

THE ENGLISH ELECTRIC CO., LTD.

NELSON RESEARCH LABORATORIES
STAFFORD
MATHEMATICS DEPARTMENT.

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Front Sheet.

Data Sheet 1.

Figure Sheet S6/11332.

DEUCE Subroutine No. 276 (D19 '2)

Report by
J. Boothroyd.

SUMMARY.

The attached document contains details of a DEUCE Subroutine which has been prepared and tested by E.E. (N.R.L. Blackheath).

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Description.

A first order subroutine using the automatic divider to divide one single length positive integer by another and give the integral quotient and remainder. The dividend need not be less than the divisor. Validity tests. It supersedes D19/1 since it uses less instructions, is faster and permits greater range of input data. It is not a direct replacement for D19/1, the entry is the same but the stores used are different.

Data.

a . P₁ a < b . 2¹⁵

b . P₁ b < 2¹⁵

Result.

Q . P₁

R . P₁ where Q, R are positive integers such that
a = Qb + R 0 ≤ R < b.

Failures.

1-1X a ≥ b . 2¹⁵

2-2X b ≥ 2¹⁵

NOTES:

- (i) This subroutine must be worked with the machine on NORMAL from 2₁₈ to 2₂₁ inclusive.
- (ii) There is no check that input data is positive. In some cases negative data will give a "reasonable" result.

Instructions for Use.

Stores Used.	13	14	16	20 ₂	20 ₃	21 ₂	21 ₃	TCB
Contents at Entry.	Link	b	-	-	-	-	a	-
Contents at Exit.	R.P. ₁₇	R.P. ₁	2 ¹⁵ b	QP ₁	R.P. ₁	-	-	OFF
Occupies.	m.c.'s 16-31.							
Entry.	m.c. 30.							
Time.	3 m.s.							

D.L.		Track					
Card Nos.							
INC	MS	S	D	C	W	T	
							Y
							X
							0
							.
0							2
1							3
2							4
3							5
4							6
5							7
6							8
7							9
8							Y
9							X
10							0
11							1
12							2
13							3
14							4
15							5
16	2	14	16	0	0		6
17	2	24	27	0	0		7
18	2	1	24	1	2		8
19	2	16	13	0	0		9
20	2	2	2	0	27	X	Y
21	2	22	30	2	0	2	X
22	2	30	21	0	0		0
23	2	14	20	0	1		1
24	2	21	28	0	2		2
25	2	20	25	0	0		3
26	1	4	24	0	2		4
27	2	13	14	0	2		5
28	2	13	1	0	19		6
29	2	1	1	0	25	X	7
30	2	24	14	1	2	16	8
31	2	23	14	1	7	22	9

