

PDP11/45

MULTIPLY

MD-11-DCKBK-A

EP DCKBK A DL A

OCT 1976

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FICHE 1 OF 1

Made in U.S.A.

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715	716	717	718	719	720	721
722	723	724	725	726	727	728
729	730	731	732	733	734	735
736	737	738	739	740	741	742
743	744	745	746	747	748	749
750	751	752	753	754	755	756
757	758	759	760	761	762	763
764	765	766	767	768	769	770
771	772	773	774	775	776	777
778	779	780	781	782	783	784
785	786	787	788	789	790	791
792	793	794	795	796	797	798
799	800	801	802	803	804	805
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869	870	871	872	873	874	875
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890	891	892	893	894	895	896
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904	905	906	907	908	909	910
911	912	913	914	915	916	917
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939	940	941	942	943	944	945
946	947	948	949	950	951	952
953	954	955	956	957	958	959
960	961	962	963	964	965	966
967	968	969	970	971	972	973
974	975	976	977	978	979	980
981	982	983	984	985	986	987
988	989	990	991	992	993	994
995	996	997	998	999	1000	1001



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TRAPVEC+4: 012716 ; MOVE SCOPE ADDRESS TO STACK
TRAPVEC+6: ADDRESS ; ADDRESS OF PREVIOUS SCOPE
TRAPVEC+10: 000006 ; RETURN TO TEST AT SCOPE

RESTORE ALL LOCATIONS BEFORE PROCEEDING TO NEXT TEST.

7.0 RESTRICTIONS
NONE

8.0 MISCELLANEOUS
ON TRAP ERRORS THE STACK POINTER(R6) WILL CONTAIN THE ADDRESS WHERE THE TRAP OCCURED.

8.1 EXECUTION TIME
THE PROGRAM TAKES ABOUT 1 MINUTE.

8.2 STACK POINTER
THE PROGRAM INITIALLY SETS THE STACK POINTER AT 500.

9.0 PROGRAM DESCRIPTIONS

THIS IS A TEST OF THE MUL INSTRUCTION. IT TESTS MUL ON
DIFERENT NUMBER PATTERNS IN ALL REGISTERS

.TITLE MAINDEC-11-DCKBK-A MUL TEST
;COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
;PROGRAM BY BOB BRAIN

.ABS

000000
000000
010701
000001
000006
000007
177570
177570
177776
000000

.=0 ;TRAP CATCHER 0 - 776

HLT=HALT
SCOPE= 10701
N=1
SP=%6
PC=%7
SMR=177570
DISPLAY=SMR
PS=177776
M=0

000200 000200 000576
000167 001000
001000 000000
001002 012706 000500
001006 005037 177776
001012 032737 001000 177570
001020 001403
001022 012737 004000 177776
001030 032767 000400 176532
001036 001403
001040 116767 176524 176722

.=200 JMP BEG
.=1000
ICNT: 0 ;PASS COUNT
BEG: MOV #500,%6 ;## STACK AT 500 ##
CLR @#PS ;WHICH REGISTER SET?
BIT #1000,@#SMR
BEQ .+10
MOV #4000,@#PS ;ALTERNATE!
BIT #400,SMR
BEQ .+10
MOVB SMR,177770

MAINDEC-11-DCKBK-A MUL TEST
DCKBKA.P11

MACY11 27(732) 07-SEP-76 09:41

EO1
PAGE 4

:TEST 1 MUL 0 * 80 = 0 0 PS = 4

001046	010701			SCOPE		:TEST OF MULTIPLY
001050	012700	000000		MOV	80,XD	:LOAD MULTIPLICAN WITH 0
001054	070027	000000		MUL	80,XD	:MULTIPLY 0 * 80
001060	013767	177776	013370	MOV	28PS,PSW	:SAVE PS
001066	122767	000004	013362	CHPB	84,PSW	:IS PS = 4
001074	001401			BEG	.+4	
001076	000000			HLT		:PS IS WRONG
001100	022700	000000		CHP	80,XD	:IS HIGH ORDER = 0
001104	001401			BEG	.+4	
001106	000000			HLT		:HIGH ORDER IS WRONG
001110	022701	000000		CHP	80,XD!1	:IS LOW ORDER = 0
001114	001401			BEG	.+4	
001116	000000			HLT		:LOW ORDER IS WRONG

:TEST 2 MUL 0 * 81 = 0 0 PS = 4

001120	010701			SCOPE		:TEST OF MULTIPLY
001122	012700	000000		MOV	80,XD	:LOAD MULTIPLICAN WITH 0
001126	070027	000001		MUL	81,XD	:MULTIPLY 0 * 81
001130	013767	177776	013316	MOV	28PS,PSW	:SAVE PS
001140	122767	000004	013310	CHPB	84,PSW	:IS PS = 4
001146	001401			BEG	.+4	
001150	000000			HLT		:PS IS WRONG
001152	022700	000000		CHP	80,XD	:IS HIGH ORDER = 0
001156	001401			BEG	.+4	
001160	000000			HLT		:HIGH ORDER IS WRONG
001162	022701	000000		CHP	80,XD!1	:IS LOW ORDER = 0
001166	001401			BEG	.+4	
001170	000000			HLT		:LOW ORDER IS WRONG

:TEST 3 MUL 1 * 80 = 0 0 PS = 4

001172 010701
001174 012700 000001
001200 070027 000000
001204 013767 177776 013244
001212 122767 000004 013236
001220 001401
001222 000000
001224 022700 000000
001230 001401
001232 000000
001234 022701 000000
001240 001401
001242 000000

SCOPE
MOV 81,XD
MUL 80,XD
MOV 28PS,PSW
CMPB 84,PSW
BEQ .+4
HLT
CMP 80,XD
BEQ .+4
HLT
CMP 80,XD!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 1
:MULTIPLY 1 * 80
:SAVE PS
:IS PS = 4

:PS IS WRONG
:IS HIGH ORDER = 0

:HIGH ORDER IS WRONG
:IS LOW ORDER = 0

:LOW ORDER IS WRONG

:TEST 4 MUL -1 * 81 = -1 -1 PS = 10

001244 010701
001246 012700 177777
001252 070027 000001
001256 013767 177776 013172
001264 122767 000010 013164
001272 001401
001274 000000
001276 022700 177777
001302 001401
001304 000000
001306 022701 177777
001312 001401
001314 000000

SCOPE
MOV 8-1,XD
MUL 81,XD
MOV 28PS,PSW
CMPB 810,PSW
BEQ .+4
HLT
CMP 8-1,XD
BEQ .+4
HLT
CMP 8-1,XD!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH -1
:MULTIPLY -1 * 81
:SAVE PS
:IS PS = 10

:PS IS WRONG
:IS HIGH ORDER = -1

:HIGH ORDER IS WRONG
:IS LOW ORDER = -1

:LOW ORDER IS WRONG

:TEST 5 MUL 1 * 0-1 = -1 -1 PS = 10

001316 010701
001320 012700 000001
001324 070027 177777
001330 013767 177776 013120
001336 122767 000010 013112
001344 001401
001346 000000
001350 022700 177777
001354 001401
001356 000000
001360 022701 177777
001364 001401
001366 000000

SCOPE
MOV 01,XD
MUL 0-1,XD
MOV 00PS,PSW
CMPB 010,PSW
BEQ .+4
HLT
CMP 0-1,XD
BEQ .+4
HLT
CMP 0-1,XD!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 1
:MULTIPLY 1 * 0-1
:SAVE PS
:IS PS = 10

:PS IS WRONG
:IS HIGH ORDER = -1

:HIGH ORDER IS WRONG
:IS LOW ORDER = -1

:LOW ORDER IS WRONG

:TEST 6 MUL 1 * 02 = 0 2 PS = 0

001370 010701
001372 012700 000001
001376 070027 000002
001402 013767 177776 013046
001410 122767 000000 013040
001416 001401
001420 000000
001422 022700 000000
001426 001401
001430 000000
001432 022701 000002
001436 001401
001440 000000

SCOPE
MOV 01,XD
MUL 02,XD
MOV 00PS,PSW
CMPB 00,PSW
BEQ .+4
HLT
CMP 00,XD
BEQ .+4
HLT
CMP 02,XD!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 1
:MULTIPLY 1 * 02
:SAVE PS
:IS PS = 0

:PS IS WRONG
:IS HIGH ORDER = 0

:HIGH ORDER IS WRONG
:IS LOW ORDER = 2

:LOW ORDER IS WRONG

:TEST 7 MUL 2 * 2 = 0 4 PS = 0

001442	010701			SCOPE		:TEST OF MULTIPLY
001444	012700	000002		MOV	2, X0	:LOAD MULTIPLICAN WITH 2
001450	070027	000002		MUL	2, X0	:MULTIPLY 2 * 2
001454	013767	177776	012774	MOV	2, PS, PSW	:SAVE PS
001462	122767	000000	012766	CHPB	80, PSW	:IS PS = 0
001470	001401			BEG	.+4	
001472	000000			HLT		:PS IS WRONG
001474	022700	000000		CHP	80, X0	:IS HIGH ORDER = 0
001500	001401			BEG	.+4	
001502	000000			HLT		:HIGH ORDER IS WRONG
001504	022701	000004		CHP	84, X0! 1	:IS LOW ORDER = 4
001510	001401			BEG	.+4	
001512	000000			HLT		:LOW ORDER IS WRONG

:TEST 10 MUL 1000 * 200 = 1 0 PS = 1

001514	010701			SCOPE		:TEST OF MULTIPLY
001516	012700	001000		MOV	81000, X0	:LOAD MULTIPLICAN WITH 1000
001522	070027	000200		MUL	8200, X0	:MULTIPLY 1000 * 200
001526	013767	177776	012722	MOV	2, PS, PSW	:SAVE PS
001534	122767	000001	012714	CHPB	81, PSW	:IS PS = 1
001542	001401			BEG	.+4	
001544	000000			HLT		:PS IS WRONG
001546	022700	000001		CHP	81, X0	:IS HIGH ORDER = 1
001552	001401			BEG	.+4	
001554	000000			HLT		:HIGH ORDER IS WRONG
001556	022701	000000		CHP	80, X0! 1	:IS LOW ORDER = 0
001562	001401			BEG	.+4	
001564	000000			HLT		:LOW ORDER IS WRONG

:TEST 11 MUL 200 * 01000 = 1 0 PS = 1
:*****

001566	010701			SCOPE		:TEST OF MULTIPLY
001570	012700	000200		MOV	0200,%0	:LOAD MULTIPLICAN WITH 200
001574	070027	001000		MUL	01000,%0	:MULTIPLY 200 * 01000
001600	013767	177776	012650	MOV	00PS,PSW	:SAVE PS
001606	122767	000001	012642	CHPB	01,PSW	:IS PS = 1
001614	001401			BEQ	+.4	
001616	000000			HLT		:PS IS WRONG
001620	022700	000001		CHP	01,%0	:IS HIGH ORDER = 1
001624	001401			BEQ	+.4	
001626	000000			HLT		:HIGH ORDER IS WRONG
001630	022701	000000		CHP	00,%0!1	:IS LOW ORDER = 0
001634	001401			BEQ	+.4	
001636	000000			HLT		:LOW ORDER IS WRONG

:TEST 12 MUL 77777 * 02 = 0 177776 PS = 1
:*****

001640	010701			SCOPE		:TEST OF MULTIPLY
001642	012700	077777		MOV	077777,%0	:LOAD MULTIPLICAN WITH 77777
001646	070027	000002		MUL	02,%0	:MULTIPLY 77777 * 02
001652	013767	177776	012576	MOV	00PS,PSW	:SAVE PS
001660	122767	000001	012570	CHPB	01,PSW	:IS PS = 1
001666	001401			BEQ	+.4	
001670	000000			HLT		:PS IS WRONG
001672	022700	000000		CHP	00,%0	:IS HIGH ORDER = 0
001676	001401			BEQ	+.4	
001700	000000			HLT		:HIGH ORDER IS WRONG
001702	022701	177776		CHP	0177776,%0!1	:IS LOW ORDER = 177776
001706	001401			BEQ	+.4	
001710	000000			HLT		:LOW ORDER IS WRONG

:TEST 13 MUL 2 * 877777 = 0 177776 PS = 1
:*****

001712	010701			SCOPE		:TEST OF MULTIPLY
001714	012700	000002		MOV	82,XD	:LOAD MULTIPLICAN WITH 2
001720	070027	077777		MUL	877777,XD	:MULTIPLY 2 * 877777
001724	013767	177776	012524	MOV	8PS,PSW	:SAVE PS
001732	122767	000001	012516	CHPB	81,PSW	:IS PS = 1
001740	001401			BEG	.+4	
001742	000000			HLT		:PS IS WRONG
001744	022700	000000		CHP	80,XD	:IS HIGH ORDER = 0
001750	001401			BEG	.+4	
001752	000000			HLT		:HIGH ORDER IS WRONG
001754	022701	177776		CHP	8177776,XD!1	:IS LOW ORDER = 177776
001760	001401			BEG	.+4	
001762	000000			HLT		:LOW ORDER IS WRONG

:TEST 14 MUL 7777 * 810 = 0 77770 PS = 0
:*****

001764	010701			SCOPE		:TEST OF MULTIPLY
001766	012700	007777		MOV	87777,XD	:LOAD MULTIPLICAN WITH 7777
001772	070027	000010		MUL	810,XD	:MULTIPLY 7777 * 810
001776	013767	177776	012452	MOV	8PS,PSW	:SAVE PS
002004	122767	000000	012444	CHPB	80,PSW	:IS PS = 0
002012	001401			BEG	.+4	
002014	000000			HLT		:PS IS WRONG
002016	022700	000000		CHP	80,XD	:IS HIGH ORDER = 0
002022	001401			BEG	.+4	
002024	000000			HLT		:HIGH ORDER IS WRONG
002026	022701	077770		CHP	877770,XD!1	:IS LOW ORDER = 77770
002032	001401			BEG	.+4	
002034	000000			HLT		:LOW ORDER IS WRONG

:TEST 15 MUL 10 * 87777 = 0 77770 PS = 0

002036	010701			SCOPE		:TEST OF MULTIPLY
002040	012700	000010		MOV	#10,%0	:LOAD MULTIPICAN WITH 10
002044	070027	007777		MUL	87777,%0	:MULTIPLY 10 * 87777
002050	013767	177776	012400	MOV	2#PS,PSW	:SAVE PS
002056	122767	000000	012372	CHPB	#0,PSW	:IS PS = 0
002064	001401			BEQ	+.4	
002066	000000			HLT		:PS IS WRONG
002070	022700	000000		CHP	#0,%0	:IS HIGH ORDER = 0
002074	001401			BEQ	+.4	
002076	000000			HLT		:HIGH ORDER IS WRONG
002100	022701	077770		CHP	877770,%0!1	:IS LOW ORDER = 77770
002104	001401			BEQ	+.4	
002106	000000			HLT		:LOW ORDER IS WRONG

:TEST 16 MUL 77777 * 877777 = 37777 1 PS = 1

002110	010701			SCOPE		:TEST OF MULTIPLY
002112	012700	077777		MOV	877777,%0	:LOAD MULTIPICAN WITH 77777
002116	070027	077777		MUL	877777,%0	:MULTIPLY 77777 * 877777
002122	013767	177776	012326	MOV	2#PS,PSW	:SAVE PS
002130	122767	000001	012320	CHPB	#1,PSW	:IS PS = 1
002136	001401			BEQ	+.4	
002140	000000			HLT		:PS IS WRONG
002142	022700	037777		CHP	837777,%0	:IS HIGH ORDER = 37777
002146	001401			BEQ	+.4	
002150	000000			HLT		:HIGH ORDER IS WRONG
002152	022701	000001		CHP	#1,%0!1	:IS LOW ORDER = 1
002156	001401			BEQ	+.4	
002160	000000			HLT		:LOW ORDER IS WRONG

:TEST 17 MUL 77777 * 81 = 0 77777 PS = 0

002162	010701			SCOPE		:TEST OF MULTIPLY
002164	012700	077777		MOV	877777,%0	:LOAD MULTIPLICAN WITH 77777
002170	070027	000001		MUL	81,%0	:MULTIPLY 77777 * 81
002174	013767	177776	012254	MOV	28PS,PSW	:SAVE PS
002202	122767	000000	012246	CMPB	80,PSW	:IS PS = 0
002210	001401			BEQ	+.4	
002212	000000			HLT		:PS IS WRONG
002214	022700	000000		CMP	80,%0	:IS HIGH ORDER = 0
002220	001401			BEQ	+.4	
002222	000000			HLT		:HIGH ORDER IS WRONG
002224	022701	077777		CMP	877777,%0!1	:IS LOW ORDER = 77777
002230	001401			BEQ	+.4	
002232	000000			HLT		:LOW ORDER IS WRONG

