

NAME: \_\_\_\_\_

## Math4Science: Temperature

*As you work through questions (1) and (2), write out any math you do. How does knowing how to convert one way (e.g. from degrees Celsius to temperature in Kelvin) help you convert the opposite way (from temperature in Kelvin to degrees Celsius)?*

### A few facts:

- The lowest temperature possible is zero Kelvin.
- Water boils at 212 degrees Fahrenheit.
- Water freezes at 0 degrees Celsius.
  
- $K=C + 273.15$
- $K=5/9 * (F + 459.67)$
- $F=9/5 * C + 32$

(1) People working at NASA (the National Aeronautics and Space Administration — part of the government of the United States) like to use Kevlar when they build things they will send into outer space. Let's imagine that [Aerospace Engineer Alex Walts](#) orders some Kevlar to wrap wires in and he is told that it will work well at temperatures from -320 to 850 degrees Fahrenheit. Help him convert these U.S. standard measurements to:



(a) Degrees Celsius \_\_\_\_\_

(b) Kelvin \_\_\_\_\_

(2) Temperatures on Greenland's ice sheet, where [Earth System Scientist Charles Zender](#) has worked, and elsewhere in the Arctic can range from **-2 degrees Celsius to +2 degrees C**. If Zender's friends back in California ask him to translate that to degrees **Fahrenheit**, what should he tell them for:



(a) The lowest temperature in the Arctic: \_\_\_\_\_

(b) The highest Arctic temperature: \_\_\_\_\_

(c) What's the range of Arctic temperatures, in Kelvin? \_\_\_\_\_

(3) *How does knowing how to convert one way (e.g. from degrees Celsius to temperature in Kelvin) help you convert the opposite way (from temperature in Kelvin to degrees Celsius)? Explain, using at least a few words and some numbers.*

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(4) What's the lowest temperature possible:

(a) In Kelvin? \_\_\_\_\_

(b) In Celsius? \_\_\_\_\_

(c) In Fahrenheit? \_\_\_\_\_

(5) To make cement, you have to heat limestone ( $\text{CaCO}_3$ ) to about 1400 degrees Celsius.

(a) How hot is this, in Fahrenheit? \_\_\_\_\_

(b) In Kelvin? \_\_\_\_\_

(6) Create three more equations that would help someone complete this worksheet:

(a) Celsius (C) in terms of Kelvin (K): \_\_\_\_\_

(b) Fahrenheit (F) in terms of Kelvin (K): \_\_\_\_\_

(c) Celsius (C) in terms of Fahrenheit (F): \_\_\_\_\_

(7) Read about Stephanie Kwolek, who invented Kevlar, [here](#). What do you find most interesting about her?

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