .233 | 3 | 3 | ± 10 | 8069 | 2 ² .2017 | 2 | 2 | ± 10 |
| 6793 | 2 ² .3.283 | 10 | 10 | ± 10 | 7459 | 2.3.11.113 | 2 | 4 | 10 | 8081 | 2 ⁴ .5.101 | 3 | 3 | ----- |
| 6803 | 2.19.179 | 2 | 3 | -10 | 7477 | 2 ² .3.7.89 | 2 | 2 | ----- | 8087 | 2.13.311 | 5 | 2 | 10 |
| 6823 | 2.3 ² .379 | 3 | 2 | 10 | 7481 | 2 ⁵ .5.11.17 | 6 | 6 | ----- | 8089 | 2 ² .3.337 | 17 | 17 | ----- |
| 6827 | 2.3413 | 2 | 3 | -10 | 7487 | 2.19.197 | 5 | 3 | 10 | 8093 | 2 ² .7.17 ² | 2 | 2 | ----- |
| 6829 | 2 ³ .3.569 | 2 | 2 | ± 10 | 7489 | 2 ² .3 ² .13 | 7 | 7 | ----- | 8101 | 2 ² .3 ⁴ .5 ² | 6 | 6 | ----- |
| 6833 | 2 ⁴ .7.61 | 3 | 3 | ± 10 | 7499 | 2.23.163 | 2 | 3 | 10 | 8111 | 2.5.811 | 11 | 2 | ----- |
| 6841 | 2 ² .3 ² .5.19 | 22 | 22 | ----- | 7507 | 2.3 ² .139 | 2 | 4 | -10 | 8117 | 2 ² .2029 | 2 | 2 | ----- |
| 6857 | 2 ² .857 | 3 | 3 | ± 10 | 7517 | 2 ² .1879 | 2 | 2 | ----- | 8123 | 2.31.131 | 2 | 3 | -10 |
| 6863 | 2.47.73 | 5 | 2 | 10 | 7523 | 2.3761 | 2 | 3 | -10 | 8147 | 2.4073 | 2 | 3 | -10 |
| 6869 | 2 ² .17.101 | 2 | 2 | ± 10 | 7529 | 2 ² .941 | 3 | 3 | ----- | 8161 | 2 ⁵ .3.5.17 | 7 | 7 | ----- |
| 6871 | 2.3.5.229 | 3 | 9 | -10 | 7537 | 2 ⁴ .3.157 | 7 | 7 | ----- | 8167 | 2.3.1361 | 3 | 9 | ----- |
| 6883 | 2.3.31.37 | 2 | 4 | -10 | 7541 | 2 ² .5.13.29 | 2 | 2 | ± 10 | 8171 | 2.5.19.43 | 2 | 3 | 10 |
| 6899 | 2.3449 | 2 | 3 | 10 | 7547 | 2.7 ² .11 | 2 | 3 | -10 | 8179 | 2.3.29.47 | 2 | 4 | 10 |
| 6907 | 2.3.1151 | 2 | 4 | ----- | 7549 | 2 ² .3.17.37 | 2 | 2 | ----- | 8191 | 2.3 ² .5.7.13 | 17 | 11 | ----- |
| 6911 | 2.5.691 | 7 | 2 | -10 | 7559 | 2.3779 | 13 | 2 | -10 | 8209 | 2 ³ .3 ² .19 | 7 | 7 | ----- |
| 6917 | 2 ² .7.13.19 | 2 | 2 | ----- | 7561 | 2 ² .3 ² .5.7 | 13 | 13 | ----- | 8219 | 2.7.587 | 2 | 3 | 10 |
| 6947 | 2.23.151 | 2 | 3 | -10 | 7573 | 2 ² .3.631 | 2 | 2 | ----- | 8221 | 2 ² .3.5.137 | 2 | 2 | ----- |
| 6949 | 2 ² .3 ² .193 | 2 | 2 | ± 10 | 7577 | 2 ² .947 | 3 | 3 | ± 10 | 8231 | 2.5.823 | 11 | 2 | -10 |
| 6959 | 2.7 ² .71 | 7 | 3 | -10 | 7583 | 2.17.223 | 5 | 2 | 10 | 8233 | 2 ² .3.7 ² | 10 | 10 | ± 10 |
