**• How much space is there between $200 and $5FF in bytes?**

1024B/1KiB as 5FF(hex)-200(hex) +1(dec) is 1024(dec)

**• Fill 512 bytes of memory from location $200 with value $1.**

LDA #$01

LDX #$FF

STA $200

STA $300

LOOP:

STA $200, X

STA $300, X

DEX

BNE LOOP

**• Fill half of the memory with one and other half with another colour.**

LDA #$03

STA $200

LOOP1:

STA $300, X

STA $200, X

DEX

BNE LOOP1

LDA #$04

STA $400

LOOP2:

STA $500, X

STA $400, X

DEX

BNE LOOP2

**• Store one 32 bit number in memory starting at $200, another at $210. Choose how to store the number yourselve. Add those numbers and store result in $220.**

LDA #$9A

STA $0203

LDA #$90

STA $0202

LDA #$10

STA $0201

LDA #$4A

STA $0200

LDA #$50

STA $0213

LDA #$CA

STA $0212

LDA #$5D

STA $0211

LDA #$83

STA $0210

LDX #$03

CLC

LDA $0200, X

ADC $0210, X

STA $0220, X

DEX

**• Create two dots in the middle of the „video memory”. Animate them moving in oposite directions, first on X then on Y axis. Repeat until reset.**

LDX #$0F

CENTER\_LEFT:

 LDA #$01

 STA $0400, X

 INX

 LDA #$00

 STA $0400, X

 DEX

 DEX

 BPL CENTER\_LEFT

LDX #$00

LEFT\_RIGHT:

 LDA #$01

 STA $0400, X

 DEX

 LDA #$00

 STA $0400, X

 INX

 INX

 CPX #$1F

 BNE LEFT\_RIGHT

RIGHT\_CENTER:

 LDA #$01

 STA $0400, X

 INX

 LDA #$00

 STA $0400, X

 DEX

 DEX

 CPX #$0E

 BNE RIGHT\_CENTER

LDA #$0F

STA $20

LDA #$04

STA $21

LDX #$10

LDY #$00

LDA #$01

STA ($20), Y

LDA $20

SBC #$20

STA $20

LDA $21

SBC #$00

STA $21

CENTER\_UP:

 LDA #$01

 STA ($20), Y

 LDA $20

 ADC #$1F

 STA $20

 LDA $21

 ADC #$00

 STA $21

 LDA #$00

 STA ($20), Y

 LDA $20

 SBC #$1F

 STA $20

 LDA $21

 SBC #$00

 STA $21

 LDA $20

 SBC #$20

 STA $20

 LDA $21

 SBC #$00

 STA $21

 DEX

 CPX #$00

 BNE CENTER\_UP

CLC

UP\_DOWN:

 LDA #$01

 STA ($20), Y

 LDA $20

 SBC #$1F

 STA $20

 LDA $21

 SBC #$00

 STA $21

 LDA #$00

 STA ($20), Y

 LDA $20

 ADC #$1F

 STA $20

 LDA $21

 ADC #$00

 STA $21

 LDA $20

 ADC #$20

 STA $20

 LDA $21

 ADC #$00

 STA $21

 INX

 CPX #$20

 BNE UP\_DOWN

LDA #$01

STA ($20), Y

LDA $20

SBC #$20

STA $20

LDA $21

SBC #$00

STA $21

DOWN\_CENTER:

 LDA #$01

 STA ($20), Y

 LDA $20

 ADC #$1F

 STA $20

 LDA $21

 ADC #$00

 STA $21

 LDA #$00

 STA ($20), Y

 LDA $20

 SBC #$1F

 STA $20

 LDA $21

 SBC #$00

 STA $21

 LDA $20

 SBC #$20

 STA $20

 LDA $21

 SBC #$00

 STA $21

 DEX

 CPX #$11

 BNE DOWN\_CENTER

LDA #$00

STA ($20), Y

LOOP:

 LDX #$0F

 JSR CENTER\_LEFT

 LDX #$00

 JSR LEFT\_RIGHT

 JSR RIGHT\_CENTER

 LDA #$0F

 STA $20

 LDA #$04

 STA $21

 CLC

 LDA #$01

 STA ($20), Y

 LDA $20

 SBC #$20

 STA $20

 LDA $21

 SBC #$00

 STA $21

 JSR CENTER\_UP

 CLC

 JSR UP\_DOWN

 LDA #$01

 STA ($20), Y

 LDA $20

 SBC #$20

 STA $20

 LDA $21

 SBC #$00

 STA $21

 JSR DOWN\_CENTER

 LDA #$00

 STA ($20), Y

 CPY #$05

 BEQ LOOP