

n8	unsigned number (0 to 255)
n16	unsigned number (0 to 65535)
s8	signed number (-128 to 127)
s16	signed number (-32768 to 32767)
a8	address (0 to 255)
a16	address (0 to 65535)
b	bit location (0-7)
r	byte register (A, B, C, D, E, H, or L)
pp	word register (BC, DE, HL, or AF/PSW)
dd	word register (BC, DE, HL, or SP)
xx	word register (BC, DE, IX, or SP)
yy	word register (BC, DE, IY, or SP)

8-bit moves

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
	ld r,r'	4	1	4	5
mvi r,n8	ld r,n8	4,3	2	7	9
mov r,M	ld r,(HL)	4,3	2	7	9
	ld r,(IX+s8)	4,4,3,5,3	5	19	24
	ld r,(IY+s8)	4,4,3,5,3	5	19	24
mov M,r	ld (HL),r	4,3	2	7	9
	ld (IX+s8),r	4,4,3,5,3	5	19	24
	ld (IY+s8),r	4,4,3,5,3	5	19	24
mvi M,n8	ld (HL),n8	4,3,3	3	10	13
	ld (IX+s8),n8	4,4,3,5,3	5	19	24
	ld (IY+s8),n8	4,4,3,5,3	5	19	24
ldax B	ld A,(BC)	4,3	2	7	9
ldax D	ld A,(DE)	4,3	2	7	9
lda a16	ld A,(a16)	4,3,3,3	4	13	17
stax B	ld (BC),A	4,3	2	7	9
stax D	ld (DE),A	4,3	2	7	9
sta a16	ld (a16),A	4,3,3,3	4	13	17
	ld A,I	4,5	2	9	11
	ld A,R	4,5	2	9	11
	ld I,A	4,5	2	9	11
	ld R,A	4,5	2	9	11

16-bit moves

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
lxi dd,n16	ld dd,n16	4,3,3	2	10	12
	ld IX,n16	4,4,3,3	4	14	18
	ld IY,n16	4,4,3,3	4	14	18
lhld a16	ld HL,(a16)	4,3,3,3,3	5	16	21
	ld dd,(a16)	4,4,3,3,3,3	6	20	26
	ld IX,(a16)	4,4,3,3,3,3	6	20	26
	ld IY,(a16)	4,4,3,3,3,3	6	20	26
shld a16	ld (a16),HL	4,3,3,3,3	5	16	21
	ld (a16),dd	4,4,3,3,3,3	6	20	26
	ld (a16),IX	4,4,3,3,3,3	6	20	26
	ld (a16),IY	4,4,3,3,3,3	6	20	26
sphl	ld SP,HL	6	1	6	7
	ld SP,IX	4,6	2	10	12
	ld SP,IY	4,6	2	10	12
push pp	push pp	5,3,3	3	11	14
	push IX	4,5,3,3	4	15	19
	push IY	4,5,3,3	4	15	19
pop pp	pop pp	4,3,3	3	10	13
	pop IX	4,4,3,3	4	14	18
	pop IY	4,4,3,3	4	14	18

exchange

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
xchg	ex DE,HL	4	1	4	5
	ex AF,AF'	4	1	4	5
	exx	4	1	4	5
xthl	ex (SP),HL	4,3,4,3,5	5	19	24
	ex (SP),IX	4,4,3,4,3,5	6	23	29
	ex (SP),IY	4,4,3,4,3,5	6	23	29
	ldi	4,4,3,5	4	16	20
	ldir	4,4,3,5,0/5	4/5	16/21	20/26
	ldd	4,4,3,5	4	16	20
	lddr	4,4,3,5,0/5	4/5	16/21	20/26
	cpi	4,4,3,5	4	16	20
	cpir	4,4,3,5,0/5	4/5	16/21	20/26
	cpd	4,4,3,5	4	16	20
	cpdr	4,4,3,5,0/5	4/5	16/21	20/26

special

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
daa	daa	4	1	4	5
cma	cpl	4	1	4	5
	neg	4,4	2	8	10
cmc	ccf	4	1	4	5
stc	scf	4	1	4	5
nop	nop	4	1	4	5
hlt	halt	4	1	4	5
di	di	4	1	4	5
ei	ei	4	1	4	5
	im 0	4,4	2	8	10
	im 1	4,4	2	8	10
	im 2	4,4	2	8	10

8-bit math/logic

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
add r	add A,r	4	1	4	5
adi n8	add A,n8	4,3	2	7	9
add M	add A,(HL)	4,3	2	7	9
	add A,(IX+s8)	4,4,3,5,3	5	19	24
	add A,(IY+s8)	4,4,3,5,3	5	19	24
adc m	adc A,"	"	"	"	"
aci n8	adc A,n8	"	"	"	"
sub r	sub A,"	"	"	"	"
sui n8	sub A,n8	"	"	"	"
sbb r	sbc A,"	"	"	"	"
sbi n8	sbc A,n8	"	"	"	"
and r	and "	"	"	"	"
ani n8	and n8	"	"	"	"
ora r	or "	"	"	"	"
ori n8	or n8	"	"	"	"
xra r	xor "	"	"	"	"
xri n8	xor n8	"	"	"	"
cmp r	cp "	"	"	"	"
cpi n8	cp n8	"	"	"	"
incr	inc r	4	1	4	5
incr M	inc (HL)	4,3,3	3	11	14
	inc (IX+s8)	4,4,3,5,4,3	6	23	29
	inc (IY+s8)	4,4,3,5,4,3	6	23	29
dcr r	dec r	4	1	4	5
dcr M	dec (HL)	4,3,3	3	11	14
	dec (IX+s8)	4,4,3,5,4,3	6	23	29
	dec (IY+s8)	4,4,3,5,4,3	6	23	29