| 6961 | 2 ⁴ .3.5.29 | 13 | 13 | ----- | 7589 | 2 ² .7.271 | 2 | 2 | ----- | 8237 | 2 ² .29.71 | 2 | 2 | ----- |
| 6967 | 2.3 ⁴ .43 | 5 | 13 | 10 | 7591 | 2.3.5.11.23 | 6 | 2 | -10 | 8243 | 2.13.317 | 2 | 3 | -10 |
| 6971 | 2.5.17.41 | 2 | 4 | 10 | 7603 | 2.3.7.181 | 2 | 4 | ----- | 8263 | 2.3 ² .17 | 3 | 2 | 10 |
| 6977 | 2 ² .109 | 3 | 3 | ± 10 | 7607 | 2.3803 | 5 | 2 | 10 | 8269 | 2 ² .3.13.53 | 2 | 2 | ± 10 |
| 6983 | 2.3491 | 5 | 2 | 10 | 7621 | 2 ² .3.5.127 | 2 | 2 | ----- | 8273 | 2 ² .11.47 | 3 | 3 | ± 10 |
| 6991 | 2.3.5.233 | 6 | 2 | -10 | 7639 | 2.3.19.67 | 7 | 5 | -10 | 8287 | 2.3.1381 | 3 | 7 | 10 |
| 6997 | 2 ² .3.11.53 | 5 | 5 | ----- | 7643 | 2.3821 | 2 | 3 | -10 | 8291 | 2.5.829 | 2 | 3 | -10 |
| 7001 | 2 ² .5 ² .7 | 3 | 3 | ----- | 7649 | 2 ² .239 | 3 | 3 | ----- | 8293 | 2 ² .1049 | 2 | 2 | ----- |
| 7013 | 2 ² .1753 | 2 | 2 | ----- | 7669 | 2 ² .3 ² .71 | 2 | 2 | ----- | 8297 | 2 ² .2099 | 3 | 3 | ± 10 |
| 7019 | 2.11 ² .29 | 2 | 3 | 10 | 7673 | 2 ² .7.137 | 3 | 3 | ± 10 | 8311 | 2.3.5.277 | 3 | 2 | -10 |
| 7027 | 2.3.1171 | 2 | 4 | ----- | 7681 | 2 ² .3.5 | 17 | 17 | ----- | 8317 | 2 ² .3 ² .7.11 | 6 | 6 | ----- |
| 7039 | 2.3 ² .17.23 | 3 | 2 | ----- | 7687 | 2.3 ² .7.61 | 6 | 2 | 10 | 8329 | 2 ² .3.347 | 7 | 7 | ----- |
| 7043 | 2.7.503 | 2 | 4 | ----- | 7691 | 2.5.769 | 2 | 3 | 10 | 8353 | 2 ² .3 ² .29 | 5 | 5 | ± 10 |
| 7057 | 2 ⁴ .3 ² .7 ² | 5 | 5 | ± 10 | 7699 | 2.3.1283 | 3 | 5 | 10 | 8363 | 2.37.113 | 2 | 3 | -10 |
| 7069 | 2 ² .3.19.31 | 2 | 2 | ± 10 | 7703 | 2.3851 | 5 | 2 | 10 | 8369 | 2 ⁴ .523 | 3 | 3 | ----- |
| 7079 | 2.3539 | 7 | 2 | -10 | 7717 | 2 ² .3.643 | 2 | 2 | ----- | 8377 | 2 ² .3.349 | 5 | 5 | ± 10 |
| 7103 | 2.53.67 | 5 | 2 | 10 | 7723 | 2.3 ² .11.13 | 3 | 6 | ----- | 8387 | 2.7.599 | 2 | 3 | ----- |
| 7109 | 2 ² .1777 | 2 | 2 | ± 10 | 7727 | 2.3863 | 5 | 2 | 10 | 8389 | 2 ² .3 ² .233 | 6 | 6 | ± 10 |

Primitive Roots, Factorization of $p-1$

Table 24.8

g , G denote the least positive and least negative (respectively) primitive roots of p . ϵ denotes whether 10, -10 both or neither are primitive roots.

