Arithmetic instructions
Addition / substraction

Addition
Opcode:-
ADD R/M
ADI 8bit data
ADC R/M
ACI 8bit data
INR R/M
INX Rp
DAD Rp
DAA - no oprand

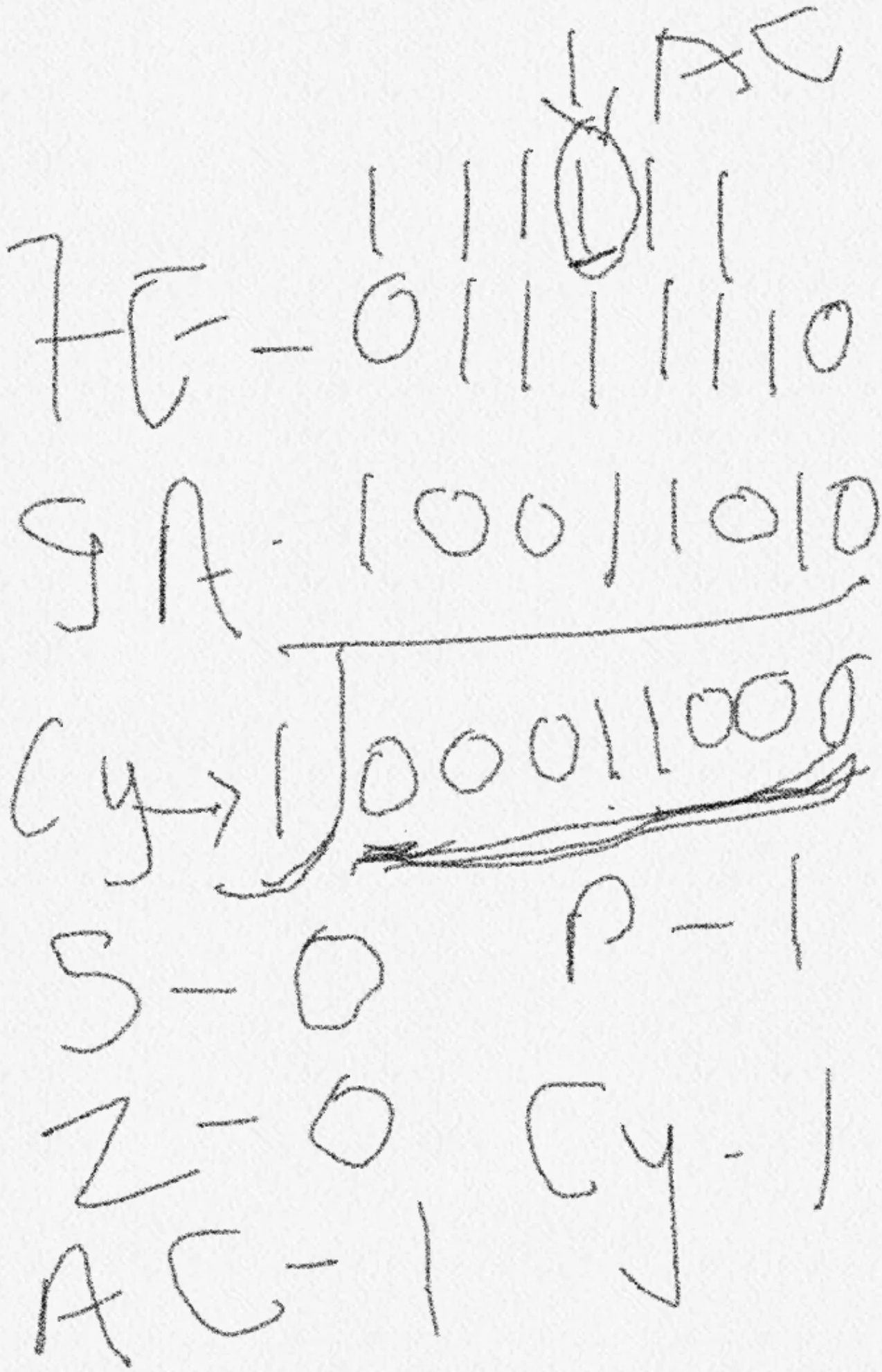
Substraction
SUB R/M
SUI 8bit data
SBB R/M
SBI 8bit data
DCR R/M
DCX Rp

In arithmetic group instruction, all the flags are modified as per result.
Here one content of operation is stored in Accumulator by default.