16-bit math

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
dad dd	add HL,dd	4,4,3	3	11	14
	adc HL,dd	4,4,4,3	4	15	19
	sbc HL,dd	4,4,4,3	4	15	19
	add IX,xx	4,4,4,3	4	15	19
	add IY,yy	4,4,4,3	4	15	19
inx dd	inc dd	6	1	6	7
	inc IX	4,6	2	10	12
	inc IY	4,6	2	10	12
dcx dd	dec dd	6	1	6	7
	dec IX	4,6	2	10	12
	dec IY	4,6	2	10	12

bitwise rotate/shift

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
rlc	rlca	4	1	4	5
ral	rla	4	1	4	5
rrc	rrca	4	1	4	5
rar	rra	4	1	4	5
	rlc r	4,4	2	8	10
	rlc (HL)	4,4,4,3	4	15	19
	rlc (IX+s8)	4,4,3,5,4,3	6	23	29
	rlc (IY+s8)	4,4,3,5,4,3	6	23	29
	rl "	"	"	"	"
	rrc "	"	"	"	"
	rr "	"	"	"	"
	sla "	"	"	"	"
	sra "	"	"	"	"
	srl "	"	"	"	"
	rld	4,4,3,4,3	5	18	23
	rrd	4,4,3,4,3	5	18	23

bit set/unset

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
	bit b,r	4,4	2	8	10
	bit b,(HL)	4,4,4	3	12	15
	bit b,(IX+s8)	4,4,3,5,4	5	20	25
	bit b,(IY+s8)	4,4,3,5,4	5	20	25
	set b,r	4,4	2	8	10
	set b,(HL)	4,4,4,3	4	15	19
	set b,(IX+s8)	4,4,3,5,4,3	6	23	29
	set b,(IY+s8)	4,4,3,5,4,3	6	23	29
	res "	"	"	"	"

branch

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
jmp a16	jp a16	4,3,3	3	10	13
jnz a16	jp nz,a16	4,3,3	3	10	13
jz a16	jp z,a16	4,3,3	3	10	13
jnc a16	jp nc,a16	4,3,3	3	10	13
jc a16	jp c,a16	4,3,3	3	10	13
jpo a16	jp po,a16	4,3,3	3	10	13
jpe a16	jp pe,a16	4,3,3	3	10	13
jp a16	jp p,a16	4,3,3	3	10	13
jm a16	jp m,a16	4,3,3	3	10	13
	jr s8	4,3,5	3	12	15
	jr c,s8	4,3,0/5	2/3	7/12	9/15
	jr nc,s8	4,3,0/5	2/3	7/12	9/15
	jr z,s8	4,3,0/5	2/3	7/12	9/15
	jr nz,s8	4,3,0/5	2/3	7/12	9/15
pchl	jp (HL)	4	1	4	5
	jp (IX)	4,4	2	8	10
	jp (IY)	4,4	2	8	10
	djnz s8	5,3,0/5	2/3	8/13	10/16

stack branch

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
call a16	call a16	4,3,4,3,3	5	17	22
cnz a16	call nz,a16	4,3,0/4,0/3,3	3/5	10/17	13/22
cz a16	call z,a16	4,3,0/4,0/3,3	3/5	10/17	13/22
cnc a16	call nc,a16	4,3,0/4,0/3,3	3/5	10/17	13/22
cc a16	call c,a16	4,3,0/4,0/3,3	3/5	10/17	13/22
cpo a16	call po,a16	4,3,0/4,0/3,3	3/5	10/17	13/22
cpe a16	call pe,a16	4,3,0/4,0/3,3	3/5	10/17	13/22
cp a16	call p,a16	4,3,0/4,0/3,3	3/5	10/17	13/22
cm a16	call m,a16	4,3,0/4,0/3,3	3/5	10/17	13/22
ret	ret	4,3,3	3	10	13
rnz	ret nz	5,0/3,0/3	1/3	5/11	5/14
rz	ret z	5,0/3,0/3	1/3	5/11	5/14
rnc	ret nc	5,0/3,0/3	1/3	5/11	5/14
rc	ret c	5,0/3,0/3	1/3	5/11	5/14
rpo	ret po	5,0/3,0/3	1/3	5/11	5/14
rpe	ret pe	5,0/3,0/3	1/3	5/11	5/14
rp	ret p	5,0/3,0/3	1/3	5/11	5/14
rm	ret m	5,0/3,0/3	1/3	5/11	5/14
	reti	4,4,3,3	4	14	18
	retn	4,4,3,3	4	14	18
rst a8	rst a8	5,3,3	3	11	14

input/output

i8080 mnemonic	z80 mnemonic	T states	M states	cpu cycles	machine cycles
in a8	in A,(a8)	4,3,4	3	11	14
	in r,(C)	4,4,4	3	12	15
	ini	4,5,3,4	4	16	20
	inir	4,5,3,4,0/5	4/5	16/21	20/26
	ind	4,5,3,4	4	16	20
	indr	4,5,3,4,0/5	4/5	16/21	20/26
out a8	out (a8),A	4,3,4	3	11	14
	out r,(C)	4,4,4	3	12	15
	outi	4,5,3,4	4	16	20
	otir	4,5,3,4,0/5	4/5	16/21	20/26
	outd	4,5,3,4	4	16	20
	otdr	4,5,3,4,0/5	4/5	16/21	20/26