

HOW TO READ A RADIOCARBON DATE

1	2	3	4	5	6
Beta-203181	2840 ± 50 bp <i>(uncal. ¹⁴C date)</i>	890 ± 50 bc <i>(uncal. ¹⁴C date)</i>	1000 BC <i>(cal. intercept)</i>	1040-920 BC <i>(cal. 1 sigma)</i>	1130-880 BC <i>(cal. 2 sigma)</i>

1. Laboratory and number of specimen. In this case the lab is the Beta Analytic Company (in Florida) and the sample number is 203191. This information is included so the researcher, or future researchers, can contact the lab to ask questions about the sample.
2. Conventional radiocarbon date (*uncalibrated*) in years before present, bp (by international agreement, “the present” is always AD 1950 [the date the carbon-14 method was invented by Libby]). The date of 2840 is the mean or statistical average of the calculated radiocarbon age of the sample, ±50 is its standard deviation. Thus, this sample has a date of 2,840 years before present plus or minus 50 radiocarbon years, which means the sample falls between 2,890–2,790 years before present (1950) in radiocarbon years. Note that lower case letters always refer to uncalibrated dates.
3. Conventional radiocarbon date (#2) converted to our calendar using the present date of AD 1950.

1,950–2,890 = 890. With “plus and minus” deviation added we get **890 bc ± 50**

We now have an uncalibrated date in years bc. If we want real time, we need to convert this date using information from dendrochronology. This is known as calibration. See next step.

4. Intercept of radiocarbon date (2840 bp, from #2) and calibration curve (tree ring chronology). If you wish to see the plot, see other side of this page (*this is only to help you understand the process of calibration, you will not be asked to generate or interpret such a plot on an exam*). Note that the date of 1000 BC is about a century earlier than the radiocarbon date of 890 bc/2840 bp.
5. Estimation of calibrated date (span) based on the intercept of 2,890–2,790 radiocarbon years before present (see step #2) and the calibration curve. This is a 1 sigma statistical result, meaning that there is a 68% probability that the actual date falls between the intercepts of 1040 and 920 BC (in our calendar).
6. 2 sigma calibration result, meaning that there is a 95% probability that the actual date falls between the intercepts of 1130 and 880 BC (in our calendar). Although we have a better probability using 2 sigma, the time spread is now greater. In other words, for greater certainty we sacrifice accuracy.