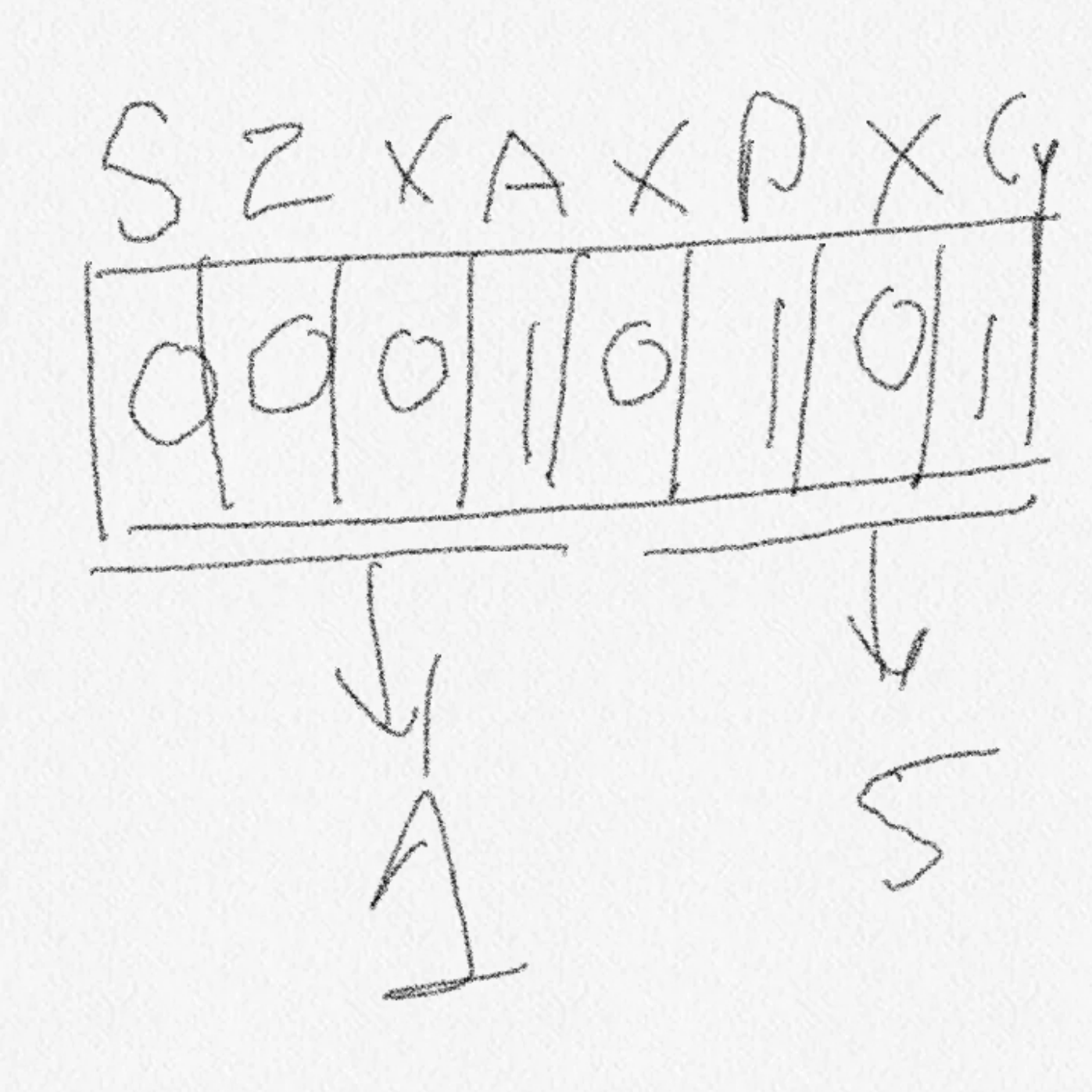
ADD R/M
REG : A,B,C,D,E,H,L

MEMORY : [HL] Content of mem loc whose add is stored in HL reg pair

Algo : A <- A + R/M
Desc : This instruction is used to add content of accumulator with content of reg/mem specified in instruction, and result will be stored in accumulator.
Eg.
ADD B
A <- A+B
Size : 1byte
A =7E , B =9A
ADD B


AC
11101
7E - 01111110
9A - 10011010
CY → 10001100
S - 0 P - 1
Z - 0 CY - 1
AC - 1

A =18



ADI 8bit data
A <- A +8bitdata
Size : 2bytes
Desc : This instruction is used to add content of accumulator with 8 bit data specified in instruction, and result will be stored into the accumulator.

