Digital Entry of Mathematical Operations for the 2025 AP Environmental Science Exam

This document provides tips for entering mathematical operations in Bluebook for the free-response section of the 2025 AP Environmental Science Exam. It is intended to help teachers prepare students for typing mathematical operations using a conventional (QWERTY) keyboard.

- Students can practice by entering equations in the AP Environmental Science test preview in Bluebook. Download the Bluebook app at **https://bluebook.collegeboard.org/**.
- Students can practice using quizzes and practice exams in AP Classroom, which are formatted to resemble Bluebook.
- Students can practice with word processing software. If using this software, they should turn off the autocorrect feature. Turning off autocorrect will avoid automatic capitalization and incorrect symbol insertion. Note that Bluebook does not have autocorrect, so there is no need to disable this function when using Bluebook.
- Students can practice by entering equations into a spreadsheet.

As in previous AP Environmental Science Exams, unless the prompt states otherwise, students are not required to include units in mathematical operations. However, inclusion of units is encouraged as a best practice. Students who include units when setting up mathematical equations are more likely to arrive at the correct answer. For this reason, examples with and without units are provided below.

The suggestions included here are just some of the many options available; this should not be considered an exhaustive list of what students may use.

TABLE 1: SUBSTITUTING QWERTY KEYBOARD CHARACTERS FOR SPECIAL CHARACTERS

Symbolic Notation	Keyboarded Options in Bluebook
4.1×0.189	4.1 * 0.189 4.1 x 0.189
℃	degrees C
$\frac{x}{18.9}$	x / 18.9

TABLE 2: SUPERSCRIPT AND ALTERNATIVES TO SUPERSCRIPT IN BLUEBOOK

Symbolic Notation	Keyboarded Options in Bluebook
10^{12}	10^{12} 10^12
5.21×10^{11}	5.21 x 10^{11} 5.21 * 10^{11} 5.21 x 10^11 5.21 * 10^11

TABLE 3: SUBSCRIPT AND ALTERNATIVES TO SUBSCRIPT IN BLUEBOOK

Symbolic Notation	Keyboarded Options in Bluebook
CO_2	CO_2 CO2 CO_2
N_2O	N_2O N2O N_2O

TABLE 4: USE OF SPACES AND PARENTHESES TO CLARIFY MATHEMATICAL OPERATIONS

Symbolic Notation	Keyboarded Options in Bluebook
$\frac{4.1 \times 10^{12}}{100} = \frac{x}{18.9}$	(4.1 * 10^{12}) / 100 = x / 18.9
$(4.1 \times 10^{12}\ \text{kWh}) \times 18.9\%$	(4.1 x 10^{12} kWh) x 18.9% (4.1 * 10^12 kWh) * 18.9% (4.1 * 10^{12} kWh) * 0.189
$\frac{(1.0\ \text{kg} - 0.42\ \text{kg})}{1\ \text{kWh}} \times (8.99 \times 10^{11}\ \text{kWh})$	(1.0 kg – 0.42 kg) / 1 kWh * (8.99 * 10^{11} kWh) (1.0 kg – 0.42 kg) / 1 kWh x (8.99 x 10^11 kWh)
$\left(\frac{8.99 \times 10^{11}\ \text{kWh}}{1} \times \frac{1\ \text{kg}\ CO_2}{\text{kWh}}\right) - \left(\frac{8.99 \times 10^{11}\ \text{kWh}}{1} \times \frac{0.42\ \text{kg}\ CO_2}{\text{kWh}}\right)$, THEN: $8.99 \times 10^{11}\ \text{kg}\ CO_2 - 3.776 \times 10^{11}\ \text{kg}\ CO_2$	(8.99 x 10^{11} kWh / 1 * 1 kg CO2 / kWh) – (8.99 x 10^{11} kWh / 1 * 0.42 kg CO2 / kWh) , THEN: 8.99 *10^{11} kg CO2 – 3.776 * 10^{11} kg CO2

TABLE 5: SIMPLIFYING EQUATIONS FOR QWERTY KEYBOARD ENTRY

Symbolic Notation	Keyboarded Options in Bluebook, Simplified and Without Units
$\frac{(1.0\ \text{kg} - 0.42\ \text{kg})}{1\ \text{kWh}} \times (8.99 \times 10^{11}\ \text{kWh})$	(1.0 – 0.42) * (8.99 * 10^11) (1.0 – 0.42) x (8.99 x 10^{11})
$(7.4 \times 10^{7}\ \text{m}^3) \times \frac{4.76\ \text{kWh}}{1\text{m}^3} \times \frac{1\text{home}}{10{,}715\ \text{kWh}}$	(7.4 * 10^7) * 4.76 / 10,715 (7.4 x 10^7) x 4.76 / 10715

