Totogram

Algorithm
(lets take an example for k=3):-

1. Find all the possible elements for the particular "*K*" Value. For our case it is 10.
2. Find out the root node from the state-space i.e., the mid number of the list.For our case in our case it is 5.
3. Remove the root node from the state-space list.
4. Divide the state-space list into three equal list named as "Left list" , "Mid list" and "Right-list". In our case it would be:- Left-list {1 2 3}; Right-list{4 6 7} and Right-list {8 9 10}
5. Now Optimize the distance between the successive nodes from "Left-list" , "right-list" and "mid-list" separately.
6. Optimize the distance between successive nodes by taking "left-list" and "mid-list"
7. Optimize the distance between successive nodes by taking "Right-list" and "mid-list"
8. After that merge the left, mid and right list and form a complete list.

Values and time taken for different "k" values

1. k=3	3	0.000292
2.k=4	5	0.000545
3.k=5	6	0.001007
4.k=6	13	0.002176
5.k=7	28	0.004214

Totogram base on BFS traversal

k=3-→{ 5 4 6 7 1 2 3 8 9 10 }

k=4→{ 11 9 12 14 4 6 10 13 17 19 1 2 3 5 7 8 15 16 18 20 21 22}

k=5-→ { 23 18 24 29 12 14 22 25 33 35 7 8 11 13 20 21 26 27 34 36 39 40 1 2 3 4 5 6 9 10 15 16 17 19 28 30 31 32 37 38 41 42 43 44 45 46 }

k=6→ { 47 37 48 58 28 30 46 49 65 67 23 24 27 29 44 45 50 51 66 68 71 72 14 15 16 20 21 22 25 26 40 41 42 43 52 53 54 55 69 70 73 74 75 79 80 81 1 2 3 4 5 6 7 8 9 10 11 12 13 17 18 19 31 32

33 34 35 36 38 39 56 57 59 60 61 62 63 64 76 77 78 82 83 84 85
86 87 88 89 90 91 92 93 94}

k=7→ { 95 75 96 116 60 62 94 97 129 131 55 56 59 61 92 93 98 99
130 132 135 136 46 47 48 52 53 54 57 58 88 89 90 91 100 101
102 103 133 134 137 138 139 143 144 145 29 30 31 32 37 38 39
40 41 42 43 44 45 49 50 51 80 81 82 83 84 85 86 87 104 105 106
107 108 109 110 111 140 141 142 146 147 148 149 150 151 152
153 154 159 160 161 162 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 33 34 35 36 63 64 65 66 67
68 69 70 71 72 73 74 76 77 78 79 112 113 114 115 117 118 119
120 121 122 123 124 125 126 127 128 155 156 157 158 163 164
165 166 167 168 169 170 171 172 173 174 175 176 177 178 179
180 181 182 183 184 185 186 187 188 189 190}