A: 79

+ 12

A = 8 B

67 - 01100111

12 00010010

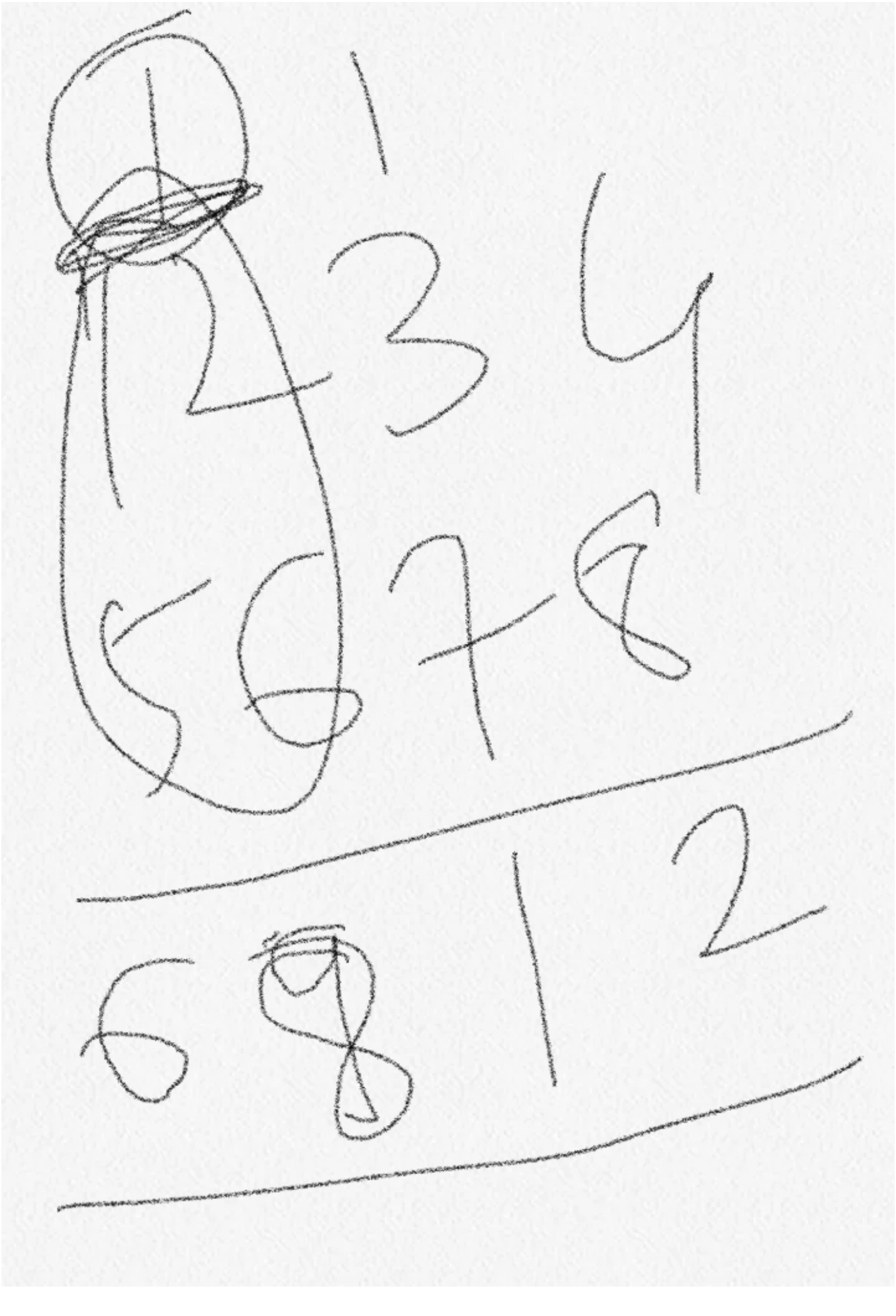
01111001

S - 0 P - 0

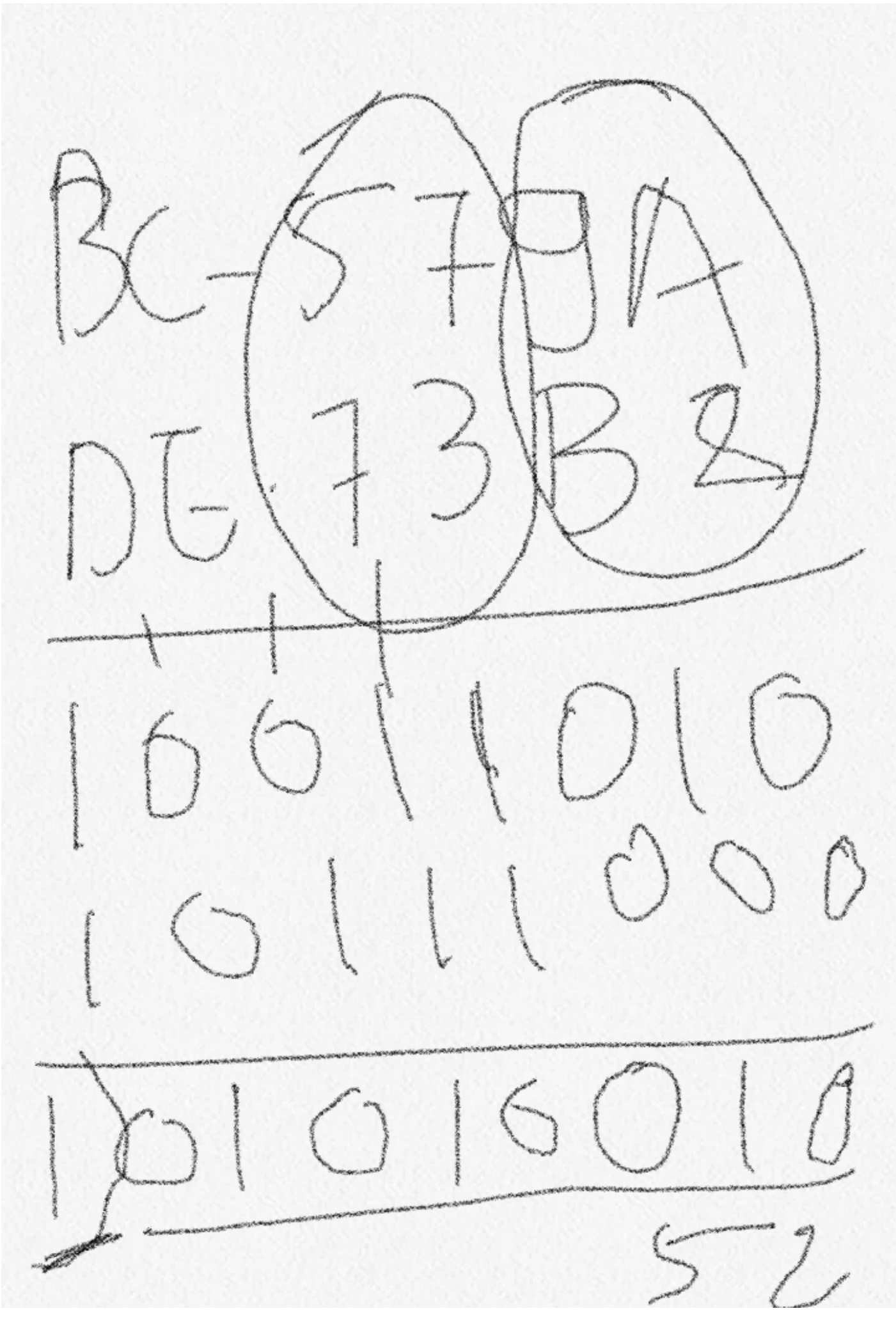
AC - 0 Z - 0