| p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ | p | $p-1$ | g | $-G$ | ϵ |
|------|--|-----|------|------------|------|--|-----|------|------------|------|--|-----|------|------------|
| 8419 | 2·3·23·61 | 3 | 6 | ----- | 8941 | 2 ³ ·3·5·149 | 6 | 6 | ----- | 9463 | 2·3·19·83 | 3 | 9 | ----- |
| 8423 | 2·4211 | 5 | 2 | 10 | 8951 | 2·5 ² ·179 | 13 | 2 | -10 | 9467 | 2·4733 | 2 | 3 | -10 |
| 8429 | 2 ² ·7 ² ·43 | 2 | 2 | ±10 | 8963 | 2·4481 | 2 | 3 | -10 | 9473 | 2 ⁸ ·37 | 3 | 3 | ±10 |
| 8431 | 2·3·5·281 | 3 | 2 | -10 | 8969 | 2 ³ ·19·59 | 3 | 3 | ----- | 9479 | 2·7·677 | 7 | 2 | -10 |
| 8443 | 2·3 ² ·7·67 | 2 | 4 | -10 | 8971 | 2·3·5·13·23 | 2 | 4 | 10 | 9491 | 2·5·13·73 | 2 | 3 | 10 |
| 8447 | 2·41·103 | 5 | 2 | 10 | 8999 | 2·11·409 | 7 | 2 | -10 | 9497 | 2 ³ ·1187 | 3 | 3 | ±10 |
| 8461 | 2 ² ·3 ² ·5·47 | 6 | 6 | ----- | 9001 | 2 ² ·3 ² ·5 ³ | 7 | 7 | ----- | 9511 | 2·3·5·317 | 3 | 9 | ----- |
| 8467 | 2·3·17·83 | 2 | 4 | -10 | 9007 | 2·3·19·79 | 3 | 2 | ----- | 9521 | 2 ⁴ ·5·7·17 | 3 | 3 | ----- |
| 8501 | 2 ² ·5 ² ·17 | 7 | 7 | ±10 | 9011 | 2·5·17·53 | 2 | 4 | 10 | 9533 | 2 ² ·2383 | 2 | 2 | ----- |
| 8513 | 2 ⁶ ·7·19 | 5 | 5 | ±10 | 9013 | 2 ³ ·3·751 | 5 | 5 | ----- | 9539 | 2·19·251 | 2 | 3 | 10 |
| 8521 | 2 ² ·3·5·71 | 13 | 13 | ----- | 9029 | 2 ² ·37·61 | 2 | 2 | ±10 | 9547 | 2·3·37·43 | 2 | 4 | -10 |
| 8527 | 2·3·7 ² ·29 | 5 | 2 | ----- | 9041 | 2 ⁴ ·5·113 | 3 | 3 | ----- | 9551 | 2·5 ² ·191 | 11 | 2 | ----- |
| 8537 | 2 ³ ·11·97 | 3 | 3 | ±10 | 9043 | 2·3·11·137 | 3 | 6 | -10 | 9587 | 2·4793 | 2 | 3 | -10 |
| 8539 | 2·3·1423 | 2 | 4 | ----- | 9049 | 2 ² ·3·13·29 | 7 | 7 | ----- | 9601 | 2 ⁷ ·3·5 ² | 13 | 13 | ----- |
| 8543 | 2·4271 | 5 | 2 | 10 | 9059 | 2·7·647 | 2 | 4 | 10 | 9613 | 2 ² ·3 ² ·89 | 2 | 2 | ----- |
| 8563 | 2·3·1427 | 2 | 4 | -10 | 9067 | 2·3·1511 | 3 | 6 | -10 | 9619 | 2·3·7·229 | 2 | 4 | ----- |
| 8573 | 2 ² ·2143 | 2 | 2 | ----- | 9091 | 2·3 ² ·5·101 | 3 | 5 | ----- | 9623 | 2·17·283 | 5 | 3 | 10 |
| 8581 | 2 ² ·3·5·11·13 | 6 | 6 | ----- | 9103 | 2·3·37·41 | 6 | 2 | 10 | 9629 | 2 ² ·29·83 | 2 | 2 | ±10 |
| 8597 | 2 ² ·7·307 | 2 | 2 | ----- | 9109 | 2 ² ·3 ² ·11·23 | 10 | 10 | ±10 | 9631 | 2·3 ² ·5·107 | 3 | 9 | -10 |
