

Tips for Understanding Commonly Used STEM Vocabulary

In science, technology, engineering, and math courses, also referred to as STEM courses, students may encounter vocabulary words that have different meanings from their common definitions. This handout identifies some of these terms and provides definitions for both common and academic usage. It also includes grammatical guidelines for usage with helpful examples. This handout is not a comprehensive vocabulary list, but it serves as a guide for recognizing the various meanings of STEM vocabulary.

Science

Term	Common Usage	Academic Usage
Current	<p><i>Adjective use:</i> now, present</p> <p><i>Example:</i> It is wise to read about current events to be informed about what is happening in the world.</p>	<p><i>Noun use in Physics:</i> the flow of particles, measured in amps</p> <p><i>Example:</i> Divide the voltage of the battery by the resistance of the resistor to calculate the current, or number of amps, flowing through the circuit.</p> <p><i>Noun use in Geology/Biology:</i> a body of water or air moving in a specific direction</p> <p><i>Example:</i> The Gulf Stream is the current that starts at the bottom of Florida, travels north along the eastern coast of the U.S. and Canada, and then crosses the Atlantic Ocean towards Europe.</p>

<p>Radical</p>	<p><i>Adjective use:</i> extreme; changing the basic nature of something</p> <p><i>Example:</i> The local elementary school made radical changes to better serve the community by doubling in size, expanding the playground, and adding computers in every classroom.</p>	<p><i>Noun use in Chemistry/Nutrition:</i> any particle such as an atom, ion, or molecule that is highly reactive due to having at least one unpaired valence electron; may be referred to as a “free radical” in certain contexts</p> <p><i>Example:</i> Free radicals that make their way into human cells can cause damage over time, but this can be somewhat mitigated by ingesting foods with high levels of antioxidants.</p>
<p>Strain</p>	<p><i>Verb use 1:</i> to struggle, to hurt oneself</p> <p><i>Example 1:</i> It is unfortunately common to strain one’s back when lifting heavy items improperly.</p> <p><i>Verb use 2:</i> to separate solids from liquids, typically in cooking</p> <p><i>Example 2:</i> After cooking the pasta, it is necessary to strain the liquid out of the pot.</p>	<p><i>Noun use in Biology:</i> a different form of the same or similar virus or bacteria</p> <p><i>Example:</i> One strain of the human coronavirus is SARS-CoV-2, which is also known as COVID-19.</p>

Technology

Term	Common Usage	Academic Usage
<p>File</p>	<p><i>Noun use:</i> a document to be stored in a container for the purpose of retaining information</p> <p><i>Example:</i> Sarah thought she had placed her birth certificate in the cabinet, but she found the file titled “Birth Certificate” sitting on her desk.</p> <p><i>Verb use 1:</i> to store a document in a particular place for future reference</p> <p><i>Example 1:</i> When Sarah found her birth certificate on the desk, she realized she should file it in a safe place.</p> <p><i>Verb use 2:</i> to start the formal process of something, such as a legal action</p> <p><i>Example 2:</i> After the car accident, Sarah needed to file a claim with her auto insurance company to get reimbursed for the price of repairs.</p>	<p><i>Noun use in Computers:</i> a resource for recording data on a storage device, typically found in a File Explorer; filenames end with “file extensions” such as .docx, .exe, .png</p> <p><i>Example:</i> Sarah created a Microsoft Word file to write her essay, a document type which commonly uses the .docx file extension.</p>

<p>Folder</p>	<p><i>Noun use:</i> a cover that holds loose papers, similar to a binder</p> <p><i>Example:</i> The student had a folder for math homework in his backpack.</p>	<p><i>Noun use in Computers:</i> a digital storage that organizes digital files, typically found in a File Explorer</p> <p><i>Example:</i> The “Program Files” folder contains files for different apps on your computer.</p>
<p>Log</p>	<p><i>Noun use:</i> an official record of events; a large section of a cut or fallen tree</p> <p><i>Example:</i> After a tree fell across the creek in last winter’s storm, the log made it possible to walk across the creek for the first time.</p> <p><i>Verb use:</i> to document an event</p> <p><i>Example:</i> Many workers need to regularly log their hours to get paid.</p>	<p><i>Noun use in Computers:</i> a record of events that have occurred in a computer system</p> <p><i>Example:</i> The audit log told me whenever an error occurred in my software.</p>
<p>Ribbon</p>	<p><i>Noun use:</i> a long strip of material, often fabric, used to tie or bind, often with decorative intent</p> <p><i>Example:</i> When it was time to dress for a special occasion, the girl liked to braid her long hair and wrap the braids with a ribbon that matched the color of her dress.</p>	<p><i>Noun use in Computers:</i> a panel displayed along the top of the workspace providing a way to access frequently used commands</p> <p><i>Example:</i> The student enlarged the size of the typed words by clicking the “Increase Font Size” button, located in the ribbon.</p>