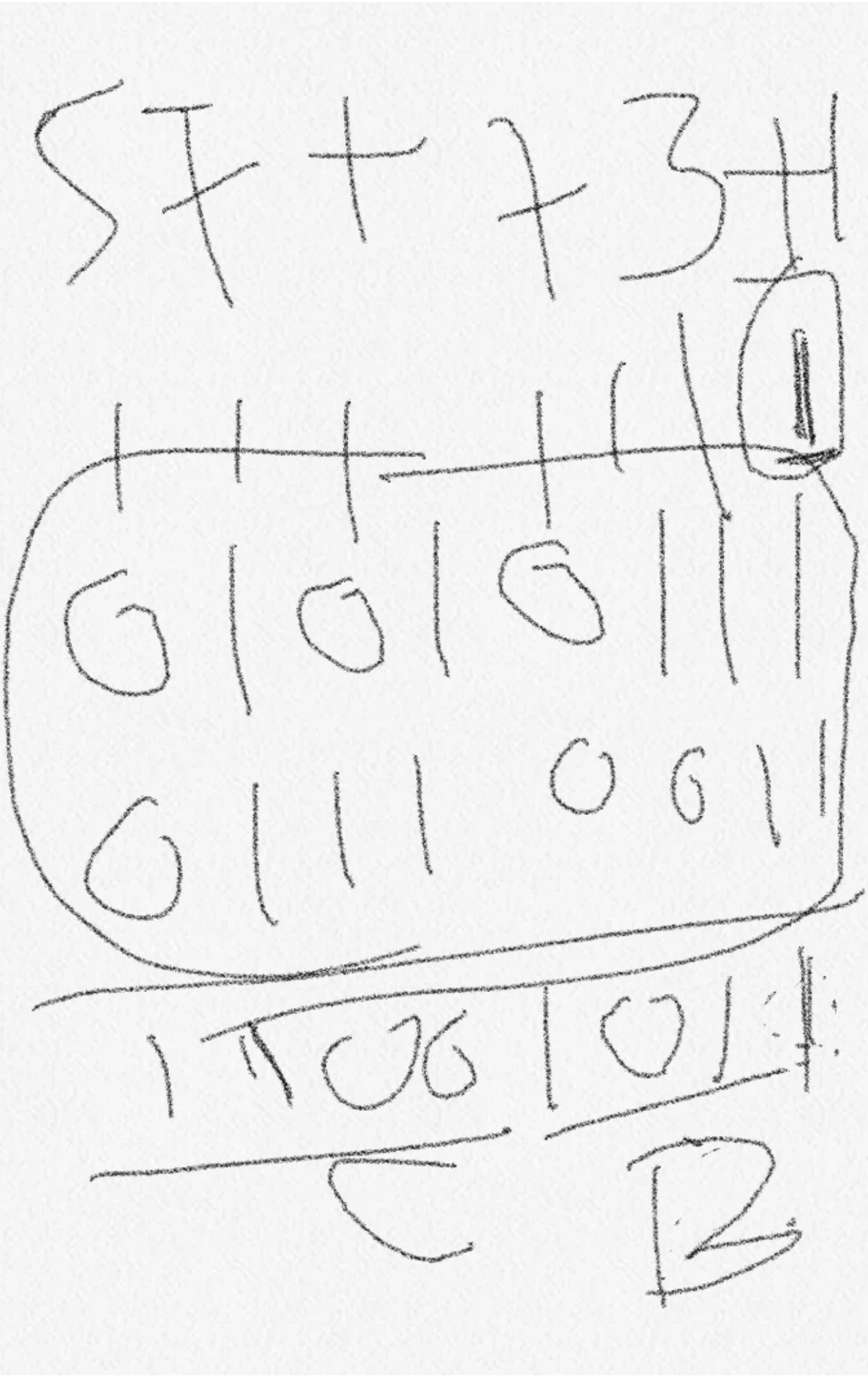
Cy - 0

ADC R/M
add with carry
Algo : A <- A + R/M +CY
FOR 16 bit addition
Desc :This instruction is used to add content of accumulator with content of reg/mem specified in instruction and also add previous stage carry, and result will be stored in accumulator.
12 34
56 78



