Table 1.5 Hexadecimal Arithmetic

(a) Addition

+	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
1	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	10
2	2	3	4	5	6	7	8	9	A	B	C	D	E	F	10	11
3	3	4	5	6	7	8	9	A	B	C	D	E	F	10	11	12
4	4	5	6	7	8	9	A	B	C	D	E	F	10	11	12	13
5	5	6	7	8	9	A	B	C	D	E	F	10	11	12	13	14
6	6	7	8	9	A	B	C	D	E	F	10	11	12	13	14	15
7	7	8	9	A	B	C	D	E	F	10	11	12	13	14	15	16
8	8	9	A	B	C	D	E	F	10	11	12	13	14	15	16	17
9	9	A	B	C	D	E	F	10	11	12	13	14	15	16	17	18
A	A	B	C	D	E	F	10	11	12	13	14	15	16	17	18	19
B	B	C	D	E	F	10	11	12	13	14	15	16	17	18	19	1A
C	C	D	E	F	10	11	12	13	14	15	16	17	18	19	1A	1B
D	D	E	F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C
E	E	F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D
F	F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E

(b) Multiplication

×	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
2	0	2	4	6	8	A	C	E	10	12	14	16	18	1A	1C	1E
3	0	3	6	9	C	F	12	15	18	1B	1E	21	24	27	2A	2D
4	0	4	8	C	10	14	18	1C	20	24	28	2C	30	34	38	3C
5	0	5	A	F	14	19	1E	23	28	2D	32	37	3C	41	46	4B
6	0	6	C	12	18	1E	24	2A	30	36	3C	42	48	4E	54	5A
7	0	7	E	15	1C	23	2A	31	38	3F	46	4D	54	5B	62	69
8	0	8	10	18	20	28	30	38	40	48	50	58	60	68	70	78
9	0	9	12	1B	24	2D	36	3F	48	51	5A	63	6C	75	7E	87
A	0	A	14	1E	28	32	3C	46	50	5A	64	6E	78	82	8C	96
B	0	B	16	21	2C	37	42	4D	58	63	6E	79	84	8F	9A	A5
C	0	C	18	24	30	3C	48	54	60	6C	78	84	90	9C	A8	B4
D	0	D	1A	27	34	41	4E	5B	68	75	82	8F	9C	A9	B6	C3
E	0	E	1C	2A	38	46	54	62	70	7E	8C	9A	A8	B6	C4	D2
F	0	F	1E	2D	3C	4B	5A	69	78	87	96	A5	B4	C3	D2	E1

Example 1.27: Addition

```
  1 1
  1 5 F C
+ 2 4 5 D
---------
  3 A 5 9
```

Scratchpad

Decimal

C = 12

D = 13

16 | 25 = $(19)_{16}$ ← This can be obtained directly from Table 1.5.

16 | 1 9 ↑

0 1 ↑

Decimal

1 = 1

F = 15

5 = 5

21 = $(15)_{16}$

Example 1.28: Subtraction

```
  1 13 15
    3
  2 4 5 D   minuend
- 1 5 F C   subtrahend
---------
  0 E 6 1   difference
```

Scratchpad

Decimal

$(15)_{16}$ = 21

$-(F)_{16}$ = −15

6 = $(6)_{16}$

$(13)_{16}$ = 19

$-(5)_{16}$ = −5

14 = $(E)_{16}$

Example 1.29: Multiplication

```
    1 E 4 A
  × F A 2
---------
    3
  0 3 C 9 4   P1
+ 1 2 E E 4   P2
+ 1 C 6 5 6   P3
---------
1 D 9 8 0 D 4
```

Scratchpad

Decimal		Hexadecimal
A × 2 = 20	=	14
4 × 2 = 8	=	08
E × 2 = 28	=	1C
1 × 2 = 2	=	02
		03C94 = P_1
A × A = 100	=	64
4 × A = 40	=	28
E × A = 140	=	8C
1 × A = 10	=	0A
		12EE4 = P_2