:TEST 20 MUL 1 * 877777 = 0 77777 PS = 0

002234	010701			SCOPE		:TEST OF MULTIPLY
002236	012700	000001		MOV	81,%0	:LOAD MULTIPLICAN WITH 1
002242	070027	077777		MUL	877777,%0	:MULTIPLY 1 * 877777
002246	013767	177776	012202	MOV	28PS,PSW	:SAVE PS
002254	122767	000000	012174	CMPB	80,PSW	:IS PS = 0
002262	001401			BEQ	+.4	
002264	000000			HLT		:PS IS WRONG
002266	022700	000000		CMP	80,%0	:IS HIGH ORDER = 0
002272	001401			BEQ	+.4	
002274	000000			HLT		:HIGH ORDER IS WRONG
002276	022701	077777		CMP	877777,%0!1	:IS LOW ORDER = 77777
002302	001401			BEQ	+.4	
002304	000000			HLT		:LOW ORDER IS WRONG

:TEST 21 MUL 77777 * 8-1 = -1 100001 PS = 10
:*****

002306 010701
002310 012700 077777
002314 070027 177777
002320 013767 177776 012130
002326 122767 000010 012122
002334 001401
002336 000000
002340 022700 177777
002344 001401
002346 000000
002350 022701 100001
002354 001401
002356 000000

SCOPE
MOV 877777,%0
MUL 8-1,%0
MOV 2#PS,PSW
CMPB 810,PSW
BEQ .+4
HLT
CMP 8-1,%0
BEQ .+4
HLT
CMP 8100001,%0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 8-1
:SAVE PS
:IS PS = 10
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100001
:
:LOW ORDER IS WRONG

:TEST 22 MUL -1 * 877777 = -1 100001 PS = 10
:*****

002360 010701
002362 012700 177777
002366 070027 077777
002372 013767 177776 012056
002400 122767 000010 012050
002406 001401
002410 000000
002412 022700 177777
002416 001401
002420 000000
002422 022701 100001
002426 001401
002430 000000

SCOPE
MOV 8-1,%0
MUL 877777,%0
MOV 2#PS,PSW
CMPB 810,PSW
BEQ .+4
HLT
CMP 8-1,%0
BEQ .+4
HLT
CMP 8100001,%0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH -1
:MULTIPLY -1 * 877777
:SAVE PS
:IS PS = 10
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100001
:
:LOW ORDER IS WRONG

:TEST 23 MUL -2 * 877777 = -1 2 PS = 11
:*****

002432	010701			SCOPE		:TEST OF MULTIPLY
002434	012700	177776		MOV	8-2,XD	:LOAD MULTIPLICAN WITH -2
002440	070027	077777		MUL	877777,XD	:MULTIPLY -2 * 877777
002444	013767	177776	012004	MOV	38PS,PSW	:SAVE PS
002452	122767	000011	011776	CHPB	811,PSW	:IS PS = 11
002460	001401			BEQ	.+4	
002462	000000			HLT		:PS IS WRONG
002464	022700	177777		CHP	8-1,XD	:IS HIGH ORDER = -1
002470	001401			BEQ	.+4	
002472	000000			HLT		:HIGH ORDER IS WRONG
002474	022701	000002		CHP	82,XD!1	:IS LOW ORDER = 2
002500	001401			BEQ	.+4	
002502	000000			HLT		:LOW ORDER IS WRONG

:TEST 24 MUL 77777 * 8-2 = -1 2 PS = 11
:*****

002504	010701			SCOPE		:TEST OF MULTIPLY
002506	012700	077777		MOV	877777,XD	:LOAD MULTIPLICAN WITH 77777
002512	070027	177776		MUL	8-2,XD	:MULTIPLY 77777 * 8-2
002516	013767	177776	011732	MOV	38PS,PSW	:SAVE PS
002524	122767	000011	011724	CHPB	811,PSW	:IS PS = 11
002532	001401			BEQ	.+4	
002534	000000			HLT		:PS IS WRONG
002536	022700	177777		CHP	8-1,XD	:IS HIGH ORDER = -1
002542	001401			BEQ	.+4	
002544	000000			HLT		:HIGH ORDER IS WRONG
002546	022701	000002		CHP	82,XD!1	:IS LOW ORDER = 2
002552	001401			BEQ	.+4	
002554	000000			HLT		:LOW ORDER IS WRONG

:TEST 25 MUL 125252 * 02 = -1 52524 PS = 11
:#####

002556 010701
002560 012700 125252
002564 070027 000002
002570 013767 177776 011660
002576 122767 000011 011652
002604 001401
002606 000000
002610 022700 177777
002614 001401
002616 000000
002620 022701 052524
002624 001401
002626 000000

SCOPE
MOV 0125252,X0
MUL 02,X0
MOV 00PS,PSM
CMPB 011,PSM
BEQ .+4
HLT
CMP 0-1,X0
BEQ .+4
HLT
CMP 052524,X0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 125252
:MULTIPLY 125252 * 02
:SAVE PS
:IS PS = 11
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 52524
:
:LOW ORDER IS WRONG

:TEST 26 MUL 2 * 0125252 = -1 52524 PS = 11
:#####

002630 010701
002632 012700 000002
002636 070027 125252
002642 013767 177776 011606
002650 122767 000011 011600
002656 001401
002660 000000
002662 022700 177777
002666 001401
002670 000000
002672 022701 052524
002676 001401
002700 000000

SCOPE
MOV 02,X0
MUL 0125252,X0
MOV 00PS,PSM
CMPB 011,PSM
BEQ .+4
HLT
CMP 0-1,X0
BEQ .+4
HLT
CMP 052524,X0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 2
:MULTIPLY 2 * 0125252
:SAVE PS
:IS PS = 11
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 52524
:
:LOW ORDER IS WRONG

:TEST 27 MUL 52525 * 82 = 0 125252 PS = 1

002702	010701			SCOPE		:TEST OF MULTIPLY
002704	012700	052525		MOV	852525,X0	:LOAD MULTIPICAN WITH 52525
002710	070027	000002		MUL	82,X0	:MULTIPLY 52525 * 82
002714	013767	177776	011534	MOV	80PS,PSW	:SAVE PS
002722	122767	000001	011526	CHPB	81,PSW	:IS PS = 1
002730	001401			BEQ	.+4	
002732	000000			HLT		:PS IS WRONG
002734	022700	000000		CHP	80,X0	:IS HIGH ORDER = 0
002740	001401			BEQ	.+4	
002742	000000			HLT		:HIGH ORDER IS WRONG
002744	022701	125252		CHP	8125252,X0!1	:IS LOW ORDER = 125252
002750	001401			BEQ	.+4	
002752	000000			HLT		:LOW ORDER IS WRONG

:TEST 30 MUL 2 * 852525 = 0 125252 PS = 1

002754	010701			SCOPE		:TEST OF MULTIPLY
002756	012700	000002		MOV	82,X0	:LOAD MULTIPICAN WITH 2
002762	070027	052525		MUL	852525,X0	:MULTIPLY 2 * 852525
002766	013767	177776	011462	MOV	80PS,PSW	:SAVE PS
002774	122767	000001	011454	CHPB	81,PSW	:IS PS = 1
003002	001401			BEQ	.+4	
003004	000000			HLT		:PS IS WRONG
003006	022700	000000		CHP	80,X0	:IS HIGH ORDER = 0
003012	001401			BEQ	.+4	
003014	000000			HLT		:HIGH ORDER IS WRONG
003016	022701	125252		CHP	8125252,X0!1	:IS LOW ORDER = 125252
003022	001401			BEQ	.+4	
003024	000000			HLT		:LOW ORDER IS WRONG

:TEST 31 MUL 125252 * #40000 = 165252 100000 PS = 11
:*****

003026 010701
003030 012700 125252
003034 070027 040000
003040 013767 177776 011410
003046 122767 000011 011402
003054 001401
003056 000000
003060 022700 165252
003064 001401
003066 000000
003070 022701 100000
003074 001401
003076 000000

SCOPE
MOV #125252,X0
MUL #40000,X0
MOV #PS,PSW
CMPB #11,PSW
BEQ .+4
HLT
CMP #165252,X0
BEQ .+4
HLT
CMP #100000,X0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPICAN WITH 125252
:MULTIPLY 125252 * #40000
:SAVE PS
:IS PS = 11
:
:PS IS WRONG
:IS HIGH ORDER = 165252
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:
:LOW ORDER IS WRONG

:TEST 32 MUL 40000 * #125252 = 165252 100000 PS = 11
:*****

003100 010701
003102 012700 040000
003106 070027 125252
003112 013767 177776 011336
003120 122767 000011 011330
003126 001401
003130 000000
003132 022700 165252
003136 001401
003140 000000
003142 022701 100000
003146 001401
003150 000000

SCOPE
MOV #40000,X0
MUL #125252,X0
MOV #PS,PSW
CMPB #11,PSW
BEQ .+4
HLT
CMP #165252,X0
BEQ .+4
HLT
CMP #100000,X0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPICAN WITH 40000
:MULTIPLY 40000 * #125252
:SAVE PS
:IS PS = 11
:
:PS IS WRONG
:IS HIGH ORDER = 165252
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:
:LOW ORDER IS WRONG

:TEST 33 MUL 10000 * 10000 = 40000 0 PS = 1
:*****

003152 010701
003154 012700 10000
003160 070027 10000
003164 013767 177776 011264
003172 122767 000001 011256
003200 001401
003202 000000
003204 022700 040000
003210 001401
003212 000000
003214 022701 000000
003220 001401
003222 000000

SCOPE
MOV 100000,X0
MUL 100000,X0
MOV 28PS,PSW
CMPB 01,PSW
BEQ .+4
HLT
CMP 40000,X0
BEQ .+4
HLT
CMP 80,X0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 100000
:MULTIPLY 10000 * 100000
:SAVE PS
:IS PS = 1
:
:PS IS WRONG
:IS HIGH ORDER = 40000
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 0
:
:LOW ORDER IS WRONG

:TEST 34 MUL 70707 * 70707 = 31221 44261 PS = 1
:*****

003224 010701
003226 012700 070707
003232 070027 070707
003236 013767 177776 011212
003244 122767 000001 011204
003252 001401
003254 000000
003256 022700 031221
003262 001401
003264 000000
003266 022701 044261
003272 001401
003274 000000

SCOPE
MOV 70707,X0
MUL 70707,X0
MOV 28PS,PSW
CMPB 01,PSW
BEQ .+4
HLT
CMP 31221,X0
BEQ .+4
HLT
CMP 44261,X0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 70707
:MULTIPLY 70707 * 70707
:SAVE PS
:IS PS = 1
:
:PS IS WRONG
:IS HIGH ORDER = 31221
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 44261
:
:LOW ORDER IS WRONG

:TEST 35 MUL 107070 * #107070 = 31222 26100 PS = 1

003276 010701
003300 012700 107070
003304 070027 107070
003310 013767 177776 011140
003316 122767 000001 011132
003324 001401
003326 000000
003330 022700 031222
003334 001401
003336 000000
003340 022701 026100
003344 001401
003346 000000

SCOPE
MOV #107070,%D
MUL #107070,%D
MOV #PS,PSM
CMPB #1,PSM
BEQ .+4
HLT
CMP #31222,%D
BEQ .+4
HLT
CMP #26100,%D!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 107070
:MULTIPLY 107070 * #107070
:SAVE PS
:IS PS = 1
:PS IS WRONG
:IS HIGH ORDER = 31222
:HIGH ORDER IS WRONG
:IS LOW ORDER = 26100
:LOW ORDER IS WRONG

:TEST 36 MUL 100000 * #77777 = 140000 100000 PS = 11

003350 010701
003352 012700 100000
003356 070027 077777 011066
003362 013767 177776 011060
003370 122767 000011
003376 001401
003400 000000
003402 022700 140000
003406 001401
003410 000000
003412 022701 100000
003416 001401
003420 000000

SCOPE
MOV #100000,%D
MUL #77777,%D
MOV #PS,PSM
CMPB #11,PSM
BEQ .+4
HLT
CMP #140000,%D
BEQ .+4
HLT
CMP #100000,%D!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 100000
:MULTIPLY 100000 * #77777
:SAVE PS
:IS PS = 11
:PS IS WRONG
:IS HIGH ORDER = 140000
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:LOW ORDER IS WRONG

:TEST 37 MUL 77777 * 0100000 = 140000 100000 PS = 11
:*****

003422	010701			SCOPE		:TEST OF MULTIPLY
003424	012700	077777		MOV	077777,XD	:LOAD MULTIPLICAN WITH 77777
003430	070027	100000		MUL	0100000,XD	:MULTIPLY 77777 * 0100000
003434	013767	177776	011014	MOV	00PS,PSW	:SAVE PS
003442	122767	000011	011006	CHPB	011,PSW	:IS PS = 11
003450	001401			BEG	.+4	
003452	000000			HLT		:PS IS WRONG
003454	022700	140000		CHP	0140000,XD	:IS HIGH ORDER = 140000
003460	001401			BEG	.+4	
003462	000000			HLT		:HIGH ORDER IS WRONG
003464	022701	100000		CHP	0100000,XD!1	:IS LOW ORDER = 100000
003470	001401			BEG	.+4	
003472	000000			HLT		:LOW ORDER IS WRONG

:TEST 40 MUL 157634 * 0104031 = 7453 133074 PS = 1
:*****

003474	010701			SCOPE		:TEST OF MULTIPLY
003476	012700	157634		MOV	0157634,XD	:LOAD MULTIPLICAN WITH 157634
003502	070027	104031		MUL	0104031,XD	:MULTIPLY 157634 * 0104031
003506	013767	177776	010742	MOV	00PS,PSW	:SAVE PS
003514	122767	000001	010734	CHPB	01,PSW	:IS PS = 1
003522	001401			BEG	.+4	
003524	000000			HLT		:PS IS WRONG
003526	022700	007453		CHP	07453,XD	:IS HIGH ORDER = 7453
003532	001401			BEG	.+4	
003534	000000			HLT		:HIGH ORDER IS WRONG
003536	022701	133074		CHP	0133074,XD!1	:IS LOW ORDER = 133074
003542	001401			BEG	.+4	
003544	000000			HLT		:LOW ORDER IS WRONG

:TEST 41 MUL 104031 * 8157634 = 7453 133074 PS = 1
:*****

003546 010701
003550 012700 104031
003554 070027 157634
003560 013767 177776 010670
003566 122767 000001 010662
003574 001401
003576 000000
003600 022700 007453
003604 001401
003606 000000
003610 022701 133074
003614 001401
003616 000000

SCOPE
MOV 8104031,XD
MUL 8157634,XD
MOV 28PS,PSW
CMPB 81,PSW
BEQ .+4
HLT
CMP 87453,XD
BEQ .+4
HLT
CMP 8133074,XD!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 104031
:MULTIPLY 104031 * 8157634
:SAVE PS
:IS PS = 1
:PS IS WRONG
:IS HIGH ORDER = 7453
:HIGH ORDER IS WRONG
:IS LOW ORDER = 133074
:LOW ORDER IS WRONG

:TEST 42 MUL 152210 * 80 = 0 0 PS = 4
:*****

003620 010701
003622 012700 152210
003626 070027 000000
003632 013767 177776 010616
003640 122767 000004 010610
003646 001401
003650 000000
003652 022700 000000
003656 001401
003660 000000
003662 022701 000000
003666 001401
003670 000000

SCOPE
MOV 8152210,XD
MUL 80,XD
MOV 28PS,PSW
CMPB 84,PSW
BEQ .+4
HLT
CMP 80,XD
BEQ .+4
HLT
CMP 80,XD!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 152210
:MULTIPLY 152210 * 80
:SAVE PS
:IS PS = 4
:PS IS WRONG
:IS HIGH ORDER = 0
:HIGH ORDER IS WRONG
:IS LOW ORDER = 0
:LOW ORDER IS WRONG

:TEST 43 MUL 0 * #152210 = 0 0 PS = 4

003672 010701
003674 012700 000000
003700 070027 152210
003704 013767 177776 010544
003712 122767 000004 010536
003720 001401
003722 000000
003724 022700 000000
003730 001401
003732 000000
003734 022701 000000
003740 001401
003742 000000