| 8599 | 2·3·1433 | 3 | 2 | ----- | 9127 | 2·3 ² ·13 ² | 3 | 2 | ----- | 9643 | 2·3·1607 | 2 | 4 | -10 |
| 8609 | 2 ⁵ ·269 | 3 | 3 | ----- | 9133 | 2 ² ·3·761 | 6 | 6 | ----- | 9649 | 2 ⁴ ·3 ² ·67 | 7 | 7 | ----- |
| 8623 | 2·3 ² ·479 | 3 | 2 | 10 | 9137 | 2 ⁴ ·571 | 3 | 3 | ±10 | 9661 | 2 ² ·3·5·7·23 | 2 | 2 | ----- |
| 8627 | 2·19·227 | 2 | 3 | -10 | 9151 | 2·3·5 ² ·61 | 3 | 2 | ----- | 9677 | 2 ² ·41·59 | 2 | 2 | ----- |
| 8629 | 2 ² ·3·719 | 6 | 6 | ----- | 9157 | 2 ² ·3·7·109 | 6 | 6 | ----- | 9679 | 2·3·1613 | 3 | 2 | ----- |
| 8641 | 2 ⁶ ·3 ² ·5 | 17 | 17 | ----- | 9161 | 2 ² ·5·229 | 3 | 3 | ----- | 9689 | 2 ² ·7·173 | 3 | 3 | ----- |
| 8647 | 2·3·11·131 | 3 | 2 | 10 | 9173 | 2 ² ·2293 | 2 | 2 | ----- | 9697 | 2 ⁵ ·3·101 | 10 | 10 | ±10 |
| 8663 | 2·61·71 | 5 | 2 | 10 | 9181 | 2 ² ·3 ² ·5·17 | 2 | 2 | ----- | 9719 | 2·43·113 | 17 | 3 | -10 |
| 8669 | 2 ² ·11·197 | 2 | 2 | ±10 | 9187 | 2·3·1531 | 3 | 6 | -10 | 9721 | 2 ³ ·3 ² ·5 | 7 | 7 | ----- |
| 8677 | 2 ² ·3 ² ·241 | 2 | 2 | ----- | 9199 | 2·3 ² ·7·73 | 3 | 2 | -10 | 9733 | 2 ² ·3·811 | 2 | 2 | ----- |
| 8681 | 2 ² ·5·7·31 | 15 | 15 | ----- | 9203 | 2·43·107 | 2 | 3 | -10 | 9739 | 2·3 ² ·541 | 3 | 5 | 10 |
| 8689 | 2 ² ·3·181 | 13 | 13 | ----- | 9209 | 2 ² ·1151 | 3 | 3 | ----- | 9743 | 2·4871 | 5 | 2 | 10 |
| 8693 | 2 ² ·41·53 | 2 | 2 | ----- | 9221 | 2 ² ·5·461 | 2 | 2 | ±10 | 9749 | 2 ² ·2437 | 2 | 2 | ±10 |
| 8699 | 2·4349 | 2 | 3 | 10 | 9227 | 2·7·659 | 2 | 3 | -10 | 9767 | 2·19·257 | 5 | 2 | 10 |
| 8707 | 2·3·1451 | 5 | 7 | -10 | 9239 | 2·31·149 | 19 | 2 | -10 | 9769 | 2 ² ·3·11·37 | 13 | 13 | ----- |
| 8713 | 2 ² ·3 ² ·11 ² | 5 | 5 | ±10 | 9241 | 2 ² ·3·5·7·11 | 13 | 13 | ----- | 9781 | 2 ² ·3·5·163 | 6 | 6 | ±10 |
| 8719 | 2·3·1453 | 3 | 5 | -10 | 9257 | 2 ² ·13·89 | 3 | 3 | ±10 | 9787 | 2·3·7·233 | 3 | 6 | -10 |
| 8731 | 2·3 ² ·5·97 | 2 | 4 | 10 | 9277 | 2 ² ·3·773 | 5 | 5 | ----- | 9791 | 2·5·11·89 | 11 | 2 | -10 |
| 8737 | 2 ² ·3·7·13 | 5 | 5 | ----- | 9281 | 2 ² ·5·29 | 3 | 3 | ----- | 9803 | 2·13 ² ·29 | 2 | 3 | -10 |
| 8741 | 2 ² ·5·19·23 | 2 | 2 | ±10 | 9283 | 2·3·7·13·17 | 2 | 4 | ----- | 9811 | 2·3 ² ·5·109 | 3 | 5 | 10 |