34 +78
12 + 56 + prev carry


BC 57 0A
DE 73 B8
10011010
10111000
101016010
52



CB52

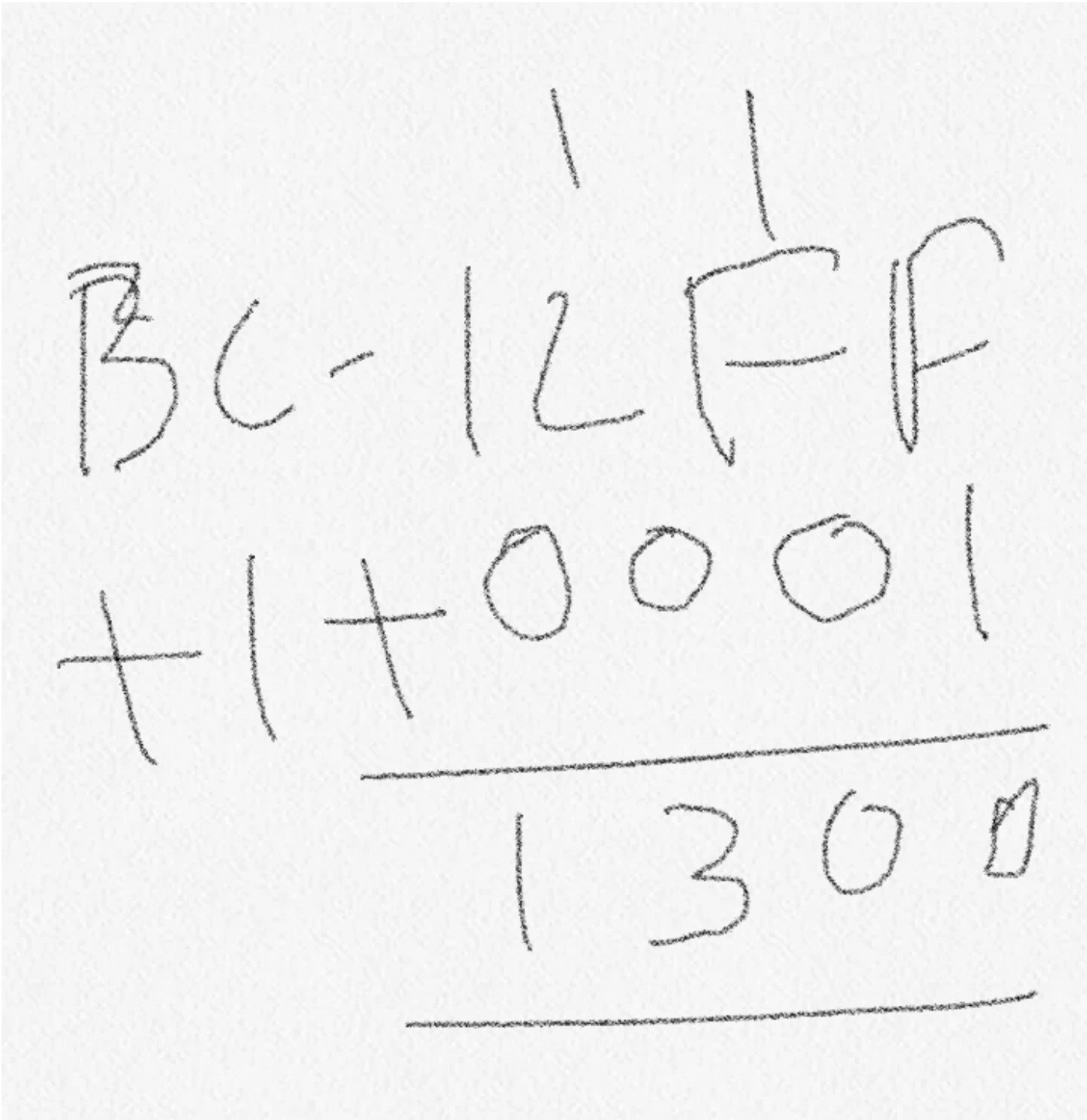
ACI 8bit data

A<- A +8Bit data +cy

INR R/M
R/M <- R/M + 01
This instruction is used to increment the content of reg /mem specified in instruction and stored result in same reg /mem.