SCOPE
MOV #0,%D
MUL #152210,%D
MOV @PS,PSW
CMPB #4,PSW
BEQ .+4
HLT
CMP #0,%D
BEQ .+4
HLT
CMP #0,%D!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPICAN WITH 0
:MULTIPLY 0 * #152210
:SAVE PS
:IS PS = 4
:
:PS IS WRONG
:IS HIGH ORDER = 0
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 0
:
:LOW ORDER IS WRONG

:TEST 44 MUL -1 * #0 = 0 0 PS = 4

003744 010701
003746 012700 177777
003752 070027 000000
003756 013767 177776 010472
003764 122767 000004 010464
003772 001401
003774 000000
003776 022700 000000
004002 001401
004004 000000
004006 022701 000000
004012 001401
004014 000000

SCOPE
MOV #-1,%D
MUL #0,%D
MOV @PS,PSW
CMPB #4,PSW
BEQ .+4
HLT
CMP #0,%D
BEQ .+4
HLT
CMP #0,%D!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPICAN WITH -1
:MULTIPLY -1 * #0
:SAVE PS
:IS PS = 4
:
:PS IS WRONG
:IS HIGH ORDER = 0
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 0
:
:LOW ORDER IS WRONG

:TEST 45 MUL 0 * 0-1 = 0 0 PS = 4
:*****

004016	010701			SCOPE		:TEST OF MULTIPLY
004020	012700	000000		MOV	00,XD	:LOAD MULTIPICAN WITH 0
004024	070027	177777		MUL	0-1,XD	:MULTIPLY 0 * 0-1
004030	013767	177776	010420	MOV	00PS,PSW	:SAVE PS
004036	122767	000004	010412	CHPB	04,PSW	:IS PS = 4
004044	001401			BEQ	.+4	
004046	000000			HLT		:PS IS WRONG
004050	022700	000000		CHP	00,XD	:IS HIGH ORDER = 0
004054	001401			BEQ	.+4	
004056	000000			HLT		:HIGH ORDER IS WRONG
004060	022701	000000		CHP	00,XD!1	:IS LOW ORDER = 0
004064	001401			BEQ	.+4	
004066	000000			HLT		:LOW ORDER IS WRONG

:TEST 46 MUL -1 * 01 = -1 -1 PS = 10
:*****

004070	010701			SCOPE		:TEST OF MULTIPLY
004072	012701	177777		MOV	0-1,X1	:LOAD MULTIPICAN WITH -1
004076	070127	000001		MUL	01,X1	:MULTIPLY -1 * 01
004102	013767	177776	010346	MOV	00PS,PSW	:SAVE PS
004110	122767	000010	010340	CHPB	010,PSW	:IS PS = 10
004116	001401			BEQ	.+4	
004120	000000			HLT		:PS IS WRONG
004122	022701	177777		CHP	0-1,X1	:IS HIGH ORDER = -1
004126	001401			BEQ	.+4	
004130	000000			HLT		:HIGH ORDER IS WRONG
004132	022701	177777		CHP	0-1,X1!1	:IS LOW ORDER = -1
004136	001401			BEQ	.+4	
004140	000000			HLT		:LOW ORDER IS WRONG

:TEST 47 MUL -1 * 80 = 0 0 PS = 4

004142	010701			SCOPE		:TEST OF MULTIPLY
004144	012701	177777		MOV	#-1,%1	:LOAD MULTIPLICAN WITH -1
004150	070127	000000		MUL	#0,%1	:MULTIPLY -1 * 80
004154	013767	177776	010274	MOV	@PS,PSW	:SAVE PS
004162	122767	000004	010266	CMPB	#4,PSW	:IS PS = 4
004170	001401			BEQ	+.4	
004172	000000			HLT		:PS IS WRONG
004174	022701	000000		CMP	#0,%1	:IS HIGH ORDER = 0
004200	001401			BEQ	+.4	
004202	000000			HLT		:HIGH ORDER IS WRONG
004204	022701	000000		CMP	#0,%1!1	:IS LOW ORDER = 0
004210	001401			BEQ	+.4	
004212	000000			HLT		:LOW ORDER IS WRONG

:TEST 50 MUL 77777 * #100000 = 100000 100000 PS = 11

004214	010701			SCOPE		:TEST OF MULTIPLY
004216	012701	077777		MOV	#77777,%1	:LOAD MULTIPLICAN WITH 77777
004222	070127	100000		MUL	#100000,%1	:MULTIPLY 77777 * #100000
004226	013767	177776	010222	MOV	@PS,PSW	:SAVE PS
004234	122767	000011	010214	CMPB	#11,PSW	:IS PS = 11
004242	001401			BEQ	+.4	
004244	000000			HLT		:PS IS WRONG
004246	022701	100000		CMP	#100000,%1	:IS HIGH ORDER = 100000
004252	001401			BEQ	+.4	
004254	000000			HLT		:HIGH ORDER IS WRONG
004256	022701	100000		CMP	#100000,%1!1	:IS LOW ORDER = 100000
004262	001401			BEQ	+.4	
004264	000000			HLT		:LOW ORDER IS WRONG

:TEST S1 MUL -1 * 877777 = 100001 100001 PS = 10
:*****

004266	010701			SCOPE		:TEST OF MULTIPLY
004270	012701	177777		MOV	8-1,%1	:LOAD MULTIPLICAN WITH -1
004274	070127	077777		MUL	877777,%1	:MULTIPLY -1 * 877777
004300	013767	177776	010150	MOV	3#PS,PSW	:SAVE PS
004306	122767	000010	010142	CHPB	810,PSW	:IS PS = 10
004314	001401			BEQ	+.4	
004316	000000			HLT		:PS IS WRONG
004320	022701	100001		CHP	8100001,%1	:IS HIGH ORDER = 100001
004324	001401			BEQ	+.4	
004326	000000			HLT		:HIGH ORDER IS WRONG
004330	022701	100001		CHP	8100001,%1!1	:IS LOW ORDER = 100001
004334	001401			BEQ	+.4	
004336	000000			HLT		:LOW ORDER IS WRONG

:TEST S2 MUL 77777 * 877777 = 1 1 PS = 1
:*****

004340	010701			SCOPE		:TEST OF MULTIPLY
004342	012701	077777		MOV	877777,%1	:LOAD MULTIPLICAN WITH 77777
004346	070127	077777		MUL	877777,%1	:MULTIPLY 77777 * 877777
004352	013767	177776	010076	MOV	3#PS,PSW	:SAVE PS
004360	122767	000001	010070	CHPB	81,PSW	:IS PS = 1
004366	001401			BEQ	+.4	
004370	000000			HLT		:PS IS WRONG
004372	022701	000001		CHP	81,%1	:IS HIGH ORDER = 1
004376	001401			BEQ	+.4	
004400	000000			HLT		:HIGH ORDER IS WRONG
004402	022701	000001		CHP	81,%1!1	:IS LOW ORDER = 1
004406	001401			BEQ	+.4	
004410	000000			HLT		:LOW ORDER IS WRONG

:TEST 53 MUL 2 * #2 = 4 4 PS = 0
:*****

004412	010701			SCOPE		:TEST OF MULTIPLY
004414	012701	000002		MOV	#2,%1	:LOAD MULTIPLICAN WITH 2
004420	070127	000002		MUL	#2,%1	:MULTIPLY 2 * #2
004424	013767	177776	010024	MOV	2#PS,PSW	:SAVE PS
004432	122767	000000	010016	CMPB	#0,PSW	:IS PS = 0
004440	001401			BEQ	+.4	
004442	000000			HLT		:PS IS WRONG
004444	022701	000004		CMP	#4,%1	:IS HIGH ORDER = 4
004450	001401			BEQ	+.4	
004452	000000			HLT		:HIGH ORDER IS WRONG
004454	022701	000004		CMP	#4,%1!1	:IS LOW ORDER = 4
004460	001401			BEQ	+.4	
004462	000000			HLT		:LOW ORDER IS WRONG

:TEST 54 MUL 0 * #0 = 0 0 PS = 4
:*****

004464	010701			SCOPE		:TEST OF MULTIPLY
004466	012702	000000		MOV	#0,%2	:LOAD MULTIPLICAN WITH 0
004472	070227	000000		MUL	#0,%2	:MULTIPLY 0 * #0
004476	013767	177776	007752	MOV	2#PS,PSW	:SAVE PS
004504	122767	000004	007744	CMPB	#4,PSW	:IS PS = 4
004512	001401			BEQ	+.4	
004514	000000			HLT		:PS IS WRONG
004516	022702	000000		CMP	#0,%2	:IS HIGH ORDER = 0
004522	001401			BEQ	+.4	
004524	000000			HLT		:HIGH ORDER IS WRONG
004526	022703	000000		CMP	#0,%2!1	:IS LOW ORDER = 0
004532	001401			BEQ	+.4	
004534	000000			HLT		:LOW ORDER IS WRONG

:TEST 55 MUL 0 * 01 = 0 0 PS = 4
:*****

004536	010701			SCOPE		:TEST OF MULTIPLY
004540	012702	000000		MOV	00,x2	:LOAD MULTIPLICAN WITH 0
004544	070227	000001		MUL	01,x2	:MULTIPLY 0 * 01
004550	013767	177776	007700	MOV	00PS,PSM	:SAVE PS
004556	122767	000004	007672	CHPB	04,PSM	:IS PS = 4
004564	001401			BEG	.+4	
004566	000000			HLT		:PS IS WRONG
004570	022702	000000		CHP	00,x2	:IS HIGH ORDER = 0
004574	001401			BEG	.+4	
004576	000000			HLT		:HIGH ORDER IS WRONG
004600	022703	000000		CHP	00,x2!1	:IS LOW ORDER = 0
004604	001401			BEG	.+4	
004606	000000			HLT		:LOW ORDER IS WRONG

:TEST 56 MUL 1 * 00 = 0 0 PS = 4
:*****

004610	010701			SCOPE		:TEST OF MULTIPLY
004612	012702	000001		MOV	01,x2	:LOAD MULTIPLICAN WITH 1
004616	070227	000000		MUL	00,x2	:MULTIPLY 1 * 00
004622	013767	177776	007626	MOV	00PS,PSM	:SAVE PS
004630	122767	000004	007620	CHPB	04,PSM	:IS PS = 4
004636	001401			BEG	.+4	
004640	000000			HLT		:PS IS WRONG
004642	022702	000000		CHP	00,x2	:IS HIGH ORDER = 0
004646	001401			BEG	.+4	
004650	000000			HLT		:HIGH ORDER IS WRONG
004652	022703	000000		CHP	00,x2!1	:IS LOW ORDER = 0
004656	001401			BEG	.+4	
004660	000000			HLT		:LOW ORDER IS WRONG

:TEST 57 MUL -1 * 01 = -1 -1 PS = 10
:*****

004662	010701			SCOPE		:TEST OF MULTIPLY
004664	012702	177777		MOV	0-1,x2	:LOAD MULTIPLICAN WITH -1
004670	070227	000001		MUL	01,x2	:MULTIPLY -1 * 01
004674	013767	177776	007554	MOV	00PS,PSH	:SAVE PS
004702	122767	000010	007546	CHPB	010,PSH	:IS PS = 10
004710	001401			BEG	.+4	
004712	000000			HLT		:PS IS WRONG
004714	022702	177777		CHP	0-1,x2	:IS HIGH ORDER = -1
004720	001401			BEG	.+4	
004722	000000			HLT		:HIGH ORDER IS WRONG
004724	022703	177777		CHP	0-1,x2!1	:IS LOW ORDER = -1
004730	001401			BEG	.+4	
004732	000000			HLT		:LOW ORDER IS WRONG

:TEST 60 MUL 1 * 0-1 = -1 -1 PS = 10
:*****

004734	010701			SCOPE		:TEST OF MULTIPLY
004736	012702	000001		MOV	01,x2	:LOAD MULTIPLICAN WITH 1
004742	070227	177777		MUL	0-1,x2	:MULTIPLY 1 * 0-1
004746	013767	177776	007502	MOV	00PS,PSH	:SAVE PS
004754	122767	000010	007474	CHPB	010,PSH	:IS PS = 10
004762	001401			BEG	.+4	
004764	000000			HLT		:PS IS WRONG
004766	022702	177777		CHP	0-1,x2	:IS HIGH ORDER = -1
004772	001401			BEG	.+4	
004774	000000			HLT		:HIGH ORDER IS WRONG
004776	022703	177777		CHP	0-1,x2!1	:IS LOW ORDER = -1
005002	001401			BEG	.+4	
005004	000000			HLT		:LOW ORDER IS WRONG

:TEST 61 MUL 1 * 82 = 0 2 PS = 0
:*****

005006	010701			SCOPE		:TEST OF MULTIPLY
005010	012702	000001		NOV	81,x2	:LOAD MULTIPICAN WITH 1
005014	070227	000002		MUL	82,x2	:MULTIPLY 1 * 82
005020	013767	177776	007430	NOV	28PS,PSH	:SAVE PS
005026	122767	000000	007422	CHPB	80,PSH	:IS PS = 0
005034	001401			BEG	.+4	
005036	000000			HLT		:PS IS WRONG
005040	022702	000000		CHP	80,x2	:IS HIGH ORDER = 0
005044	001401			BEG	.+4	
005046	000000			HLT		:HIGH ORDER IS WRONG
005050	022703	000002		CHP	82,x2!1	:IS LOW ORDER = 2
005054	001401			BEG	.+4	
005056	000000			HLT		:LOW ORDER IS WRONG

:TEST 62 MUL 2 * 82 = 0 4 PS = 0
:*****

005060	010701			SCOPE		:TEST OF MULTIPLY
005062	012702	000002		NOV	82,x2	:LOAD MULTIPICAN WITH 2
005066	070227	000002		MUL	82,x2	:MULTIPLY 2 * 82
005072	013767	177776	007356	NOV	28PS,PSH	:SAVE PS
005100	122767	000000	007350	CHPB	80,PSH	:IS PS = 0
005106	001401			BEG	.+4	
005110	000000			HLT		:PS IS WRONG
005112	022702	000000		CHP	80,x2	:IS HIGH ORDER = 0
005116	001401			BEG	.+4	
005120	000000			HLT		:HIGH ORDER IS WRONG
005122	022703	000004		CHP	84,x2!1	:IS LOW ORDER = 4
005126	001401			BEG	.+4	
005130	000000			HLT		:LOW ORDER IS WRONG

:TEST 63 MUL 1000 * 200 = 1 0 PS = 1

005132	010701			SCOPE		:TEST OF MULTIPLY
005134	012702	001000		MOV	200,x2	:LOAD MULTIPLICAN WITH 1000
005140	070227	000200		MUL	200,x2	:MULTIPLY 1000 * 200
005144	013767	177776	007304	MOV	28PS,PSH	:SAVE PS
005152	122767	000001	007276	CHPB	21,PSH	:IS PS = 1
005160	001401			BEQ	.+4	
005162	000000			HLT		:PS IS WRONG
005164	022702	000001		CHP	21,x2	:IS HIGH ORDER = 1
005170	001401			BEQ	.+4	
005172	000000			HLT		:HIGH ORDER IS WRONG
005174	022703	000000		CHP	20,x2!1	:IS LOW ORDER = 0
005200	001401			BEQ	.+4	
005202	000000			HLT		:LOW ORDER IS WRONG

:TEST 64 MUL 200 * 1000 = 1 0 PS = 1

005204	010701			SCOPE		:TEST OF MULTIPLY
005206	012702	000200		MOV	200,x2	:LOAD MULTIPLICAN WITH 200
005212	070227	001000		MUL	200,x2	:MULTIPLY 200 * 1000
005216	013767	177776	007232	MOV	28PS,PSH	:SAVE PS
005224	122767	000001	007224	CHPB	21,PSH	:IS PS = 1
005232	001401			BEQ	.+4	
005234	000000			HLT		:PS IS WRONG
005236	022702	000001		CHP	21,x2	:IS HIGH ORDER = 1
005242	001401			BEQ	.+4	
005244	000000			HLT		:HIGH ORDER IS WRONG
005246	022703	000000		CHP	20,x2!1	:IS LOW ORDER = 0
005252	001401			BEQ	.+4	
005254	000000			HLT		:LOW ORDER IS WRONG

:TEST 65 MUL 77777 * 82 = 0 177776 PS = 1

005296 010701
005298 012702 077777
005300 070227 000002
005302 013767 177776 007160
005304 122767 000001 007152
005306 001401
005308 000000
005310 022702 000000
005312 001401
005314 000000
005316 000000
005318 022703 177776
005320 001401
005322 000000
005324 000000

