

Least Common Multiple with User Input for the Casio fx-5800P Calculator
https://github.com/slugrustle/fx-5800P_progs Version 2

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1  0→DimZ:
2  27→DimZ:
3  0→A:
4  "ENTER -1 AFTER  LAST INPUT":
5  While 1:
6      "NUMBER"?→B:
7      B=-1⇒Break:
8      If B≠Int(B):
9          Then Cls:
10             "NUMBER MUST BE  AN INTEGER":
11             Stop:
12      IfEnd:
13      If B<1 Or B≥1x1010:
14          Then Cls:
15             "NUMBER MUST BE  >0 And <1x1010":
16             Stop:
17      IfEnd:
18      A+1→A:
19      If A≤27:
20          Then B→Z[A]:
21      Else Cls:
22          "SUPPORTS AT MOST27 NUMBERS":
23          Stop:
24      IfEnd:
25  WhileEnd:
26  If A<2:
27      Then Cls:
28      "REQUIRES 2 OR  MORE NUMBERS":
29      Stop:
30  IfEnd:
31  A→D:
32  Z[D]→B:
33  For D-1→A To 1 Step -1:
34      B→E:
35      Z[A]→C:
36      While B≠C:
37          If B≥C:
38              Then B-C×Int(B÷C)→B:
39              B=0⇒C→B:
40          Else C-B×Int(C÷B)→C:
41              C=0⇒B→C:
42          IfEnd:
43      WhileEnd:
44      If E≥Z[A]:
45          Then (E÷B)×Z[A]→B:
46      Else (Z[A]÷B)×E→B:
47      IfEnd:
48      If B≥1x1010:

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49          Then Cls:
50          "OVERFLOW":
51          Stop:
52      IfEnd:
53  Next:
54  Int(D÷3)→E:
55  D-3×E>0⇒E+1→E:
56  1→C:
57  Lbl 1:
58  Cls:
59  Locate 1,1,B:
60  Locate 12,1,C:
61  Locate 13,1,"":
62  Locate 14,1,E:
63  3×(C-1)+1→A:
64  Locate 1,2,Z[A]:
65  A+1≤D⇒Locate 1,3,Z[A+1]:
66  A+2≤D⇒Locate 1,4,Z[A+2]:
67  While 1:
68      Getkey→F:
69      If F=34 Or F=73:
70          Then Cls:
71          "DONE":
72          Stop:
73      IfEnd:
74      If F=84 Or F=86 Or F=77 Or F=47:
75          Then C+1→C:
76          C>E⇒1→C:
77          Goto 1:
78      IfEnd:
79      If F=83 Or F=85 Or F=67:
80          Then C-1→C:
81          C<1⇒E→C:
82          Goto 1:
83      IfEnd:
84  WhileEnd

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Program Outline

Lines 1–2: Set up memory for extra variables $Z[\alpha]$ where $\alpha \in [1, 27]$.

Lines 3–31: User input of arguments for $\text{LCM}(Z[1], \dots, Z[D])$. $D \in [2, 27]$.

Lines 32–53: Evaluate $B = \text{LCM}(Z[1], \dots, Z[D])$. Uses $\text{LCM}(\beta, \gamma) = (\beta \times \gamma) \div \text{GCD}(\beta, \gamma) = (\beta \div \text{GCD}(\beta, \gamma)) \times \gamma = (\gamma \div \text{GCD}(\beta, \gamma)) \times \beta$ and $\text{LCM}(\beta, \gamma, \delta, \epsilon) = \text{LCM}(\text{LCM}(\text{LCM}(\beta, \gamma), \delta), \epsilon)$.

Lines 54–84: Display result and inputs.

Variable Descriptions

A: Index into extra variable memory.

B: User input and LCM evaluation.

C: LCM evaluation and number of displayed input argument page.

D: Number of input arguments.

E: LCM evaluation and number of input argument display pages (3 inputs per page).

F: Identifier of most recently pressed key.

Notes

Lines 4, 10, 15, 22, and 28: The weird spacing prevents text wrapping from occurring in the middle of a word.

Lines 13 and 48: The fx-5800P can only represent numbers on the range $[-1 \times 10^{10}, 1 \times 10^{10}]$ as exact integers.

Line 69: Pressing DEL (34) or EXIT (73) ends the program.

Line 74: Pressing ▲ (84), ► (86), + (77), or EXE (47) cycles to the next input argument display page.

Line 79: Pressing ◀ (83), ▼ (85), or – (67) cycles to the previous input argument display page.

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