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1. Convert 37°C to both Fahrenheit degrees and Kelvin.

$F = \frac{9}{5}C + 32 = \frac{9(37)}{5} + 32 = 66.6 + 32 = 98.6^\circ F$ ← That's human body temp.

2. Convert 80K to both Celsius and Fahrenheit degrees.

First convert to Celsius by subtracting 273.15 K: T = 80 – 273.15 = -193.15°C

Then to Fahrenheit: $F = \frac{9}{5}C + 32 = 9\frac{(-193.15)}{5} + 32 = -347.7^\circ F$

3. Calculate the difference between 97°F and 40°F in both Celcius degrees and Kelvin.

In Celsius degrees, these temperatures are

$T_1 = \frac{5}{9}(F - 32) = \frac{5}{9}(97 - 32) = 5\frac{(67)}{9} = 37.22^\circ C$

$T_1 = \frac{5}{9}(F - 32) = \frac{5}{9}(40 - 32) = 5\frac{(8)}{9} = 4.44^\circ C$

The difference is $37.22 - 4.44 = 32.78^\circ C$ or *32.78 K*

We would get the same answer using Kelvin because the size of the degree is the same, so the difference would be the same.

4. Convert -40°F to Celsius degrees.

$C = \frac{5}{9}(F - 32) = 5\frac{(-72)}{9} = -40^\circ C$

-40°F = -40°C; the two scales cross at that unique point.

5. The boiling temperature of liquid oxygen (O_2) is -297.3°F. Convert this temperature to Celsius degrees and Kelvin.

First convert to Celsius: $C = \frac{5}{9}(F - 32) = \frac{5}{9}(-297.3 - 32) = -182.9^\circ C$

Then to Kelvin by adding *273.15: K = 273.15 – 182.6 = 90.2 K*