SCOPE
MOV 877777,x2
MUL 82,x2
MOV 28PS,PSM
CHPB 81,PSM
BEQ .+4
HLT
CHP 80,x2
BEQ .+4
HLT
CHP 8177776,x2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 82
:SAVE PS
:IS PS = 1
:
:PS IS WRONG
:IS HIGH ORDER = 0
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 177776
:
:LOW ORDER IS WRONG

:TEST 66 MUL 2 * 877777 = 0 177776 PS = 1

005330 010701
005332 012702 000002
005334 070227 077777
005336 013767 177776 007106
005338 122767 000001 007100
005340 001401
005342 000000
005344 022702 000000
005346 001401
005348 000000
005350 022703 177776
005352 001401
005354 000000
005400 000000

SCOPE
MOV 82,x2
MUL 877777,x2
MOV 28PS,PSM
CHPB 81,PSM
BEQ .+4
HLT
CHP 80,x2
BEQ .+4
HLT
CHP 8177776,x2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 2
:MULTIPLY 2 * 877777
:SAVE PS
:IS PS = 1
:
:PS IS WRONG
:IS HIGH ORDER = 0
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 177776
:
:LOW ORDER IS WRONG

:TEST 67 MUL 7777 * 810 = 0 77770 PS = 0

005402	010701			SCOPE		:TEST OF MULTIPLY
005404	012702	007777		MOV	87777,x2	:LOAD MULTIPLICAN WITH 7777
005410	070227	000010		MUL	810,x2	:MULTIPLY 7777 * 810
005414	013767	177776	007034	MOV	28PS,PSW	:SAVE PS
005420	122767	000000	007026	CHPB	80,PSW	:IS PS = 0
005430	001401			BEQ	+.4	
005432	000000			HLT		:PS IS WRONG
005434	022702	000000		CHP	80,x2	:IS HIGH ORDER = 0
005440	001401			BEQ	+.4	
005442	000000			HLT		:HIGH ORDER IS WRONG
005444	022703	077770		CHP	877770,x2!1	:IS LOW ORDER = 77770
005450	001401			BEQ	+.4	
005452	000000			HLT		:LOW ORDER IS WRONG

:TEST 70 MUL 10 * 87777 = 0 77770 PS = 0

005454	010701			SCOPE		:TEST OF MULTIPLY
005456	012702	000010		MOV	810,x2	:LOAD MULTIPLICAN WITH 10
005462	070227	007777		MUL	87777,x2	:MULTIPLY 10 * 87777
005466	013767	177776	006762	MOV	28PS,PSW	:SAVE PS
005474	122767	000000	006754	CHPB	80,PSW	:IS PS = 0
005502	001401			BEQ	+.4	
005504	000000			HLT		:PS IS WRONG
005506	022702	000000		CHP	80,x2	:IS HIGH ORDER = 0
005512	001401			BEQ	+.4	
005514	000000			HLT		:HIGH ORDER IS WRONG
005516	022703	077770		CHP	877770,x2!1	:IS LOW ORDER = 77770
005522	001401			BEQ	+.4	
005524	000000			HLT		:LOW ORDER IS WRONG

:TEST 71 MUL 77777 * 877777 = 37777 1 PS = 1
:*****

005526	010701			SCOPE		:TEST OF MULTIPLY
005530	012702	077777		MOV	877777,x2	:LOAD MULTIPLICAN WITH 77777
005534	070227	077777		MUL	877777,x2	:MULTIPLY 77777 * 877777
005540	013767	177776	006710	MOV	38PS,PSW	:SAVE PS
005546	122767	000001	006702	CMPB	81,PSW	:IS PS = 1
005554	001401			BEQ	+.4	
005556	000000			HLT		:PS IS WRONG
005560	022702	037777		CMP	837777,x2	:IS HIGH ORDER = 37777
005564	001401			BEQ	+.4	
005566	000000			HLT		:HIGH ORDER IS WRONG
005570	022703	000001		CMP	81,x2!1	:IS LOW ORDER = 1
005574	001401			BEQ	+.4	
005576	000000			HLT		:LOW ORDER IS WRONG

:TEST 72 MUL 77777 * 81 = 0 77777 PS = 0
:*****

005600	010701			SCOPE		:TEST OF MULTIPLY
005602	012702	077777		MOV	877777,x2	:LOAD MULTIPLICAN WITH 77777
005606	070227	000001		MUL	81,x2	:MULTIPLY 77777 * 81
005612	013767	177776	006636	MOV	38PS,PSW	:SAVE PS
005620	122767	000000	006630	CMPB	80,PSW	:IS PS = 0
005626	001401			BEQ	+.4	
005630	000000			HLT		:PS IS WRONG
005632	022702	000000		CMP	80,x2	:IS HIGH ORDER = 0
005636	001401			BEQ	+.4	
005640	000000			HLT		:HIGH ORDER IS WRONG
005642	022703	077777		CMP	877777,x2!1	:IS LOW ORDER = 77777
005646	001401			BEQ	+.4	
005650	000000			HLT		:LOW ORDER IS WRONG

:TEST 73 MUL 1 * 877777 = 0 77777 PS = 0
:*****

005652 010701
005654 012702 000001
005660 070227 077777
005664 013767 177776 006564
005672 122767 000000 006556
005700 001401
005702 000000
005704 022702 000000
005710 001401
005712 000000
005714 022703 077777
005720 001401
005722 000000

SCOPE
MOV 81,x2
MUL 877777,x2
MOV 28PS,PSW
CMPB 80,PSW
BEQ .+4
HLT
CMP 80,x2
BEQ .+4
HLT
CMP 877777,x2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 1
:MULTIPLY 1 * 877777
:SAVE PS
:IS PS = 0

:PS IS WRONG
:IS HIGH ORDER = 0

:HIGH ORDER IS WRONG
:IS LOW ORDER = 77777

:LOW ORDER IS WRONG

:TEST 74 MUL 77777 * 8-1 = -1 100001 PS = 10
:*****

005724 010701
005726 012702 077777
005732 070227 177777
005736 013767 177776 006512
005744 122767 000010 006504
005752 001401
005754 000000
005756 022702 177777
005762 001401
005764 000000
005766 022703 100001
005772 001401
005774 000000

SCOPE
MOV 877777,x2
MUL 8-1,x2
MOV 28PS,PSW
CMPB 810,PSW
BEQ .+4
HLT
CMP 8-1,x2
BEQ .+4
HLT
CMP 8100001,x2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 8-1
:SAVE PS
:IS PS = 10

:PS IS WRONG
:IS HIGH ORDER = -1

:HIGH ORDER IS WRONG
:IS LOW ORDER = 100001

:LOW ORDER IS WRONG

: TEST 75 MUL -1 * 877777 = -1 100001 PS = 10
: *****

005776 010701
006000 012702 177777
006004 070227 077777
006010 013767 177776 006440
006016 122767 000010 006432
006024 001401
006026 000000
006030 022702 177777
006034 001401
006036 000000
006040 022703 100001
006044 001401
006046 000000

SCOPE
MOV 8-1,x2
MUL 877777,x2
MOV 28PS,PSW
CMPB 810,PSW
BEQ .+4
HLT
CMP 8-1,x2
BEQ .+4
HLT
CMP 8100001,x2!1
BEQ .+4
HLT

: TEST OF MULTIPLY
: LOAD MULTIPLICAN WITH -1
: MULTIPLY -1 * 877777
: SAVE PS
: IS PS = 10
: PS IS WRONG
: IS HIGH ORDER = -1
: HIGH ORDER IS WRONG
: IS LOW ORDER = 100001
: LOW ORDER IS WRONG

: TEST 76 MUL -2 * 877777 = -1 2 PS = 11
: *****

006050 010701
006052 012702 177776
006056 070227 077777
006062 013767 177776 006366
006070 122767 000011 006360
006076 001401
006100 000000
006102 022702 177777
006106 001401
006110 000000
006112 022703 000002
006116 001401
006120 000000

SCOPE
MOV 8-2,x2
MUL 877777,x2
MOV 28PS,PSW
CMPB 811,PSW
BEQ .+4
HLT
CMP 8-1,x2
BEQ .+4
HLT
CMP 82,x2!1
BEQ .+4
HLT

: TEST OF MULTIPLY
: LOAD MULTIPLICAN WITH -2
: MULTIPLY -2 * 877777
: SAVE PS
: IS PS = 11
: PS IS WRONG
: IS HIGH ORDER = -1
: HIGH ORDER IS WRONG
: IS LOW ORDER = 2
: LOW ORDER IS WRONG

:TEST 77 MUL 77777 * 8-2 = -1 2 PS = 11

006122 010701
006124 012702 077777
006130 070227 177776
006134 013767 177776 006314
006142 122767 000011 006306
006150 001401
006152 000000
006154 022702 177777
006160 001401
006162 000000
006164 022703 000002
006170 001401
006172 000000

SCOPE
MOV #77777,%2
MUL #2,%2
MOV @#PS,PSW
CMPB #11,PSW
BEQ .+4
HLT
CMP #-1,%2
BEQ .+4
HLT
CMP #2,%2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 8-2
:SAVE PS
:IS PS = 11
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 2
:
:LOW ORDER IS WRONG

:TEST 100 MUL 125252 * #2 = -1 52524 PS = 11

006174 010701
006176 012702 125252
006202 070227 000002
006206 013767 177776 006242
006214 122767 000011 006234
006222 001401
006224 000000
006226 022702 177777
006232 001401
006234 000000
006236 022703 052524
006242 001401
006244 000000

SCOPE
MOV #125252,%2
MUL #2,%2
MOV @#PS,PSW
CMPB #11,PSW
BEQ .+4
HLT
CMP #-1,%2
BEQ .+4
HLT
CMP #52524,%2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 125252
:MULTIPLY 125252 * #2
:SAVE PS
:IS PS = 11
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 52524
:
:LOW ORDER IS WRONG

```

:*****
:TEST 101 MUL 2 * #125252 = -1 52524 PS = 11
:*****
    
```

006246	010701			SCOPE		:TEST OF MULTIPLY
006250	012702	000002		MOV	#2,%2	:LOAD MULTIPICAN WITH 2
006254	070227	125252		MUL	#125252,%2	:MULTIPLY 2 * #125252
006260	013767	177776	006170	MOV	@#PS,PSW	:SAVE PS
006266	122767	000011	006162	CMPB	#11,PSW	:IS PS = 11
006274	001401			BEQ	+.4	
006276	000000			HLT		:PS IS WRONG
006300	022702	177777		CMP	#-1,%2	:IS HIGH ORDER = -1
006304	001401			BEQ	+.4	
006306	000000			HLT		:HIGH ORDER IS WRONG
006310	022703	052524		CMP	#52524,%2!1	:IS LOW ORDER = 52524
006314	001401			BEQ	+.4	
006316	000000			HLT		:LOW ORDER IS WRONG

```

:*****
:TEST 102 MUL 52525 * #2 = 0 125252 PS = 1
:*****
    
```

006320	010701			SCOPE		:TEST OF MULTIPLY
006322	012702	052525		MOV	#52525,%2	:LOAD MULTIPICAN WITH 52525
006326	070227	000002		MUL	#2,%2	:MULTIPLY 52525 * #2
006332	013767	177776	006116	MOV	@#PS,PSW	:SAVE PS
006340	122767	000001	006110	CMPB	#1,PSW	:IS PS = 1
006346	001401			BEQ	+.4	
006350	000000			HLT		:PS IS WRONG
006352	022702	000000		CMP	#0,%2	:IS HIGH ORDER = 0
006356	001401			BEQ	+.4	
006360	000000			HLT		:HIGH ORDER IS WRONG
006362	022703	125252		CMP	#125252,%2!1	:IS LOW ORDER = 125252
006366	001401			BEQ	+.4	
006370	000000			HLT		:LOW ORDER IS WRONG

MO3

MAINDEC-11-DCKBK-A MUL TEST
DCKBKA.P11

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:*****
:TEST 103 MUL 2 * #52525 = 0 125252 PS = 1
:*****
  
```

006372	010701			SCOPE		:TEST OF MULTIPLY
006374	012702	000002		MOV	#2,%2	:LOAD MULTIPLICAN WITH 2
006400	070227	052525		MUL	#52525,%2	:MULTIPLY 2 * #52525
006404	013767	177776	006044	MOV	2#PS,PSW	:SAVE PS
006412	122767	000001	006036	CMPB	#1,PSW	:IS PS = 1
006420	001401			BEQ	+.4	
006422	000000			HLT		:PS IS WRONG
006424	022702	000000		CMP	#0,%2	:IS HIGH ORDER = 0
006430	001401			BEQ	+.4	
006432	000000			HLT		:HIGH ORDER IS WRONG
006434	022703	125252		CMP	#125252,%2!1	:IS LOW ORDER = 125252
006440	001401			BEQ	+.4	
006442	000000			HLT		:LOW ORDER IS WRONG

```

:*****
:TEST 104 MUL 125252 * #40000 = 165252 100000 PS = 11
:*****
  
```

006444	010701			SCOPE		:TEST OF MULTIPLY
006446	012702	125252		MOV	#125252,%2	:LOAD MULTIPLICAN WITH 125252
006452	070227	040000		MUL	#40000,%2	:MULTIPLY 125252 * #40000
006456	013767	177776	005772	MOV	2#PS,PSW	:SAVE PS
006464	122767	000011	005764	CMPB	#11,PSW	:IS PS = 11
006472	001401			BEQ	+.4	
006474	000000			HLT		:PS IS WRONG
006476	022702	165252		CMP	#165252,%2	:IS HIGH ORDER = 165252
006502	001401			BEQ	+.4	
006504	000000			HLT		:HIGH ORDER IS WRONG
006506	022703	100000		CMP	#100000,%2!1	:IS LOW ORDER = 100000
006512	001401			BEQ	+.4	
006514	000000			HLT		:LOW ORDER IS WRONG

```

:*****
:TEST 105 MUL 40000 * #125252 = 165252 100000 PS = 11
:*****
    
```

006516	010701			SCOPE		:TEST OF MULTIPLY
006520	012702	040000		MOV	#40000,%2	:LOAD MULTIPICAN WITH 40000
006524	070227	125252		MUL	#125252,%2	:MULTIPLY 40000 * #125252
006530	013767	177776	005720	MOV	@#PS,PSW	:SAVE PS
006536	122767	000011	005712	CMPB	#11,PSW	:IS PS = 11
006544	001401			BEQ	+.4	
006546	000000			HLT		:PS IS WRONG
006550	022702	165252		CMP	#165252,%2	:IS HIGH ORDER = 165252
006554	001401			BEQ	+.4	
006556	000000			HLT		:HIGH ORDER IS WRONG
006560	022703	100000		CMP	#100000,%2!1	:IS LOW ORDER = 100000
006564	001401			BEQ	+.4	
006566	000000			HLT		:LOW ORDER IS WRONG