| 8747 | 2·4373 | 2 | 3 | -10 | 9293 | 2 ² ·23·101 | 2 | 2 | ----- | 9817 | 2 ² ·3·409 | 5 | 5 | ±10 |
| 8753 | 2 ⁴ ·547 | 3 | 3 | ±10 | 9311 | 2·5·7 ² ·19 | 7 | 2 | -10 | 9829 | 2 ² ·3 ² ·7·13 | 10 | 10 | ±10 |
| 8761 | 2 ² ·3·5·73 | 23 | 23 | ----- | 9319 | 2·3·1553 | 3 | 2 | -10 | 9833 | 2 ² ·1229 | 3 | 3 | ±10 |
| 8779 | 2·3·7·11·19 | 11 | 22 | ----- | 9323 | 2·59·79 | 2 | 3 | -10 | 9839 | 2·4919 | 7 | 2 | -10 |
| 8783 | 2·4391 | 5 | 2 | 10 | 9337 | 2 ² ·3·389 | 5 | 5 | ----- | 9851 | 2·5 ² ·197 | 2 | 4 | 10 |
| 8803 | 2·3 ² ·163 | 2 | 4 | ----- | 9341 | 2 ² ·5·467 | 2 | 2 | ±10 | 9857 | 2 ⁷ ·7·11 | 5 | 5 | ±10 |
| 8807 | 2·7·17·37 | 5 | 2 | 10 | 9343 | 2·3 ² ·173 | 5 | 2 | 10 | 9859 | 2·3·31·53 | 2 | 4 | ----- |
| 8819 | 2·4409 | 2 | 3 | 10 | 9349 | 2 ² ·3·19·41 | 2 | 2 | ----- | 9871 | 2·3·5·7·47 | 3 | 2 | -10 |
| 8821 | 2 ² ·3 ² ·5·7 ² | 2 | 2 | ±10 | 9371 | 2·5·937 | 2 | 3 | 10 | 9883 | 2·3 ² ·61 | 2 | 4 | -10 |
| 8831 | 2·5·883 | 7 | 5 | -10 | 9377 | 2 ² ·293 | 3 | 3 | ±10 | 9887 | 2·4943 | 5 | 2 | 10 |
| 8837 | 2 ² ·47 ² | 2 | 2 | ----- | 9391 | 2·3·5·313 | 3 | 2 | -10 | 9901 | 2 ² ·3 ² ·5 ² ·11 | 2 | 2 | ----- |
| 8839 | 2·3 ² ·491 | 3 | 2 | -10 | 9397 | 2 ² ·3 ² ·29 | 2 | 2 | ----- | 9907 | 2·3·13·127 | 2 | 4 | -10 |
| 8849 | 2 ² ·7·79 | 3 | 3 | ----- | 9403 | 2·3·1567 | 3 | 6 | ----- | 9923 | 2·11 ² ·41 | 2 | 3 | -10 |
| 8861 | 2 ² ·5·443 | 2 | 2 | ±10 | 9413 | 2 ² ·13·181 | 3 | 3 | ----- | 9929 | 2 ² ·17·73 | 3 | 3 | ----- |
| 8863 | 2·3·7·211 | 3 | 9 | 10 | 9419 | 2·17·277 | 2 | 3 | ----- | 9931 | 2·3·5·331 | 10 | 5 | 10 |
| 8867 | 2·11·13·31 | 2 | 3 | -10 | 9421 | 2 ² ·3·5·157 | 2 | 2 | ±10 | 9941 | 2 ² ·5·7·71 | 2 | 2 | ----- |
| 8887 | 2·3·1481 | 3 | 2 | 10 | 9431 | 2·5·23·41 | 7 | 3 | -10 | 9949 | 2 ² ·3·829 | 2 | 2 | ±10 |
| 8893 | 2 ² ·3 ² ·13·19 | 5 | 5 | ----- | 9433 | 2 ² ·3 ² ·131 | 5 | 5 | ----- | 9967 | 2·3·11·151 | 3 | 2 | 10 |
| 8923 | 2·3·1487 | 2 | 4 | ----- | 9437 | 2 ² ·7·337 | 2 | 2 | ----- | 9973 | 2 ² ·3 ² ·277 | 11 | 11 | ----- |
| 8929 | 2 ² ·3 ² ·31 | 11 | 11 | ----- | 9439 | 2·3·11 ² ·13 | 22 | 7 | ----- | | | | | |
| 8933 | 2 ² ·7·11·29 | 2 | 2 | ----- | 9461 | 2 ² ·5·11·43 | 3 | 3 | ±10 | | | | | |