

Calculate the temperature which has same numeral value on celsius and Fahrenheit scale.

Let the required temperature be  $x^{\circ}\text{C} = x^{\circ}\text{F}$

In celsius scale;

Lower fixed point  $(\text{LFP})_c = 0^{\circ}\text{C}$

Upper fixed point  $(\text{UFP})_c = 100^{\circ}\text{C}$

Similarly, in Fahrenheit scale

$(\text{LFP})_F = 32^{\circ}\text{F}$  ,  $(\text{UFP})_F = 212^{\circ}\text{F}$

$$\therefore \frac{T_C - (LFP)_C}{(UFP)_C - (LFP)_C} = \frac{T_F - (LFP)_F}{(UFP)_F - (LFP)_F}$$

$$\Rightarrow \frac{x - 0}{100 - 0} = \frac{x - 32}{212 - 32}$$

$$\Rightarrow \frac{x}{100} = \frac{x - 32}{180}$$

$$\Rightarrow \boxed{x = -40}$$

Hence, required temperature is  $-40^\circ\text{C}$  or  $-40^\circ\text{F}$