```

:*****
:TEST 106 MUL 100000 * #100000 = 40000 0 PS = 1
:*****
    
```

006570	010701			SCOPE		:TEST OF MULTIPLY
006572	012702	100000		MOV	#100000,%2	:LOAD MULTIPICAN WITH 100000
006576	070227	100000		MUL	#100000,%2	:MULTIPLY 100000 * #100000
006602	013767	177776	005646	MOV	@#PS,PSW	:SAVE PS
006610	122767	000001	005640	CMPB	#1,PSW	:IS PS = 1
006616	001401			BEQ	+.4	
006620	000000			HLT		:PS IS WRONG
006622	022702	040000		CMP	#40000,%2	:IS HIGH ORDER = 40000
006626	001401			BEQ	+.4	
006630	000000			HLT		:HIGH ORDER IS WRONG
006632	022703	000000		CMP	#0,%2!1	:IS LOW ORDER = 0
006636	001401			BEQ	+.4	
006640	000000			HLT		:LOW ORDER IS WRONG

:TEST 107 MUL 70707 * 870707 = 31221 44261 PS = 1

006642	010701			SCOPE		:TEST OF MULTIPLY
006644	012702	070707		MOV	870707,x2	:LOAD MULTIPLICAN WITH 70707
006650	070227	070707		MUL	870707,x2	:MULTIPLY 70707 * 870707
006654	013767	177776	005574	MOV	38PS,PSW	:SAVE PS
006662	122767	000001	005566	CMPB	81,PSW	:IS PS = 1
006670	001401			BEG	.+4	
006672	000000			HLT		:PS IS WRONG
006674	022702	031221		CMP	831221,x2	:IS HIGH ORDER = 31221
006700	001401			BEG	.+4	
006702	000000			HLT		:HIGH ORDER IS WRONG
006704	022703	044261		CMP	844261,x2!1	:IS LOW ORDER = 44261
006710	001401			BEG	.+4	
006712	000000			HLT		:LOW ORDER IS WRONG

:TEST 110 MUL 107070 * 8107070 = 31222 26100 PS = 1

006714	010701			SCOPE		:TEST OF MULTIPLY
006716	012702	107070		MOV	8107070,x2	:LOAD MULTIPLICAN WITH 107070
006722	070227	107070		MUL	8107070,x2	:MULTIPLY 107070 * 8107070
006726	013767	177776	005522	MOV	38PS,PSW	:SAVE PS
006734	122767	000001	005514	CMPB	81,PSW	:IS PS = 1
006742	001401			BEG	.+4	
006744	000000			HLT		:PS IS WRONG
006746	022702	031222		CMP	831222,x2	:IS HIGH ORDER = 31222
006752	001401			BEG	.+4	
006754	000000			HLT		:HIGH ORDER IS WRONG
006756	022703	026100		CMP	826100,x2!1	:IS LOW ORDER = 26100
006762	001401			BEG	.+4	
006764	000000			HLT		:LOW ORDER IS WRONG

:TEST 111 MUL 100000 * 877777 = 140000 100000 PS = 11

006766	010701			SCOPE		:TEST OF MULTIPLY
006770	012702	100000		MOV	8100000,x2	:LOAD MULTIPLICAN WITH 100000
006774	070227	077777		MUL	877777,x2	:MULTIPLY 100000 * 877777
007000	013767	177776	005450	MOV	8PS,PSW	:SAVE PS
007006	122767	000011	005442	CHPB	811,PSW	:IS PS = 11
007014	001401			BEG	.+4	
007016	000000			HLT		:PS IS WRONG
007020	022702	140000		CHP	8140000,x2	:IS HIGH ORDER = 140000
007024	001401			BEG	.+4	
007026	000000			HLT		:HIGH ORDER IS WRONG
007030	022703	100000		CHP	8100000,x2!1	:IS LOW ORDER = 100000
007034	001401			BEG	.+4	
007036	000000			HLT		:LOW ORDER IS WRONG

:TEST 112 MUL 77777 * 8100000 = 140000 100000 PS = 11

007040	010701			SCOPE		:TEST OF MULTIPLY
007042	012702	077777		MOV	877777,x2	:LOAD MULTIPLICAN WITH 77777
007046	070227	100000		MUL	8100000,x2	:MULTIPLY 77777 * 8100000
007052	013767	177776	005376	MOV	8PS,PSW	:SAVE PS
007058	122767	000011	005370	CHPB	811,PSW	:IS PS = 11
007066	001401			BEG	.+4	
007070	000000			HLT		:PS IS WRONG
007072	022702	140000		CHP	8140000,x2	:IS HIGH ORDER = 140000
007076	001401			BEG	.+4	
007100	000000			HLT		:HIGH ORDER IS WRONG
007102	022703	100000		CHP	8100000,x2!1	:IS LOW ORDER = 100000
007106	001401			BEG	.+4	
007110	000000			HLT		:LOW ORDER IS WRONG

:TEST 113 MUL 157634 * 0104031 = 7453 133074 PS = 1
:*****

007112 010701
007114 012702 157634
007120 070227 104031
007124 013767 177776 005324
007132 122767 000001 005316
007140 001401
007142 000000
007144 022702 007453
007150 001401
007152 000000
007154 022703 133074
007160 001401
007162 000000

SCOPE
MOV @157634,x2
MUL @104031,x2
MOV @PS,PSM
CMPB @1,PSM
BEQ .+4
HLT
CMP @7453,x2
BEQ .+4
HLT
CMP @133074,x2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 157634
:MULTIPLY 157634 * 0104031
:SAVE PS
:IS PS = 1
:PS IS WRONG
:IS HIGH ORDER = 7453
:HIGH ORDER IS WRONG
:IS LOW ORDER = 133074
:LOW ORDER IS WRONG

:TEST 114 MUL 104031 * 0157634 = 7453 133074 PS = 1
:*****

007164 010701
007166 012702 104031
007172 070227 157634
007176 013767 177776 005252
007204 122767 000001 005244
007212 001401
007214 000000
007216 022702 007453
007222 001401
007224 000000
007226 022703 133074
007232 001401
007234 000000

SCOPE
MOV @104031,x2
MUL @157634,x2
MOV @PS,PSM
CMPB @1,PSM
BEQ .+4
HLT
CMP @7453,x2
BEQ .+4
HLT
CMP @133074,x2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 104031
:MULTIPLY 104031 * 0157634
:SAVE PS
:IS PS = 1
:PS IS WRONG
:IS HIGH ORDER = 7453
:HIGH ORDER IS WRONG
:IS LOW ORDER = 133074
:LOW ORDER IS WRONG

:TEST 115 MUL 152210 * 80 = 0 0 PS = 4

007236 010701
007240 012702 152210
007244 070227 000000
007250 013767 177776 005200
007256 122767 000004 005172
007264 001401
007266 000000
007270 022702 000000
007274 001401
007276 000000
007300 022703 000000
007304 001401
007306 000000

SCOPE
MOV 8152210,x2
MUL 80,x2
MOV 28PS,PSH
CMPB 84,PSH
BEQ .+4
HLT
CMP 80,x2
BEQ .+4
HLT
CMP 80,x2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 152210
:MULTIPLY 152210 * 80
:SAVE PS
:IS PS = 4

:PS IS WRONG
:IS HIGH ORDER = 0

:HIGH ORDER IS WRONG
:IS LOW ORDER = 0

:LOW ORDER IS WRONG

:TEST 116 MUL 0 * 8152210 = 0 0 PS = 4

007310 010701
007312 012702 000000
007316 070227 152210
007322 013767 177776 005126
007330 122767 000004 005120
007336 001401
007340 000000
007342 022702 000000
007346 001401
007350 000000
007352 022703 000000
007356 001401
007360 000000

SCOPE
MOV 80,x2
MUL 8152210,x2
MOV 28PS,PSH
CMPB 84,PSH
BEQ .+4
HLT
CMP 80,x2
BEQ .+4
HLT
CMP 80,x2!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 0
:MULTIPLY 0 * 8152210
:SAVE PS
:IS PS = 4

:PS IS WRONG
:IS HIGH ORDER = 0

:HIGH ORDER IS WRONG
:IS LOW ORDER = 0

:LOW ORDER IS WRONG

:TEST 117 MUL -1 * 80 = 0 0 PS = 4

007362	010701			SCOPE		:TEST OF MULTIPLY
007364	012702	177777		MOV	8-1,x2	:LOAD MULTIPLICAN WITH -1
007370	070227	000000		MUL	80,x2	:MULTIPLY -1 * 80
007374	013767	177776	005054	MOV	28PS,PSW	:SAVE PS
007402	122767	000004	005046	CHPB	84,PSW	:IS PS = 4
007410	001401			BEG	.+4	
007412	000000			HLT		:PS IS WRONG
007414	022702	000003		CHP	80,x2	:IS HIGH ORDER = 0
007420	001401			BEG	.+4	
007422	000000			HLT		:HIGH ORDER IS WRONG
007424	022703	000000		CHP	80,x2!1	:IS LOW ORDER = 0
007430	001401			BEG	.+4	
007432	000000			HLT		:LOW ORDER IS WRONG

:TEST 120 MUL 0 * 8-1 = 0 0 PS = 4

007434	010701			SCOPE		:TEST OF MULTIPLY
007436	012702	000000		MOV	80,x2	:LOAD MULTIPLICAN WITH 0
007442	070227	177777		MUL	8-1,x2	:MULTIPLY 0 * 8-1
007446	013767	177776	005002	MOV	28PS,PSW	:SAVE PS
007454	122767	000004	004774	CHPB	84,PSW	:IS PS = 4
007462	001401			BEG	.+4	
007464	000000			HLT		:PS IS WRONG
007466	022702	000000		CHP	80,x2	:IS HIGH ORDER = 0
007472	001401			BEG	.+4	
007474	000000			HLT		:HIGH ORDER IS WRONG
007476	022703	000000		CHP	80,x2!1	:IS LOW ORDER = 0
007502	001401			BEG	.+4	
007504	000000			HLT		:LOW ORDER IS WRONG

:TEST 121 MUL -1 * 81 = -1 -1 PS = 10
:*****

007506	010701			SCOPE		:TEST OF MULTIPLY
007510	012703	177777		MOV	8-1,x3	:LOAD MULTIPICAN WITH -1
007514	070327	000001		MUL	81,x3	:MULTIPLY -1 * 81
007520	013767	177776	004730	MOV	38PS,PSW	:SAVE PS
007526	122767	000010	004722	CHPB	810,PSW	:IS PS = 10
007534	001401			BEQ	.+4	
007536	000000			HLT		:PS IS WRONG
007540	022703	177777		CHP	8-1,x3	:IS HIGH ORDER = -1
007544	001401			BEQ	.+4	
007546	000000			HLT		:HIGH ORDER IS WRONG
007550	022703	177777		CHP	8-1,x3!1	:IS LOW ORDER = -1
007554	001401			BEQ	.+4	
007556	000000			HLT		:LOW ORDER IS WRONG

:TEST 122 MUL -1 * 80 = 0 0 PS = 4
:*****

007560	010701			SCOPE		:TEST OF MULTIPLY
007562	012703	177777		MOV	8-1,x3	:LOAD MULTIPICAN WITH -1
007566	070327	000000		MUL	80,x3	:MULTIPLY -1 * 80
007572	013767	177776	004656	MOV	38PS,PSW	:SAVE PS
007600	122767	000004	004650	CHPB	84,PSW	:IS PS = 4
007606	001401			BEQ	.+4	
007610	000000			HLT		:PS IS WRONG
007612	022703	000000		CHP	80,x3	:IS HIGH ORDER = 0
007616	001401			BEQ	.+4	
007620	000000			HLT		:HIGH ORDER IS WRONG
007622	022703	000000		CHP	80,x3!1	:IS LOW ORDER = 0
007626	001401			BEQ	.+4	
007630	000000			HLT		:LOW ORDER IS WRONG

:TEST 123 MUL 77777 * 8100000 = 100000 100000 PS = 11
:*****

007632 010701
007634 012703 077777
007640 070327 100000
007644 013767 177776 004604
007652 122767 000011 004576
007660 001401
007662 000000
007664 022703 100000
007670 001401
007672 000000
007674 022703 100000
007700 001401
007702 000000

SCOPE
MOV 877777,x3
MUL 8100000,x3
MOV 2#PS,PSM
CHPB 811,PSM
BEQ .+4
HLT
CHPB 8100000,x3
BEQ .+4
HLT
CHPB 8100000,x3!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 8100000
:SAVE PS
:IS PS = 11
:PS IS WRONG
:IS HIGH ORDER = 100000
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:LOW ORDER IS WRONG

:TEST 124 MUL -1 * 877777 = 100001 100001 PS = 10
:*****

007704 010701
007706 012703 177777
007712 070327 077777
007716 013767 177776 004532
007724 122767 000010 004524
007732 001401
007734 000000
007736 022703 100001
007742 001401
007744 000000
007746 022703 100001
007752 001401
007754 000000

SCOPE
MOV 8-1,x3
MUL 877777,x3
MOV 2#PS,PSM
CHPB 810,PSM
BEQ .+4
HLT
CHPB 8100001,x3
BEQ .+4
HLT
CHPB 8100001,x3!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH -1
:MULTIPLY -1 * 877777
:SAVE PS
:IS PS = 10
:PS IS WRONG
:IS HIGH ORDER = 100001
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100001
:LOW ORDER IS WRONG

:TEST 125 MUL 7777 * 87777 = 1 1 PS = 1
:*****

007756 010701
007760 012703 077777
007764 070327 077777
007770 013767 177776 004460
007776 122767 000001 004452
010004 001401
010006 000000
010010 022703 000001
010014 001401
010016 000000
010020 022703 000001
010024 001401
010026 000000

SCOPE
MOV 877777,X3
MUL 877777,X3
MOV 28PS,PSM
CMPB 81,PSM
BEQ .+4
HLT
CMP 81,X3
BEQ .+4
HLT
CMP 81,X3!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 877777
:SAVE PS
:IS PS = 1
:
:PS IS WRONG
:IS HIGH ORDER = 1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 1
:
:LOW ORDER IS WRONG

:TEST 126 MUL 2 * 82 = 4 4 PS = 0
:*****

010030 010701
010032 012703 000002
010036 070327 000002
010042 013767 177776 004406
010050 122767 000000 004400
010056 001401
010060 000000
010062 022703 000004
010066 001401
010070 000000
010072 022703 000004
010076 001401
010100 000000

SCOPE
MOV 82,X3
MUL 82,X3
MOV 28PS,PSM
CMPB 80,PSM
BEQ .+4
HLT
CMP 84,X3
BEQ .+4
HLT
CMP 84,X3!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 2
:MULTIPLY 2 * 82
:SAVE PS
:IS PS = 0
:
:PS IS WRONG
:IS HIGH ORDER = 4
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 4
:
:LOW ORDER IS WRONG

:TEST 127 MUL 0 * 80 = 0 0 PS = 4

010102	010701			SCOPE		:TEST OF MULTIPLY
010104	012704	000000		MOV	80,X4	:LOAD MULTIPICAN WITH 0
010110	070427	000000		MUL	80,X4	:MULTIPLY 0 * 80
010114	013767	177776	004334	MOV	28PS,PSM	:SAVE PS
010122	122767	000004	004326	CMPS	84,PSM	:IS PS = 4
010130	001401			BEG	.+4	
010132	000000			HLT		:PS IS WRONG
010134	022704	000000		CMPS	80,X4	:IS HIGH ORDER = 0
010140	001401			BEG	.+4	
010142	000000			HLT		:HIGH ORDER IS WRONG
010144	022705	000000		CMPS	80,X4!1	:IS LOW ORDER = 0
010150	001401			BEG	.+4	
010152	000000			HLT		:LOW ORDER IS WRONG

:TEST 130 MUL 0 * 81 = 0 0 PS = 4

010154	010701			SCOPE		:TEST OF MULTIPLY
010156	012704	000000		MOV	80,X4	:LOAD MULTIPICAN WITH 0
010162	070427	000001		MUL	81,X4	:MULTIPLY 0 * 81
010166	013767	177776	004262	MOV	28PS,PSM	:SAVE PS
010174	122767	000004	004254	CMPS	84,PSM	:IS PS = 4
010202	001401			BEG	.+4	
010204	000000			HLT		:PS IS WRONG
010206	022704	000000		CMPS	80,X4	:IS HIGH ORDER = 0
010212	001401			BEG	.+4	
010214	000000			HLT		:HIGH ORDER IS WRONG
010216	022705	000000		CMPS	80,X4!1	:IS LOW ORDER = 0
010222	001401			BEG	.+4	
010224	000000			HLT		:LOW ORDER IS WRONG

:TEST 131 MUL 1 * 80 = 0 0 PS = 4
:*****

010226 010701
010230 012704 000001
010234 070427 000000
010240 013767 177776 004210
010246 122767 000004 004202
010254 001401
010256 000000
