

# A BCH Mystery

From BCH22LE.nb

July-13-12  
8:50 AM

```
Do[
  BCHBase[n];
  Print[n → {TimeUsed[], Length[BCHBase[n]]}],
  {n, 22}
]
1 → {0.312, 2}
2 → {0.312, 2}
3 → {0.312, 2}
4 → {0.312, 2}
5 → {0.312, 6}
6 → {0.312, 5}
7 → {0.312, 18}
8 → {0.312, 17}
9 → {0.452, 55}
10 → {0.655, 55}
11 → {1.06, 186}
12 → {1.918, 185}
13 → {3.681, 630}
14 → {7.566, 629}
15 → {16.146, 2181}
16 → {35.849, 2181}
17 → {81.323, 7710}
18 → {181.117, 7709}
19 → {400.641, 27594}
20 → {887.676, 27593}
21 → {1987.55, 99857}
22 → {4420.21, 99857}
```

Why?

(These are the lengths of the degree  $n$  pieces of the BCH formula, as expressed in the Lyndon basis)