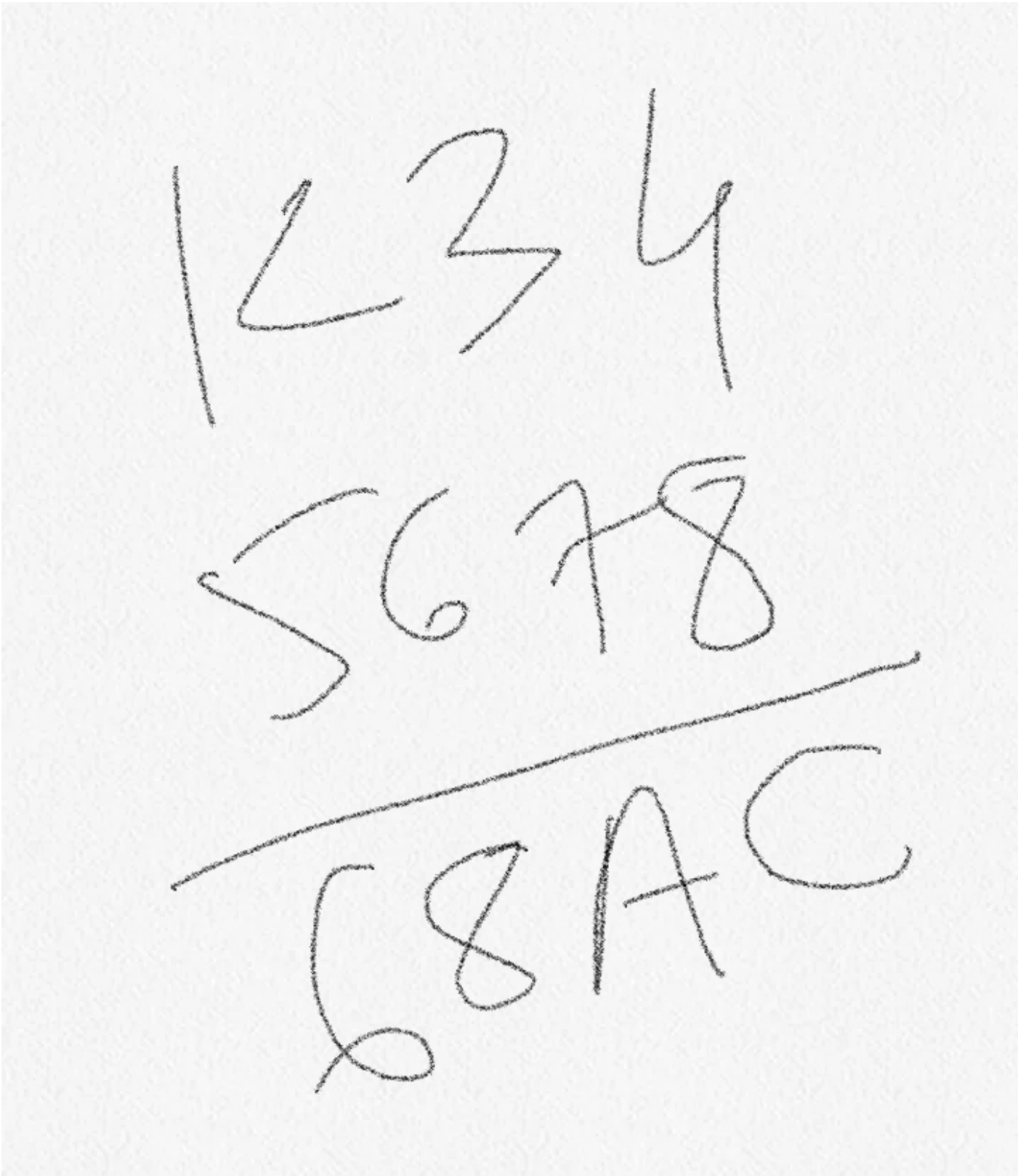
B =34
INR B
B=35

INX Rp



Increment content of reg pair

DAD Rp
16 bit addition
HL <- HL + Rp
DAD B
HL <- HL +BC



Last modified: 24 Jul 2020