010260 022704 000000
010264 001401
010266 000000
010270 022705 000000
010274 001401
010276 000000

SCOPE
MOV 81,X4
MUL 80,X4
MOV 28PS,PSW
CMPB 84,PSW
BEQ .+4
HLT
CMP 80,X4
BEQ .+4
HLT
CMP 80,X4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 1
:MULTIPLY 1 * 80
:SAVE PS
:IS PS = 4

:PS IS WRONG
:IS HIGH ORDER = 0

:HIGH ORDER IS WRONG
:IS LOW ORDER = 0

:LOW ORDER IS WRONG

:TEST 132 MUL -1 * 81 = -1 -1 PS = 10
:*****

010300 010701
010302 012704 177777
010306 070427 000001
010312 013767 177776 004136
010320 122767 000010 004130
010326 001401
010330 000000
010332 022704 177777
010336 001401
010340 000000
010342 022705 177777
010346 001401
010350 000000

SCOPE
MOV 8-1,X4
MUL 81,X4
MOV 28PS,PSW
CMPB 810,PSW
BEQ .+4
HLT
CMP 8-1,X4
BEQ .+4
HLT
CMP 8-1,X4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH -1
:MULTIPLY -1 * 81
:SAVE PS
:IS PS = 10

:PS IS WRONG
:IS HIGH ORDER = -1

:HIGH ORDER IS WRONG
:IS LOW ORDER = -1

:LOW ORDER IS WRONG

:TEST 133 MUL 1 * 0-1 = -1 -1 PS = 10

010352 010701
010354 012704 000001
010360 070427 177777
010364 013767 177776 004064
010372 122767 000010 004056
010400 001401
010402 000000
010404 022704 177777
010410 001401
010412 000000
010414 022705 177777
010420 001401
010422 000000

SCOPE
MOV 01,x4
MUL 0-1,x4
MOV 00PS,PSW
CMPB 010,PSW
BEQ .+4
HLT
CMP 0-1,x4
BEQ .+4
HLT
CMP 0-1,x4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 1
:MULTIPLY 1 * 0-1
:SAVE PS
:IS PS = 10
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = -1
:
:LOW ORDER IS WRONG

:TEST 134 MUL 1 * 02 = 0 2 PS = 0

010424 010701
010426 012704 000001
010432 070427 000002
010436 013767 177776 004012
010444 122767 000000 004004
010452 001401
010454 000000
010456 022704 000000
010462 001401
010464 000000
010466 022705 000002
010472 001401
010474 000000

SCOPE
MOV 01,x4
MUL 02,x4
MOV 00PS,PSW
CMPB 00,PSW
BEQ .+4
HLT
CMP 00,x4
BEQ .+4
HLT
CMP 02,x4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 1
:MULTIPLY 1 * 02
:SAVE PS
:IS PS = 0
:
:PS IS WRONG
:IS HIGH ORDER = 0
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 2
:
:LOW ORDER IS WRONG

:TEST 135 MUL 2 * #2 = 0 4 PS = 0
:*****

010476	010701			SCOPE		:TEST OF MULTIPLY
010500	012704	000002		MOV	#2,%4	:LOAD MULTIPLICAN WITH 2
010504	070427	000002		MUL	#2,%4	:MULTIPLY 2 * #2
010510	013767	177776	003740	MOV	@#PS,PSW	:SAVE PS
010516	122767	000000	003732	CMPB	#0,PSW	:IS PS = 0
010524	001401			BEQ	+.4	
010526	000000			HLT		:PS IS WRONG
010530	022704	000000		CMP	#0,%4	:IS HIGH ORDER = 0
010534	001401			BEQ	+.4	
010536	000000			HLT		:HIGH ORDER IS WRONG
010540	022705	000004		CMP	#4,%4!1	:IS LOW ORDER = 4
010544	001401			BEQ	+.4	
010546	000000			HLT		:LOW ORDER IS WRONG

:TEST 136 MUL 1000 * #200 = 1 0 PS = 1
:*****

010550	010701			SCOPE		:TEST OF MULTIPLY
010552	012704	001000		MOV	#1000,%4	:LOAD MULTIPLICAN WITH 1000
010556	070427	000200		MUL	#200,%4	:MULTIPLY 1000 * #200
010562	013767	177776	003666	MOV	@#PS,PSW	:SAVE PS
010570	122767	000001	003660	CMPB	#1,PSW	:IS PS = 1
010576	001401			BEQ	+.4	
010600	000000			HLT		:PS IS WRONG
010602	022704	000001		CMP	#1,%4	:IS HIGH ORDER = 1
010606	001401			BEQ	+.4	
010610	000000			HLT		:HIGH ORDER IS WRONG
010612	022705	000000		CMP	#0,%4!1	:IS LOW ORDER = 0
010616	001401			BEQ	+.4	
010620	000000			HLT		:LOW ORDER IS WRONG

:TEST 137 MUL 200 * #1000 = 1 0 PS = 1
:*****

010622	010701			SCOPE		:TEST OF MULTIPLY
010624	012704	000200		MOV	#200,%4	:LOAD MULTIPLICAN WITH 200
010630	070427	001000		MUL	#1000,%4	:MULTIPLY 200 * #1000
010634	013767	177776	003614	MOV	@#PS,PSW	:SAVE PS
010642	122767	000001	003606	CMPS	#1,PSW	:IS PS = 1
010650	001401			BEQ	+.4	
010652	000000			HLT		:PS IS WRONG
010654	022704	000001		CMPS	#1,%4	:IS HIGH ORDER = 1
010660	001401			BEQ	+.4	
010662	000000			HLT		:HIGH ORDER IS WRONG
010664	022705	000000		CMPS	#0,%4!1	:IS LOW ORDER = 0
010670	001401			BEQ	+.4	
010672	000000			HLT		:LOW ORDER IS WRONG

:TEST 140 MUL 77777 * #2 = 0 177776 PS = 1
:*****

010674	010701			SCOPE		:TEST OF MULTIPLY
010676	012704	077777		MOV	#77777,%4	:LOAD MULTIPLICAN WITH 77777
010702	070427	000002		MUL	#2,%4	:MULTIPLY 77777 * #2
010706	013767	177776	003542	MOV	@#PS,PSW	:SAVE PS
010714	122767	000001	003534	CMPS	#1,PSW	:IS PS = 1
010722	001401			BEQ	+.4	
010724	000000			HLT		:PS IS WRONG
010726	022704	000000		CMPS	#0,%4	:IS HIGH ORDER = 0
010732	001401			BEQ	+.4	
010734	000000			HLT		:HIGH ORDER IS WRONG
010736	022705	177776		CMPS	#177776,%4!1	:IS LOW ORDER = 177776
010742	001401			BEQ	+.4	
010744	000000			HLT		:LOW ORDER IS WRONG

:TEST 141 MUL 2 * 877777 = 0 177776 PS = 1
:*****

010746	010701			SCOPE		:TEST OF MULTIPLY
010750	012704	000002		MOV	82,x4	:LOAD MULTIPLICAN WITH 2
010754	070427	077777		MUL	877777,x4	:MULTIPLY 2 * 877777
010760	013767	177776	003470	MOV	28PS,PSW	:SAVE PS
010766	122767	000001	003462	CMPB	81,PSW	:IS PS = 1
010774	001401			BEQ	.+4	
010776	000000			HLT		:PS IS WRONG
011000	022704	000000		CMP	80,x4	:IS HIGH ORDER = 0
011004	001401			BEQ	.+4	
011006	000000			HLT		:HIGH ORDER IS WRONG
011010	022705	177776		CMP	8177776,x4!1	:IS LOW ORDER = 177776
011014	001401			BEQ	.+4	
011016	000000			HLT		:LOW ORDER IS WRONG

:TEST 142 MUL 7777 * 810 = 0 77770 PS = 0
:*****

011020	010701			SCOPE		:TEST OF MULTIPLY
011022	012704	007777		MOV	87777,x4	:LOAD MULTIPLICAN WITH 7777
011026	070427	000010		MUL	810,x4	:MULTIPLY 7777 * 810
011032	013767	177776	003416	MOV	28PS,PSW	:SAVE PS
011040	122767	000000	003410	CMPB	80,PSW	:IS PS = 0
011046	001401			BEQ	.+4	
011050	000000			HLT		:PS IS WRONG
011052	022704	000000		CMP	80,x4	:IS HIGH ORDER = 0
011056	001401			BEQ	.+4	
011060	000000			HLT		:HIGH ORDER IS WRONG
011062	022705	077770		CMP	877770,x4!1	:IS LOW ORDER = 77770
011066	001401			BEQ	.+4	
011070	000000			HLT		:LOW ORDER IS WRONG

: TEST 143 MUL 10 * 07777 = 0 77770 PS = 0
: *****

011072	010701			SCOPE		: TEST OF MULTIPLY
011074	012704	000010		MOV	010,x4	: LOAD MULTIPLICAN WITH 10
011100	070427	007777		MUL	07777,x4	: MULTIPLY 10 * 07777
011104	013767	177776	003344	MOV	00PS,PSM	: SAVE PS
011112	122767	000000	003336	CMPB	00,PSM	: IS PS = 0
011120	001401			BEG	+.4	
011122	000000			HLT		: PS IS WRONG
011124	022704	000000		CMP	00,x4	: IS HIGH ORDER = 0
011130	001401			BEG	+.4	
011132	000000			HLT		: HIGH ORDER IS WRONG
011134	022705	077770		CMP	077770,x4!1	: IS LOW ORDER = 77770
011140	001401			BEG	+.4	
011142	000000			HLT		: LOW ORDER IS WRONG

: TEST 144 MUL 7777 * 07777 = 37777 1 PS = 1
: *****

011144	010701			SCOPE		: TEST OF MULTIPLY
011146	012704	077777		MOV	077777,x4	: LOAD MULTIPLICAN WITH 77777
011152	070427	077777		MUL	077777,x4	: MULTIPLY 77777 * 077777
011156	013767	177776	003272	MOV	00PS,PSM	: SAVE PS
011164	122767	000001	003264	CMPB	01,PSM	: IS PS = 1
011172	001401			BEG	+.4	
011174	000000			HLT		: PS IS WRONG
011176	022704	037777		CMP	037777,x4	: IS HIGH ORDER = 37777
011202	001401			BEG	+.4	
011204	000000			HLT		: HIGH ORDER IS WRONG
011206	022705	000001		CMP	01,x4!1	: IS LOW ORDER = 1
011212	001401			BEG	+.4	
011214	000000			HLT		: LOW ORDER IS WRONG

:TEST 145 MUL 77777 * 81 = 0 77777 PS = 0

011216	010701			SCOPE		:TEST OF MULTIPLY
011220	012704	077777		MOV	877777,x4	:LOAD MULTIPICAN WITH 77777
011224	070427	000001		MUL	81,x4	:MULTIPLY 77777 * 81
011230	013767	177776	003220	MOV	28PS,PSM	:SAVE PS
011236	122767	000000	003212	CHPB	80,PSM	:IS PS = 0
011244	001401			BEQ	.+4	
011246	000000			HLT		:PS IS WRONG
011250	022704	000000		CHP	80,x4	:IS HIGH ORDER = 0
011254	001401			BEQ	.+4	
011256	000000			HLT		:HIGH ORDER IS WRONG
011260	022705	077777		CHP	877777,x4!1	:IS LOW ORDER = 77777
011264	001401			BEQ	.+4	
011266	000000			HLT		:LOW ORDER IS WRONG

:TEST 146 MUL 1 * 877777 = 0 77777 PS = 0

011270	010701			SCOPE		:TEST OF MULTIPLY
011272	012704	000001		MOV	81,x4	:LOAD MULTIPICAN WITH 1
011276	070427	077777		MUL	877777,x4	:MULTIPLY 1 * 877777
011302	013767	177776	003146	MOV	28PS,PSM	:SAVE PS
011310	122767	000000	003140	CHPB	80,PSM	:IS PS = 0
011316	001401			BEQ	.+4	
011320	000000			HLT		:PS IS WRONG
011322	022704	000000		CHP	80,x4	:IS HIGH ORDER = 0
011326	001401			BEQ	.+4	
011330	000000			HLT		:HIGH ORDER IS WRONG
011332	022705	077777		CHP	877777,x4!1	:IS LOW ORDER = 77777
011336	001401			BEQ	.+4	
011340	000000			HLT		:LOW ORDER IS WRONG

:TEST 147 MUL 77777 * 8-1 = -1 100001 PS = 10
:*****

011342	010701			SCOPE		:TEST OF MULTIPLY
011344	012704	077777		MOV	877777,x4	:LOAD MULTIPICAN WITH 77777
011350	070427	177777		MUL	8-1,x4	:MULTIPLY 77777 * 8-1
011354	013767	177776	003074	MOV	28PS,PSW	:SAVE PS
011362	122767	000010	003066	CHPB	810,PSW	:IS PS = 10
011370	001401			BEG	.+4	
011372	000000			HLT		:PS IS WRONG
011374	022704	177777		CHP	8-1,x4	:IS HIGH ORDER = -1
011400	001401			BEG	.+4	
011402	000000			HLT		:HIGH ORDER IS WRONG
011404	022705	100001		CHP	8100001,x4!1	:IS LOW ORDER = 100001
011410	001401			BEG	.+4	
011412	000000			HLT		:LOW ORDER IS WRONG

:TEST 150 MUL -1 * 877777 = -1 100001 PS = 10
:*****

011414	010701			SCOPE		:TEST OF MULTIPLY
011416	012704	177777		MOV	8-1,x4	:LOAD MULTIPICAN WITH -1
011422	070427	077777		MUL	877777,x4	:MULTIPLY -1 * 877777
011426	013767	177776	003022	MOV	28PS,PSW	:SAVE PS
011434	122767	000010	003014	CHPB	810,PSW	:IS PS = 10
011442	001401			BEG	.+4	
011444	000000			HLT		:PS IS WRONG
011446	022704	177777		CHP	8-1,x4	:IS HIGH ORDER = -1
011450	001401			BEG	.+4	
011452	000000			HLT		:HIGH ORDER IS WRONG
011456	022705	100001		CHP	8100001,x4!1	:IS LOW ORDER = 100001
011462	001401			BEG	.+4	
011464	000000			HLT		:LOW ORDER IS WRONG

:TEST 151 MUL -2 * 877777 = -1 2 PS = 11

011466 010701
011470 012704 177776
011474 070427 077777
011500 013767 177776 002750
011506 122767 000011 002742
011514 001401
011516 000000
011520 022704 177777
011524 001401
011528 000000
011530 022705 000002
011534 001401
011536 000000

SCOPE
MOV 8-2,x4
MUL 877777,x4
MOV 28PS,PSW
CMPB 811,PSW
BEQ .+4
HLT
CMP 8-1,x4
BEQ .+4
HLT
CMP 82,x4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH -2
:MULTIPLY -2 * 877777
:SAVE PS
:IS PS = 11
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 2
:
:LOW ORDER IS WRONG

:TEST 152 MUL 77777 * 8-2 = -1 2 PS = 11

011540 010701
011542 012704 077777
011546 070427 177776
011552 013767 177776 002676
011556 122767 000011 002670
011566 001401
011570 000000
011572 022704 177777
011576 001401
011600 000000
011602 022705 000002
011606 001401
011610 000000

SCOPE
MOV 877777,x4
MUL 8-2,x4
MOV 28PS,PSW
CMPB 811,PSW
BEQ .+4
HLT
CMP 8-1,x4
BEQ .+4
HLT
CMP 82,x4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 8-2
:SAVE PS
:IS PS = 11
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 2
:
:LOW ORDER IS WRONG

:TEST 153 MUL 125252 * 02 = -1 52524 PS = 11

011612	010701			SCOPE		:TEST OF MULTIPLY
011614	012704	125252		MOV	0125252,x4	:LOAD MULTIPLICAN WITH 125252
011620	070427	000002		MUL	02,x4	:MULTIPLY 125252 * 02
011624	013767	177776	002624	MOV	00PS,PSW	:SAVE PS
011632	122767	000011	002616	CHPB	011,PSW	:IS PS = 11
011640	001401			BEQ	.+4	
011642	000000			HLT		:PS IS WRONG
011644	022704	177777		CHP	0-1,x4	:IS HIGH ORDER = -1
011650	001401			BEQ	.+4	
011652	000000			HLT		:HIGH ORDER IS WRONG
011654	022705	052524		CHP	052524,x4!1	:IS LOW ORDER = 52524
011660	001401			BEQ	.+4	
011662	000000			HLT		:LOW ORDER IS WRONG

:TEST 154 MUL 2 * 0125252 = -1 52524 PS = 11

011664	010701			SCOPE		:TEST OF MULTIPLY
011666	012704	000002		MOV	02,x4	:LOAD MULTIPLICAN WITH 2
011672	070427	125252		MUL	0125252,x4	:MULTIPLY 2 * 0125252
011676	013767	177776	002552	MOV	00PS,PSW	:SAVE PS
011704	122767	000011	002544	CHPB	011,PSW	:IS PS = 11
011712	001401			BEQ	.+4	
011714	000000			HLT		:PS IS WRONG
011716	022704	177777		CHP	0-1,x4	:IS HIGH ORDER = -1
011722	001401			BEQ	.+4	
011724	000000			HLT		:HIGH ORDER IS WRONG
011726	022705	052524		CHP	052524,x4!1	:IS LOW ORDER = 52524
