

5.11

Temperature in Different Systems

Try These

Compare. Write $>$, $<$, or $=$ to make a true statement. -10

i) 0 $=$ $-1 + 1$

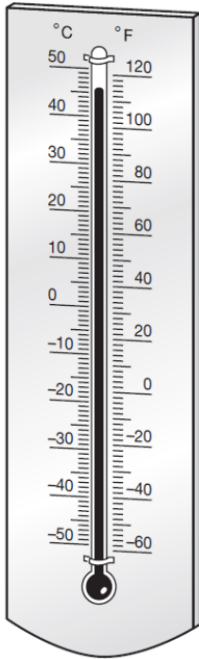
iii) -8 $>$ $-2 - 8$

ii) $6 - 8$ $>$ -7

iv) $-2 + 3$ $-5 + 7$

-2 $>$ -7

$+1$ $<$ 2



In 1714, Gabriel Daniel Fahrenheit invented the mercury thermometer. The imperial unit for measuring temperature is degrees **Fahrenheit** (°F).

In 1742, Anders Celsius created a Celsius temperature scale. The metric unit for measuring temperature is degrees **Celsius** (°C).

The thermometer at the left shows the highest temperature recorded in Canada. It was on July 5, 1937, in Midale, Saskatchewan, and Yellow Grass, Saskatchewan.

- 1 What is the temperature? 46 °C or 113 °F

For Celsius and Fahrenheit temperatures, use these formulas:

$F = \frac{9}{5}C + 32$ and $C = \frac{5}{9}(F - 32)$. F is the temperature in degrees Fahrenheit and C is the temperature in degrees Celsius.

Example 1

Élise is training to become a chef. A recipe for tourtière says to bake it at 190 °C. To what temperature should Élise set an oven with temperatures in degrees Fahrenheit?

Solution

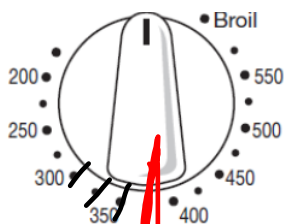
A. Which formula will you use? F = $\frac{9}{5}C + 32$

B. What is the value of F ? F = $\frac{9}{5}(190) + 32$

$$9 \times 190 \div 5 + 32 = \underline{374} \text{ } ^\circ\text{F}$$

Example 1

Élise is training to become a chef. A recipe for tourtière says to bake it at $190\text{ }^{\circ}\text{C}$. To what temperature should Élise set an oven with temperatures in degrees Fahrenheit?



- C. What temperature for a Fahrenheit oven is closest to the value you calculated for F ? 374 $^{\circ}\text{F}$
Élise should set the oven to 375 $^{\circ}\text{F}$.

Example 2

Owen, an assistant at a library, learned that the highest temperature in Calgary was $36.1\text{ }^{\circ}\text{C}$ on July 25, 1933. The lowest temperature was $-47.9\text{ }^{\circ}\text{F}$ on January 31, 1893. What is the difference in degrees Celsius, to one decimal place?

Solution

A. Which formula will you use? $C = \frac{5}{9}(F - 32)$

B. What is the value of C ? $C = \frac{5}{9}(-47.9 - 32)$

$$\begin{aligned} -47.9 - 32 &= \boxed{} \\ \boxed{} \times 5 \div 9 &= -44.4^{\circ}\text{C} \end{aligned}$$

Example 2

Owen, an assistant at a library, learned that the highest temperature in Calgary was $36.1\text{ }^{\circ}\text{C}$ on July 25, 1933. The lowest temperature was $-47.9\text{ }^{\circ}\text{F}$ on January 31, 1893. What is the difference in degrees Celsius, to one decimal place?

- C. What is the difference between these temperatures?

$$\begin{aligned} \underline{36.1}\text{ }^{\circ}\text{C} - (\underline{-44.4}\text{ }^{\circ}\text{C}) &= \underline{36.1}\text{ }^{\circ}\text{C} + \underline{44.4}\text{ }^{\circ}\text{C} \\ &= \underline{80.5}\text{ }^{\circ}\text{C}, \text{ or about } \underline{80.5}\text{ }^{\circ}\text{C} \end{aligned}$$