<p>Site</p>	<p><i>Noun use:</i> the location of an event</p> <p><i>Example:</i> The site of the county fair was the Expo Fairgrounds.</p>	<p><i>Noun use in Computers:</i> an online location, a web page address</p> <p><i>Example:</i> The Academic Center for Excellence has its own web page on the Germanna Community College website. The site address is: https://germanna.edu/academic-center-excellence</p>
<p>Tab</p>	<p><i>Noun use 1:</i> a small projection or extension of material from a surface to allow for manipulation, identification, or connection to something else</p> <p><i>Example 1:</i> The student used pages with tabs to separate and identify subjects in his homework binder.</p> <p><i>Noun use 2:</i> a tally of expenses owed with intent to pay</p> <p><i>Example 2:</i> The student paid the restaurant tab for all her friends when they went out for lunch.</p>	<p><i>Noun use 1 in Computers:</i> a subdivision within a single window of an internet browser and some other types of programs, such as a PDF viewer, to allow for greater organization and more efficient use of screen space</p> <p><i>Example 1:</i> The student signed into myGCC through her internet browser and opened a new tab in the same window for Canvas, student email, and the library database to easily switch between resources while doing homework.</p> <p><i>Noun use 2 in Computers:</i> a button on the left side of keyboards used to cycle through items on a web page or document; or, to add indentation when using a word processor app</p> <p><i>Example 2:</i> The student pressed the tab button to add an indent to the first line of the paragraph.</p>

<p>Web</p>	<p><i>Noun use:</i> any complex structure of interconnected points, such as a network of silk threads created by a spider to catch its prey</p> <p><i>Example:</i> In the sunlight, I could see the silky threads of the spider’s web and the insect that was trapped within it.</p>	<p><i>Noun use in Computers:</i> another name for the Internet</p> <p><i>Example:</i> When the Internet was first introduced, people were amazed with the amount of information available on the worldwide web.</p>
<p>Window</p>	<p><i>Noun use:</i> an inset within a structure containing a sometimes-openable barrier, usually of glass, that provides some combination of ventilation, light, and a view to the outside, often paired with curtains or blinds to further control the amount of light allowed in</p> <p><i>Example:</i> The student closed the window to prevent rain from coming into the classroom but kept the curtains open to watch the storm.</p>	<p><i>Noun use in Computers:</i> component of a computer’s graphical user interface shown as a distinct or separate viewing area bound by a rectangular border that can be resized and closed using buttons in the top corner of the viewing area</p> <p><i>Example:</i> The student clicked on the internet browser icon and opened a new window to access the Germanna website.</p>

Engineering

Term	Common Usage	Academic Usage
Assembly	<p><i>Noun use:</i> a group of people gathered in one place</p> <p><i>Example:</i> During the assembly, alumni spoke to the graduating class and told motivational stories of how to be successful.</p>	<p><i>Noun use in Mechanical Engineering:</i> an object made from components</p> <p><i>Example:</i> An automobile is an assembly of many separate components, each having a function that contributes to the whole.</p>
Draft	<p><i>Noun use 1:</i> a cold wind from an open window or door</p> <p><i>Example 1:</i> When I opened the windows this morning, the weather was calm. Now that the wind has increased, the draft is making me cold.</p> <p><i>Noun use 2:</i> a mandatory recruitment for military service</p> <p><i>Example 2:</i> The U.S. does not have a military draft; military service is voluntary.</p>	<p><i>Verb use in Engineering/Architecture:</i> to make engineering drawings</p> <p><i>Example:</i> It takes time to draft engineering drawings.</p> <p><i>Noun use in Engineering/Architecture:</i> two dimensional and isometric line drawings created from three dimensional objects and engineering drawings</p> <p><i>Example:</i> With the invention of CADD, a draft of engineering drawings can be created in a fraction of the time that it used to take.</p>
Shear	<p><i>Verb use:</i> to cut off or through, often in reference to removing wooly fleece from an animal</p> <p><i>Example:</i> When spring arrived bringing warmer weather, the farmhand knew it was time to shear the wool from the sheep.</p>	<p><i>Noun use in Mechanical Engineering:</i> a force parallel to a surface</p> <p><i>Example:</i> Pressing the palms of the hand together and rubbing them quickly generates warmth from friction due to the shear forces from the palms sliding together in parallel but opposite directions.</p>

<p>Strain</p>	<p><i>Verb use 1:</i> to struggle, to hurt oneself</p> <p><i>Example 1:</i> The professor had a sore throat and had to strain her voice to be heard.</p> <p><i>Verb use 2:</i> to separate solids from liquids, typically in cooking</p> <p><i>Example 2:</i> Brian prefers using fresh tea leaves, so he has to strain the tea after it steeps.</p>	<p><i>Noun use in Mechanical Engineering:</i> a material's change in shape resulting from the force applied to it</p> <p><i>Example:</i> The material's strain is the ratio of its final length to its original length before it was stretched.</p>
<p>Stress</p>	<p><i>Noun use:</i> emotional or physical tension resulting from challenging circumstances</p> <p><i>Example:</i> Grief can cause emotional stress.</p> <p><i>Verb use:</i> to emphasize the importance of something</p> <p><i>Example:</i> Doctors often stress the value of eating well and exercising.</p>	<p><i>Noun use in Mechanical Engineering:</i> the force applied to a material per square unit</p> <p><i>Example:</i> The stress applied by the machine pulling apart a material sample to test its strength in one trial was around 1000 Newtons per square meter.</p>