011732	001401			BEQ	.+4	
011734	000000			HLT		:LOW ORDER IS WRONG

:TEST 155 MUL 52525 * 02 = 0 125252 PS = 1
:*****

011736	010701			SCOPE		:TEST OF MULTIPLY
011740	012704	052525		MOV	052525,x4	:LOAD MULTIPLICAN WITH 52525
011744	070427	000002		MUL	02,x4	:MULTIPLY 52525 * 02
011750	013767	177776	002500	MOV	00PS,PSW	:SAVE PS
011756	122767	000001	002472	CHPB	01,PSW	:IS PS = 1
011764	001401			BEQ	+.4	
011766	000000			HLT		:PS IS WRONG
011770	022704	000000		CHP	00,x4	:IS HIGH ORDER = 0
011774	001401			BEQ	+.4	
011776	000000			HLT		:HIGH ORDER IS WRONG
012000	022705	125252		CHP	0125252,x4!1	:IS LOW ORDER = 125252
012004	001401			BEQ	+.4	
012006	000000			HLT		:LOW ORDER IS WRONG

:TEST 156 MUL 2 * 052525 = 0 125252 PS = 1
:*****

012010	010701			SCOPE		:TEST OF MULTIPLY
012012	012704	000002		MOV	02,x4	:LOAD MULTIPLICAN WITH 2
012016	070427	052525		MUL	052525,x4	:MULTIPLY 2 * 052525
012022	013767	177776	002426	MOV	00PS,PSW	:SAVE PS
012030	122767	000001	002420	CHPB	01,PSW	:IS PS = 1
012036	001401			BEQ	+.4	
012040	000000			HLT		:PS IS WRONG
012042	022704	000000		CHP	00,x4	:IS HIGH ORDER = 0
012046	001401			BEQ	+.4	
012050	000000			HLT		:HIGH ORDER IS WRONG
012052	022705	125252		CHP	0125252,x4!1	:IS LOW ORDER = 125252
012056	001401			BEQ	+.4	
012060	000000			HLT		:LOW ORDER IS WRONG

:TEST 157 MUL 125252 * #40000 = 165252 100000 PS = 11
:*****

012062	010701			SCOPE		:TEST OF MULTIPLY
012064	012704	125252		MOV	#125252,X4	:LOAD MULTIPICAN WITH 125252
012070	070427	040000		MUL	#40000,X4	:MULTIPLY 125252 * #40000
012074	013767	177776	002354	MOV	3#PS,PSW	:SAVE PS
012102	122767	000011	002346	CHPB	#11,PSW	:IS PS = 11
012110	001401			BEQ	.+4	
012112	000000			HLT		:PS IS WRONG
012114	022704	165252		CHP	#165252,X4	:IS HIGH ORDER = 165252
012120	001401			BEQ	.+4	
012122	000000			HLT		:HIGH ORDER IS WRONG
012124	022705	100000		CHP	#100000,X4!1	:IS LOW ORDER = 100000
012130	001401			BEQ	.+4	
012132	000000			HLT		:LOW ORDER IS WRONG

:TEST 160 MUL 40000 * #125252 = 165252 100000 PS = 11
:*****

012134	010701			SCOPE		:TEST OF MULTIPLY
012136	012704	040000		MOV	#40000,X4	:LOAD MULTIPICAN WITH 40000
012142	070427	125252		MUL	#125252,X4	:MULTIPLY 40000 * #125252
012146	013767	177776	002302	MOV	3#PS,PSW	:SAVE PS
012154	122767	000011	002274	CHPB	#11,PSW	:IS PS = 11
012162	001401			BEQ	.+4	
012164	000000			HLT		:PS IS WRONG
012166	022704	165252		CHP	#165252,X4	:IS HIGH ORDER = 165252
012172	001401			BEQ	.+4	
012174	000000			HLT		:HIGH ORDER IS WRONG
012176	022705	100000		CHP	#100000,X4!1	:IS LOW ORDER = 100000
012202	001401			BEQ	.+4	
012204	000000			HLT		:LOW ORDER IS WRONG

:TEST 161 MUL 100000 * 8100000 = 40000 0 PS = 1
:*****

012206	010701			SCOPE		:TEST OF MULTIPLY
012210	012704	100000		MOV	8100000,x4	:LOAD MULTIPICAN WITH 100000
012214	070427	100000		MUL	8100000,x4	:MULTIPLY 100000 * 8100000
012220	013767	177776	002230	MOV	2#PS,PSW	:SAVE PS
012226	122767	000001	002222	CHPB	81,PSW	:IS PS = 1
012234	001401			BEG	+.4	
012236	000000			HLT		:PS IS WRONG
012240	022704	040000		CHP	840000,x4	:IS HIGH ORDER = 40000
012244	001401			BEG	+.4	
012246	000000			HLT		:HIGH ORDER IS WRONG
012250	022705	000000		CHP	80,x4!1	:IS LOW ORDER = 0
012254	001401			BEG	+.4	
012256	000000			HLT		:LOW ORDER IS WRONG

:TEST 162 MUL 70707 * 870707 = 31221 44261 PS = 1
:*****

012260	010701			SCOPE		:TEST OF MULTIPLY
012262	012704	070707		MOV	870707,x4	:LOAD MULTIPICAN WITH 70707
012266	070427	070707		MUL	870707,x4	:MULTIPLY 70707 * 870707
012272	013767	177776	002156	MOV	2#PS,PSW	:SAVE PS
012300	122767	000001	002150	CHPB	81,PSW	:IS PS = 1
012306	001401			BEG	+.4	
012310	000000			HLT		:PS IS WRONG
012312	022704	031221		CHP	831221,x4	:IS HIGH ORDER = 31221
012316	001401			BEG	+.4	
012320	000000			HLT		:HIGH ORDER IS WRONG
012322	022705	044261		CHP	844261,x4!1	:IS LOW ORDER = 44261
012326	001401			BEG	+.4	
012330	000000			HLT		:LOW ORDER IS WRONG

:TEST 163 MUL 107070 * 8107070 = 31222 26100 PS = 1

012332	010701			SCOPE		:TEST OF MULTIPLY
012334	012704	107070		MOV	8107070,x4	:LOAD MULTIPLICAN WITH 107070
012340	070427	107070		MUL	8107070,x4	:MULTIPLY 107070 * 8107070
012344	013767	177776	002104	MOV	28PS,PSW	:SAVE PS
012352	122767	000001	002076	CHPB	81,PSW	:IS PS = 1
012360	001401			BEG	.+4	
012362	000000			HLT		:PS IS WRONG
012364	022704	031222		CHP	831222,x4	:IS HIGH ORDER = 31222
012370	001401			BEG	.+4	
012372	000000			HLT		:HIGH ORDER IS WRONG
012374	022705	026100		CHP	826100,x4!1	:IS LOW ORDER = 26100
012400	001401			BEG	.+4	
012402	000000			HLT		:LOW ORDER IS WRONG

:TEST 164 MUL 100000 * 877777 = 140000 100000 PS = 11

012404	010701			SCOPE		:TEST OF MULTIPLY
012406	012704	100000		MOV	8100000,x4	:LOAD MULTIPLICAN WITH 100000
012412	070427	077777		MUL	877777,x4	:MULTIPLY 100000 * 877777
012416	013767	177776	002032	MOV	28PS,PSW	:SAVE PS
012424	122767	000011	002024	CHPB	811,PSW	:IS PS = 11
012432	001401			BEG	.+4	
012434	000000			HLT		:PS IS WRONG
012436	022704	140000		CHP	8140000,x4	:IS HIGH ORDER = 140000
012442	001401			BEG	.+4	
012444	000000			HLT		:HIGH ORDER IS WRONG
012446	022705	100000		CHP	8100000,x4!1	:IS LOW ORDER = 100000
012452	001401			BEG	.+4	
012454	000000			HLT		:LOW ORDER IS WRONG

:TEST 165 MUL 77777 * 100000 = 140000 100000 PS = 11

012456 010701
012460 012704 077777
012464 070427 100000
012470 013767 177776 001760
012476 122767 000011 001752
012504 001401
012506 000000
012510 022704 140000
012514 001401
012516 000000
012520 022705 100000
012524 001401
012526 000000

SCOPE
MOV 877777,X4
MUL 8100000,X4
MOV 28PS,PSW
CMPB 811,PSW
BEQ .+4
HLT
CMP 8140000,X4
BEQ .+4
HLT
CMP 8100000,X4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 100000
:SAVE PS
:IS PS = 11
:PS IS WRONG
:IS HIGH ORDER = 140000
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:LOW ORDER IS WRONG

:TEST 166 MUL 157634 * 104031 = 7453 133074 PS = 1

012530 010701
012532 012704 157634
012536 070427 104031
012542 013767 177776 001706
012550 122767 000001 001700
012556 001401
012560 000000
012562 022704 007453
012566 001401
012570 000000
012572 022705 133074
012576 001401
012600 000000

SCOPE
MOV 8157634,X4
MUL 8104031,X4
MOV 28PS,PSW
CMPB 81,PSW
BEQ .+4
HLT
CMP 87453,X4
BEQ .+4
HLT
CMP 8133074,X4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 157634
:MULTIPLY 157634 * 104031
:SAVE PS
:IS PS = 1
:PS IS WRONG
:IS HIGH ORDER = 7453
:HIGH ORDER IS WRONG
:IS LOW ORDER = 133074
:LOW ORDER IS WRONG

:TEST 167 MUL 104031 * 0157634 = 7453 133074 PS = 1
:*****

012602	010701			SCOPE		:TEST OF MULTIPLY
012604	012704	104031		MOV	#104031,x4	:LOAD MULTIPLICAN WITH 104031
012610	070427	157634		MUL	#157634,x4	:MULTIPLY 104031 * 0157634
012614	013767	177776	001634	MOV	@PS,PSW	:SAVE PS
012622	122767	000001	001626	CMPB	#1,PSW	:IS PS = 1
012630	001401			BEQ	.+4	
012632	000000			HLT		:PS IS WRONG
012634	022704	007453		CMP	#7453,x4	:IS HIGH ORDER = 7453
012640	001401			BEQ	.+4	
012642	000000			HLT		:HIGH ORDER IS WRONG
012644	022705	133074		CMP	#133074,x4!1	:IS LOW ORDER = 133074
012650	001401			BEQ	.+4	
012652	000000			HLT		:LOW ORDER IS WRONG

:TEST 170 MUL 152210 * #0 = 0 0 PS = 4
:*****

012654	010701			SCOPE		:TEST OF MULTIPLY
012656	012704	152210		MOV	#152210,x4	:LOAD MULTIPLICAN WITH 152210
012662	070427	000000		MUL	#0,x4	:MULTIPLY 152210 * #0
012666	013767	177776	001562	MOV	@PS,PSW	:SAVE PS
012674	122767	000004	001554	CMPB	#4,PSW	:IS PS = 4
012702	001401			BEQ	.+4	
012704	000000			HLT		:PS IS WRONG
012706	022704	000000		CMP	#0,x4	:IS HIGH ORDER = 0
012712	001401			BEQ	.+4	
012714	000000			HLT		:HIGH ORDER IS WRONG
012716	022705	000000		CMP	#0,x4!1	:IS LOW ORDER = 0
012722	001401			BEQ	.+4	
012724	000000			HLT		:LOW ORDER IS WRONG

:TEST 171 MUL 0 * #152210 = 0 0 PS = 4
:*****

012726 010701
012730 012704 000000
012734 070427 152210
012740 013767 177776 001510
012746 122767 000004 001502
012754 001401
012756 000000
012760 022704 000000
012764 001401
012766 000000
012770 022705 000000
012774 001401
012776 000000

SCOPE
MOV #0,%4
MUL #152210,%4
MOV 2#PS,PSW
CMPB #4,PSW
BEQ .+4
HLT
CMP #0,%4
BEQ .+4
HLT
CMP #0,%4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 0
:MULTIPLY 0 * #152210
:SAVE PS
:IS PS = 4
:
:PS IS WRONG
:IS HIGH ORDER = 0
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 0
:
:LOW ORDER IS WRONG

:TEST 172 MUL -1 * #0 = 0 0 PS = 4
:*****

013000 010701
013002 012704 177777
013006 070427 000000
013012 013767 177776 001436
013020 122767 000004 001430
013026 001401
013030 000000
013032 022704 000000
013036 001401
013040 000000
013042 022705 000000
013046 001401
013050 000000

SCOPE
MOV #-1,%4
MUL #0,%4
MOV 2#PS,PSW
CMPB #4,PSW
BEQ .+4
HLT
CMP #0,%4
BEQ .+4
HLT
CMP #0,%4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH -1
:MULTIPLY -1 * #0
:SAVE PS
:IS PS = 4
:
:PS IS WRONG
:IS HIGH ORDER = 0
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 0
:
:LOW ORDER IS WRONG

:TEST 173 MUL 0 * 0-1 = 0 0 PS = 4
:*****

013052 010701
013054 012704 000000
013060 070427 177777
013064 013767 177776 001364
013072 122767 000004 001356
013100 001401
013102 000000
013104 022704 000000
013110 001401
013112 000000
013114 022705 000000
013120 001401
013122 000000

SCOPE
MOV 00,x4
MUL 0-1,x4
MOV 00PS,PSM
CMPB 04,PSM
BEQ .+4
HLT
CMP 00,x4
BEQ .+4
HLT
CMP 00,x4!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 0
:MULTIPLY 0 * 0-1
:SAVE PS
:IS PS = 4
:
:PS IS WRONG
:IS HIGH ORDER = 0
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 0
:
:LOW ORDER IS WRONG

:TEST 174 MUL -1 * 01 = -1 -1 PS = 10
:*****

013124 010701
013126 012705 177777
013130 070527 000001
013136 013767 177776 001312
013144 122767 000010 001304
013150 001401
013152 000000
013154 022705 177777
013160 001401
013162 000000
013164 022705 177777
013172 001401
013174 000000

SCOPE
MOV 0-1,x5
MUL 01,x5
MOV 00PS,PSM
CMPB 010,PSM
BEQ .+4
HLT
CMP 0-1,x5
BEQ .+4
HLT
CMP 0-1,x5!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH -1
:MULTIPLY -1 * 01
:SAVE PS
:IS PS = 10
:
:PS IS WRONG
:IS HIGH ORDER = -1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = -1
:
:LOW ORDER IS WRONG

:TEST 175 MUL -1 * 80 = 0 0 PS = 4
#####

013176	010701			SCOPE		:TEST OF MULTIPLY
013200	012705	177777		MOV	8-1,XS	:LOAD MULTIPLICAN WITH -1
013204	070527	000000		MUL	80,XS	:MULTIPLY -1 * 80
013210	013767	177776	001240	MOV	38PS,PSW	:SAVE PS
013216	122767	000004	001232	CHPB	84,PSW	:IS PS = 4
013224	001401			BEQ	.+4	
013226	000000			HLT		:PS IS WRONG
013230	022705	000000		CHP	80,XS	:IS HIGH ORDER = 0
013234	001401			BEQ	.+4	
013236	000000			HLT		:HIGH ORDER IS WRONG
013240	022705	000000		CHP	80,XS!1	:IS LOW ORDER = 0
013244	001401			BEQ	.+4	
013246	000000			HLT		:LOW ORDER IS WRONG

:TEST 176 MUL 77777 * 810000 = 100000 100000 PS = 11
#####

013250	010701			SCOPE		:TEST OF MULTIPLY
013252	012705	077777		MOV	877777,XS	:LOAD MULTIPLICAN WITH 77777
013256	070527	100000		MUL	810000,XS	:MULTIPLY 77777 * 810000
013262	013767	177776	001166	MOV	38PS,PSW	:SAVE PS
013270	122767	000011	001160	CHPB	811,PSW	:IS PS = 11
013276	001401			BEQ	.+4	
013300	000000			HLT		:PS IS WRONG
013302	022705	100000		CHP	810000,XS	:IS HIGH ORDER = 100000
013306	001401			BEQ	.+4	
013310	000000			HLT		:HIGH ORDER IS WRONG
013312	022705	100000		CHP	810000,XS!1	:IS LOW ORDER = 100000
013316	001401			BEQ	.+4	
013320	000000			HLT		:LOW ORDER IS WRONG

:TEST 177 MUL -1 * 877777 = 100001 100001 PS = 10

013322 010701
013324 012705 177777
013330 070527 077777
013334 013767 177776 001114
013342 122767 000010 001106
013350 001401
013352 000000
013354 022705 100001
013360 001401
013362 000000
013364 022705 100001
013370 001401
013372 000000

SCOPE
MOV 0-1,XS
MUL 877777,XS
MOV @PS,PSW
CMPB @10,PSW
BEQ .+4
HLT
CMP @100001,XS
BEQ .+4
HLT
CMP @100001,XS!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH -1
