

Appendix A - Decimal to Fraction for the HP-15C

Joseph K. Horn

Version 1.2

Converts any positive decimal number to a fraction.

Accuracy is controlled by the current FIX setting.

01*LBL A	42 21 11	16 X<>Y	34	31 1/x	15
02 STO 0	44 0	17 ÷	10	32 STO 1	44 1
03 STO 1	44 1	18 RND	43 34	33 GTO 0	22 0
04 0	0	19 RCL 0	45 0	34*LBL 1	42 21 1
05 ENTER	36	20 RND	43 34	35 RCL 2	45 2
06 ENTER	36	21 TEST 5	43 30 5	36*LBL 2	42 21 2
07 1	1	22 GTO 1	22 1	37 ENTER	36
08 R↑	43 33	23 +	40	38 ENTER	36
09*LBL 0	42 21 0	24 CLx	43 35	39 RCL 0	45 0
10 INT	43 44	25 RCL 2	45 2	40 ×	20
11 R↑	43 33	26 ENTER	36	41 .	48
12 ×	20	27 ENTER	36	42 5	5
13 +	40	28 R↑	43 33	43 +	40
14 STO 2	44 2	29 RCL 1	45 1	44 INT	43 44
15 GSB 2	32 2	30 FRAC	42 44	45 RTN	43 32

Instructions:

- (1) Use a FIX setting as desired.
- (2) Place decimal number in X.
- (3) GSB A ⇒ see numerator.
- (4) X<>Y ⇒ see denominator.

Optional: ÷ RCL - 0 ⇒ “error” (difference between input and output)

Example:

Convert π to a fraction accurate to 5 decimal places.

- (1) FIX 5
- (2) π
- (3) GSB A ⇒ 355
- (4) X<>Y ⇒ 113

Answer: 355/113

Notes:

- (a) The program uses registers 0 through 2, so make sure that enough register memory is allocated.
- (b) As always, turning off USER mode makes it easier to key in the program.
- (c) When the program finishes, register 0 contains your original input. Registers 1 and 2 are used for temporary storage.
- (d) The Golden ratio, 1.618033989, is the most challenging (takes longest time).