ConvertFtoC

Write a subroutine that convert a temperature reading in Fahrenheit (variable F) to Celsius

(Variable C).

Using Fmax value (255)

```
.DSEG
        C: .BYTE 1
        F: .BYTE 1

.CSEG

.DEF Denominator=R19
.DEF Quotient=R22

.ORG 0x0000


//input a Fahrenheit value into r17
TestConvertFtoC:
    ldi r17,255
    sts F, R17
    //call subroutine ConvertFtoC
    rcall ConvertFtoC
    rjmp TestConvertFtoC

/****************************
 * subroutine converts a temperature reading in Fahrenheit (variable F) to Celsius (variable C).
 * (°F  -  32)  x  5/9 = °C
 * Range of °F (32 to 255) therefore °Cmax is 123.8
 ****************************/

ConvertFtoC:
    //Load the °F value into r18
    lds r18, F
    //Input the constant value 18 in reg. 16
    ldi r16, 32
    //This part calculates (°F-32)
    sub r18, r16
    ldi r20, 5
    //This part calculates (°F-32)*5
    mul r18, r20
    //move the products into r25H and r24L
    movw r25:r24, r1:r0
    //input the denominator into r19
    ldi Denominator, 9
    //call the 16 bit by 8 bit division
    rcall Div16_8
    sts  C, r22
    ret
```

Watch				✕
Name	Value	Type	Location	
F	255 'ÿ'	SRAM Locat:	0x0101 [SRAM]	
C	123 '{'	SRAM Locat:	0x0100 [SRAM]	
r24	8 '▯'	Register	R24	

|◀ ◀ ▶ ▶| **Watch 1** ⟋ Watch 2 ⟋ Watch 3 ⟋ Watch 4 ⟋

Using Fmin value (32)

```
.DSEG
        C:  .BYTE 1
        F:  .BYTE 1

.CSEG


.DEF Denominator=R19
.DEF Quotient=R22

.ORG 0x0000


//input a Fahrenheit value into r17
TestConvertFtoC:
    ldi r17,32
    sts F, R17
    //call subroutine ConvertFtoC
    rcall ConvertFtoC
    rjmp TestConvertFtoC

/*****************************
 * subroutine converts a temperature reading in Fahrenheit (variable F) to Celsius (variabl
 * (°F  -  32)   x   5/9 = °C
 * Range of °F (32 to 255) therefore °Cmax is 123.8
 *****************************/

ConvertFtoC:
    //Load the °F value into r18
    lds r18, F
    //Input the constant value 18 in reg. 16
    ldi r16, 32
    //This part calculates (°F-32)
    sub r18, r16
    ldi r20, 5
    //This part calculates (°F-32)*5
    mul r18, r20
    //move the products into r25H and r24L
    movw r25:r24, r1:r0
    //input the denominator into r19
    ldi Denominator, 9
    //call the 16 bit by 8 bit division
    rcall Div16_8
    sts  C, r22
    ret
```

Watch				✕
Name	Value	Type	Location	
F	32 ' '	SRAM Locat: 0x0101 [SRAM]		
C	0 ''	SRAM Locat: 0x0100 [SRAM]		
r24	0 ''	Register	R24	

Watch 1 / Watch 2 / Watch 3 / Watch 4 /

F random value (124)

```
.INCLUDE <m328pdef.inc>

.DSEG
        C:  .BYTE 1
        F:  .BYTE 1

.CSEG


.DEF Denominator=R19
.DEF Quotient=R22

.ORG 0x0000


//input a Fahrenheit value into r17
TestConvertFtoC:
    ldi r17,124
    sts F, R17
    //call subroutine ConvertFtoC
    rcall ConvertFtoC
    rjmp TestConvertFtoC

/*****************************
 * subroutine converts a temperature reading in Fahrenheit (variable F) to Celsius (variable C).
 * (°F  -  32)  x  5/9 = °C
 * Range of °F (32 to 255) therefore °Cmax is 123.8
 ****************************/

ConvertFtoC:
    //Load the °F value into r18
    lds r18, F
    //Input the constant value 18 in reg. 16
    ldi r16, 32
    //This part calculates (°F-32)
    sub r18, r16
    ldi r20, 5
    //This part calculates (°F-32)*5
    mul r18, r20
    //move the products into r25H and r24L
    movw r25:r24, r1:r0
    //input the denominator into r19
    ldi Denominator, 9
    //call the 16 bit by 8 bit division
    rcall Div16_8
    sts  C, r22
    ret
```

Watch				
Name	Value	Type	Location	
F	124 '|'	SRAM Locat:	0x0101 [SRAM]	
C	51 '3'	SRAM Locat:	0x0100 [SRAM]	
r24	1 ' '	Register	R24	

Watch 1 / Watch 2 / Watch 3 / Watch 4