:MULTIPLY -1 * 877777
:SAVE PS
:IS PS = 10
:
:PS IS WRONG
:IS HIGH ORDER = 100001
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100001
:
:LOW ORDER IS WRONG

:TEST 200 MUL 77777 * 877777 = 1 1 PS = 1

013374 010701
013376 012705 077777
013402 070527 077777
013406 013767 177776 001042
013414 122767 000001 001034
013422 001401
013424 000000
013426 022705 000001
013432 001401
013434 000000
013436 022705 000001
013442 001401
013444 000000

SCOPE
MOV 877777,XS
MUL 877777,XS
MOV @PS,PSW
CMPB @1,PSW
BEQ .+4
HLT
CMP @1,XS
BEQ .+4
HLT
CMP @1,XS!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 77777
:MULTIPLY 77777 * 877777
:SAVE PS
:IS PS = 1
:
:PS IS WRONG
:IS HIGH ORDER = 1
:
:HIGH ORDER IS WRONG
:IS LOW ORDER = 1
:
:LOW ORDER IS WRONG

:TEST 201 MUL 2 * 82 = 44 PS = 0
:*****

013446	010701			SCOPE		:TEST OF MULTIPLY
013450	012705	000002		MOV	82,X5	:LOAD MULTIPLICAN WITH 2
013454	070527	000002		MUL	82,X5	:MULTIPLY 2 * 82
013460	013767	177776	000770	MOV	2#PS,PSH	:SAVE PS
013466	122767	000000	000762	CHPB	80,PSH	:IS PS = 0
013474	001401			BEG	.+4	
013476	000000			HLT		:PS IS WRONG
013500	022705	000004		CHP	84,X5	:IS HIGH ORDER = 4
013504	001401			BEG	.+4	
013506	000000			HLT		:HIGH ORDER IS WRONG
013510	022705	000004		CHP	84,X5!1	:IS LOW ORDER = 4
013514	001401			BEG	.+4	
013516	000000			HLT		:LOW ORDER IS WRONG
013520	012702	040000		MOV	840000,X2	
013524	012703	014462		MOV	851,X3	
013530	012704	014464		MOV	852,X4	

:TEST 202 MUL 125252 * S1 = 165252 100000 PS = 11
:*****

013534	010701			SCOPE		:TEST OF MULTIPLY
013536	012700	125252		MOV	8125252,X0	:LOAD MULTIPLICAN WITH 125252
013542	070067	000714		MUL	S1,X0	:MULTIPLY 125252 * S1
013546	013767	177776	000702	MOV	2#PS,PSH	:SAVE PS
013554	122767	000011	000674	CHPB	811,PSH	:IS PS = 11
013562	001401			BEG	.+4	
013564	000000			HLT		:PS IS WRONG
013566	022700	165252		CHP	8165252,X0	:IS HIGH ORDER = 165252
013572	001401			BEG	.+4	
013574	000000			HLT		:HIGH ORDER IS WRONG
013576	022701	100000		CHP	8100000,X0!1	:IS LOW ORDER = 100000
013602	001401			BEG	.+4	
013604	000000			HLT		:LOW ORDER IS WRONG

:TEST 203 MUL 125252 * 252 = 165252 100000 PS = 11
:*****

013606 010701
013610 012700 125252
013614 070077 000644
013620 013767 177776 000630
013626 122767 000011 000622
013632 001401
013636 000000
013640 022700 165252
013644 001401
013646 000000
013650 022701 100000
013654 001401
013656 000000

SCOPE
MOV @125252,x0
MUL @252,x0
MOV @PS,PSM
CMPB @11,PSM
BEQ .+4
HLT
CMP @165252,x0
BEQ .+4
HLT
CMP @100000,x0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 125252
:MULTIPLY 125252 * 252
:SAVE PS
:IS PS = 11
:PS IS WRONG
:IS HIGH ORDER = 165252
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:LOW ORDER IS WRONG

:TEST 204 MUL 125252 * 2851 = 165252 100000 PS = 11
:*****

013660 010701
013662 012700 125252
013666 070037 014462
013672 013767 177776 000556
013700 122767 000011 000550
013706 001401
013710 000000
013712 022700 165252
013716 001401
013720 000000
013722 022701 100000
013726 001401
013730 000000

SCOPE
MOV @125252,x0
MUL @2851,x0
MOV @PS,PSM
CMPB @11,PSM
BEQ .+4
HLT
CMP @165252,x0
BEQ .+4
HLT
CMP @100000,x0!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 125252
:MULTIPLY 125252 * 2851
:SAVE PS
:IS PS = 11
:PS IS WRONG
:IS HIGH ORDER = 165252
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:LOW ORDER IS WRONG

:TEST 205 MUL 125252 * X2 = 165252 100000 PS = 11

013732	010701			SCOPE		:TEST OF MULTIPLY
013734	012700	125252		MOV	#125252,X0	:LOAD MULTIPLICAN WITH 125252
013740	070002			MUL	X2,X0	:MULTIPLY 125252 * X2
013742	013767	177776	000506	MOV	2#PS,PSW	:SAVE PS
013750	122767	000011	000500	CHPB	#11,PSW	:IS PS = 11
013756	001401			BEQ	.+4	
013760	000000			HLT		:PS IS WRONG
013762	022700	165252		CHP	#165252,X0	:IS HIGH ORDER = 165252
013766	001401			BEQ	.+4	
013770	000000			HLT		:HIGH ORDER IS WRONG
013772	022701	100000		CHP	#100000,X0!1	:IS LOW ORDER = 100000
013776	001401			BEQ	.+4	
014000	000000			HLT		:LOW ORDER IS WRONG

:TEST 206 MUL 125252 * (3)+ = 165252 100000 PS = 11

014002	010701			SCOPE		:TEST OF MULTIPLY
014004	012700	125252		MOV	#125252,X0	:LOAD MULTIPLICAN WITH 125252
014010	070023			MUL	(3)+,X0	:MULTIPLY 125252 * (3)+
014012	013767	177776	000436	MOV	2#PS,PSW	:SAVE PS
014020	122767	000011	000430	CHPB	#11,PSW	:IS PS = 11
014026	001401			BEQ	.+4	
014030	000000			HLT		:PS IS WRONG
014032	022700	165252		CHP	#165252,X0	:IS HIGH ORDER = 165252
014036	001401			BEQ	.+4	
014040	000000			HLT		:HIGH ORDER IS WRONG
014042	022701	100000		CHP	#100000,X0!1	:IS LOW ORDER = 100000
014046	001401			BEQ	.+4	
014050	000000			HLT		:LOW ORDER IS WRONG

:TEST 207 MUL 125252 * -(3) = 165252 100000 PS = 11

014052 010701
014054 012700 125252
014060 070043
014062 013767 177776 000366
014070 122767 000011 000360
014076 001401
014100 000000
014102 022700 165252
014106 001401
014110 000000
014112 022701 100000
014116 001401
014120 000000

SCOPE
MOV @125252,%D
MUL -(3),%D
MOV @%PS,%PSH
CMPB @11,%PSH
BEQ .+4
HLT
CMP @165252,%D
BEQ .+4
HLT
CMP @100000,%D!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 125252
:MULTIPLY 125252 * -(3)
:SAVE PS
:IS PS = 11
:PS IS WRONG
:IS HIGH ORDER = 165252
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:LOW ORDER IS WRONG

:TEST 210 MUL 125252 * 2(4) = 165252 100000 PS = 11

014122 010701
014124 012700 125252
014130 070064 000002
014134 013767 177776 000314
014142 122767 000011 000306
014150 001401
014152 000000
014154 022700 165252
014160 001401
014162 000000
014164 022701 100000
014170 001401
014172 000000

SCOPE
MOV @125252,%D
MUL 2(4),%D
MOV @%PS,%PSH
CMPB @11,%PSH
BEQ .+4
HLT
CMP @165252,%D
BEQ .+4
HLT
CMP @100000,%D!1
BEQ .+4
HLT

:TEST OF MULTIPLY
:LOAD MULTIPLICAN WITH 125252
:MULTIPLY 125252 * 2(4)
:SAVE PS
:IS PS = 11
:PS IS WRONG
:IS HIGH ORDER = 165252
:HIGH ORDER IS WRONG
:IS LOW ORDER = 100000
:LOW ORDER IS WRONG

:TEST 211 MUL 125252 * 2(4) = 165252 100000 PS = 11

014174	010701			SCOPE		:TEST OF MULTIPLY
014176	012700	125252		MOV	@125252,x0	:LOAD MULTIPLICAN WITH 125252
014202	070074	000000		MUL	@(4),x0	:MULTIPLY 125252 * 2(4)
014206	013767	177776	000242	MOV	@PS,PSW	:SAVE PS
014214	122767	000011	000234	CMPB	@11,PSW	:IS PS = 11
014222	001401			BEQ	.+4	
014224	000000			HLT		:PS IS WRONG
014226	022700	165252		CMP	@165252,x0	:IS HIGH ORDER = 165252
014232	001401			BEQ	.+4	
014234	000000			HLT		:HIGH ORDER IS WRONG
014236	022701	100000		CMP	@100000,x0!1	:IS LOW ORDER = 100000
014242	001401			BEQ	.+4	
014244	000000			HLT		:LOW ORDER IS WRONG

:TEST 212 MUL 125252 * 2(4)+ = 165252 100000 PS = 11

014246	010701			SCOPE		:TEST OF MULTIPLY
014250	012700	125252		MOV	@125252,x0	:LOAD MULTIPLICAN WITH 125252
014254	070034			MUL	@(4)+,x0	:MULTIPLY 125252 * 2(4)+
014256	013767	177776	000172	MOV	@PS,PSW	:SAVE PS
014264	122767	000011	000164	CMPB	@11,PSW	:IS PS = 11
014272	001401			BEQ	.+4	
014274	000000			HLT		:PS IS WRONG
014276	022700	165252		CMP	@165252,x0	:IS HIGH ORDER = 165252
014302	001401			BEQ	.+4	
014304	000000			HLT		:HIGH ORDER IS WRONG
014306	022701	100000		CMP	@100000,x0!1	:IS LOW ORDER = 100000
014312	001401			BEQ	.+4	
014314	000000			HLT		:LOW ORDER IS WRONG

TEST 213 MUL 125252 * 2-(4) = 165252 100000 PS = 11

014316	010701			SCOPE					
014320	012700	125252		MOV	#125252,X0			:TEST OF MULTIPLY	
014324	070054			MUL	2-(4),X0			:LOAD MULTIPLICAN WITH 125252	
014326	013767	177776	000122	MOV	2#PS,PSW			:MULTIPLY 125252 * 2-(4)	
014334	122767	000011	000114	CHPB	#11,PSW			:SAVE PS	
014342	001401			BEQ	.+4			:IS PS = 11	
014344	000000			HLT				:PS IS WRONG	
014346	022700	165252		CHP	#165252,X0			:IS HIGH ORDER = 165252	
014352	001401			BEQ	.+4			:HIGH ORDER IS WRONG	
014354	000000			HLT				:IS LOW ORDER = 100000	
014356	022701	100000		CHP	#100000,X0!1			:LOW ORDER IS WRONG	
014362	001401			BEQ	.+4				
014364	000000			HLT					

014366	005267	164406		INC	ICNT				
014372	016737	164402	177570	MOV	ICNT,2#DISPLAY				
014400	022767	020000	164372	CHP	#20000,ICNT				
014406	001402			BEQ	.+6				
014410	000167	164366		JMP	BEG				
014414	005067	164360		CLR	ICNT				
014420	105737	177564		TSTB	2#177564				
014424	100375			BPL	.-4				
014426	112737	000007	177566	MOVB	#7,2#177566				
014434	013700	000042		MOV	2#42,X0			:GET MONITOR RETURN ADDRESS	
014440	001404			BEQ	1\$:SKIP IF NONE	
014442	004710			JSR	7,(0)			:GO BACK TO THE MONITOR	
014444	000240			NOP					
014446	000240			NOP					
014450	000240			NOP					
014452	000137	000200		JMP	2#200			:RESTART THE PROGRAM	

014456	000000			PSW:	0
014460	177777			S0:	-1
014462	040000			S1:	40000
014464	014462			S2:	S1
014466	040000			S3:	40000

000001 .END

368	371	374	387	390	393	406	409	412	425	428	431	444
447	450	463	466	469	482	485	488	501	504	507	520	523
526	539	542	545	558	561	564	577	580	583	596	599	602
615	618	621	634	637	640	653	656	659	672	675	678	691
694	697	710	713	716	729	732	735	748	751	754	767	770
773	786	789	792	805	808	811	824	827	830	843	846	849
862	865	868	881	884	887	900	903	906	919	922	925	938
941	944	957	960	963	976	979	982	995	998	1001	1014	1017
1020	1033	1036	1039	1052	1055	1058	1071	1074	1077	1090	1093	1096
1109	1112	1115	1128	1131	1134	1147	1150	1153	1166	1169	1172	1185
1188	1191	1204	1207	1210	1223	1226	1229	1242	1245	1248	1261	1264
1267	1280	1283	1286	1299	1302	1305	1318	1321	1324	1337	1340	1343
1356	1359	1362	1375	1378	1381	1394	1397	1400	1413	1416	1419	1432
1435	1438	1451	1454	1457	1470	1473	1476	1489	1492	1495	1508	1511
1514	1527	1530	1533	1546	1549	1552	1565	1568	1571	1584	1587	1590
1603	1606	1609	1622	1625	1628	1641	1644	1647	1660	1663	1666	1679
1682	1685	1698	1701	1704	1717	1720	1723	1736	1739	1742	1755	1758
1761	1774	1777	1780	1793	1796	1799	1812	1815	1818	1831	1834	1837
1850	1853	1856	1869	1872	1875	1888	1891	1894	1907	1910	1913	1926
1929	1932	1945	1948	1951	1964	1967	1970	1983	1986	1989	2002	2005
2008	2021	2024	2027	2040	2043	2046	2059	2062	2065	2078	2081	2084
2097	2100	2103	2116	2119	2122	2135	2138	2141	2154	2157	2160	2173
2176	2179	2192	2195	2198	2211	2214	2217	2230	2233	2236	2249	2252
2255	2268	2271	2274	2287	2290	2293	2306	2309	2312	2325	2328	2331
2344	2347	2350	2363	2366	2369	2382	2385	2388	2401	2404	2407	2420
2423	2426	2439	2442	2445	2458	2461	2464	2477	2480	2483	2496	2499
2502	2515	2518	2521	2534	2537	2540	2553	2556	2559	2572	2575	2578
2591	2594	2597	2614	2617	2620	2633	2636	2639	2652	2655	2658	2671
2674	2677	2690	2693	2696	2709	2712	2715	2728	2731	2734	2747	2750
2753	2766	2769	2772	2785	2788	2791	2799	2803				

	986	1005	1024	1043	1062	1081	1100	1119	1138	1157	1176	1195	1214	1233	1252
	1271	1290	1309	1328	1347	1366	1385	1404	1423	1442	1461	1480	1499	1518	1537
	1556	1575	1594	1613	1632	1651	1670	1689	1708	1727	1746	1765	1784	1803	1822
	1841	1860	1879	1898	1917	1936	1955	1974	1993	2012	2031	2050	2069	2088	2107
	2126	2145	2164	2183	2202	2221	2240	2259	2278	2297	2316	2335	2354	2373	2392
	2411	2430	2449	2468	2487	2506	2525	2544	2563	2582	2601	2620	2639	2658	2677
	2700	2719	2738	2757	2776	2795	2814	2833	2852	2871	2890	2909	2928	2947	2966
.MACR	136	125	169	188	207	226	245	264	283	302	321	340	359	378	397
.NLIST	117	416	701	986	1271	1556	1841	2126	2411	2700	150	720	1290	1860	2430
	150	189	228	267	306	345	384	423	462	501	540	579	618	657	696
	720	759	798	837	876	915	954	993	1032	1071	1110	1149	1188	1227	1266
.PAGE	1290	1328	1366	1404	1443	1481	1519	1557	1595	1633	1671	1709	1747	1785	1823
	1860	1898	1936	1974	2012	2050	2088	2126	2164	2202	2240	2278	2316	2354	2392
.REN	1														
.REPT	125	150													
.TITLE	117														

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

#DCKBKA,DCKBKA,SEQ/SOL/CRF/DS:ERFZ/EN:ABS=DSKH:DCKBKA.P11
RUN-TIME: 12 21 3 SECONDS
RUN-TIME RATIO: 102/37=2.7
CORE USED: 7K (14 PAGES)

E07

Speaker system 8 channels, 21 WTR, 212 disk reader, 2 disk writer, 24 pages
7801274578012 #8