Worksheet – Variables & Expressions

**Task 1:**

The melting point of lead is 327.5C. Write some Python code that will first store that value in a variable, and then calculate the equivalent in Fahrenheit, again storing it in a variable. Finally, make sure to print out the result.

Now, change the melting point to that of aluminium, 660.3C. Note how you can rerun your other expressions, as-is, and get the new answer.

**Task 2:**

The Ideal Gas Law is PV = nRT, which states that the pressure of a gas (P) times the volume of it (V) is equal to the amount of the gas, in moles (n) times its temperature in Kelvin (T), and a constant (R; which equals 8.31446261815324). Note that this is an equation, *not* a variable assignment, so you can use algebra to solve the equation for any variable you desire.

Use this equation to calculate the volume (V; in cubic meters) of 3 moles of gas (n) at a temperature of 300 Kelvin (T) and a pressure of 150 Pascals (P).

***Note***: All of the units provided work out, and do not need to be converted, but you do need to pay attention to the order of operations.

**Task 3:**

In Portal 2, [Cave Johnson](https://half-life.fandom.com/wiki/Cave_Johnson) said that "*The average human male is about sixty percent water. Far as we're concerned, that's a little extravagant. So if you feel a bit dehydrated in this next test, that's normal. We're gonna hit you with some jet engines, and see if we can't get you down to twenty or thirty percent.*"

Let’s assume that Cave Johnson means 60% water by weight (not volume), and that when a person is dehydrated with a jet engine, they only lose water weight, and the rest of their body stays the same (implausible, but it simplifies things).

Imagine we have an 80kg person, who is dehydrated until they are 25% water (by weight) instead of 60%. Write one or more expressions (using variables, as appropriate) to calculate their new weight.