Math

Term	Common Usage	Academic Usage
<p>Cube</p>	<p><i>Noun use:</i> a three-dimensional geometric shape made up of six equal squares</p> <p><i>Example:</i> Natalie solved the Rubik's Cube in three minutes.</p>	<p><i>Noun use in Algebra:</i> the product of multiplying a number by itself and then by itself again</p> <p><i>Example:</i> The cube of three is twenty-seven. ($27 = 3 \cdot 3 \cdot 3$ or $27 = 3^3$)</p>

<p>Log</p>	<p><i>Noun use:</i> an official record of events; a large section of a cut or fallen tree</p> <p><i>Example:</i> According to the captain’s log, the Titanic hit an iceberg at 11:40 PM on April 14, 1912.</p> <p><i>Verb use:</i> to document an event</p> <p><i>Example:</i> Because the captain of the Titanic took the time to log the event, we know exactly when the ship hit the iceberg.</p>	<p><i>Noun use in Algebra/Calculus:</i> shortened form of <i>logarithm</i>; the inverse of exponents, answers the question: A raised to what power equals B?</p> <p><i>Example:</i> Find the log of 32 with base of 4. ($\log_4 32 = 2.5$)</p>
<p>Mean</p>	<p><i>Adjective use:</i> not nice, cruel</p> <p><i>Example:</i> As children, my brother and I were mean to each other, often fighting and saying cruel things, but now we are dear friends.</p>	<p><i>Noun use in Algebra/Statistics:</i> the average value of a set of numbers, obtained by summing all values and dividing by the total number of values</p> <p><i>Example:</i> When searching for the average salary in a particular career, all salaries are considered, and the mean represents the average salary even if it is not an actual salary number in the data.</p>
<p>Median</p>	<p><i>Noun use:</i> a partition that separates opposite directions of traffic</p> <p><i>Example:</i> A police vehicle was parked on the grass median, waiting to catch speeding drivers.</p>	<p><i>Noun use in Algebra/Statistics:</i> the middle value in a set of numbers arranged in ascending order</p> <p><i>Example:</i> When searching for the typical salary in a particular career, all salaries are considered, and the median represents the middle point of the data.</p>

<p>Mode</p>	<p><i>Noun use:</i> the manner of doing something</p> <p><i>Example:</i> My preferred mode of exercise is walking, but my daughter prefers weightlifting.</p>	<p><i>Noun use in Algebra/Statistics:</i> the value that appears most frequently in a set of numbers</p> <p><i>Example:</i> Real estate agents might calculate the mode of the number of bedrooms per house to how many bedrooms to expect from most houses in a particular area.</p>
<p>Plane</p>	<p><i>Noun use:</i> shortened form of <i>airplane</i></p> <p><i>Example:</i> The view of the city from up in a plane provides such a different perspective than on the ground.</p>	<p><i>Noun use in Geometry:</i> a flat surface in any given direction</p> <p><i>Example:</i> The XY-plane has zero thickness and extends infinitely along the X and Y axes.</p>
<p>Radical</p>	<p><i>Adjective use:</i> extreme; changing the basic nature of something</p> <p><i>Example:</i> The pandemic had a radical effect on education, forcing a shift to online learning that still continues along with in-class instruction.</p>	<p><i>Noun use in Algebra:</i> the symbol for square root (\sqrt{x}), cube root ($\sqrt[3]{x}$), etc.</p> <p><i>Example:</i> The radical $\sqrt{2}$ is an irrational number, but $\sqrt{4} = 2$.</p>
<p>Rational</p>	<p><i>Adjective use:</i> using reason or logic; able to think clearly or logically</p> <p><i>Example:</i> A rational decision involves good logic, but an irrational decision is based on emotions that have blocked the person's ability to think clearly.</p>	<p><i>Adjective use in Algebra:</i> a number that can be written as a ratio of integers $\frac{a}{b}$ (b is not equal to 0); an irrational number cannot be written as a ratio of integers.</p> <p><i>Example:</i> The fraction $\frac{2}{5}$ is a rational number, but π is an irrational number.</p>

<p>Root</p>	<p><i>Noun use 1:</i> the part of the plant that supplies nutrients</p> <p><i>Example 1:</i> With orchids, a green root color means that it does not need watering, but a silver root color signifies dehydration.</p> <p><i>Noun use 2:</i> the origin of something</p> <p><i>Example 2:</i> In psychotherapy, patients often explore the root of an emotional issue.</p>	<p><i>Noun use 1 in Algebra:</i> a solution to an equation</p> <p><i>Example 1:</i> $x = 1$ is a root of $x^2 + x - 2 = 0$. The other root is $x = -2$.</p> <p><i>Noun use 2 in Algebra:</i> a number that when multiplied by itself produces the original number</p> <p><i>Example 2:</i> The square root of 25 is 5 because 5^2, or $5 \cdot 5$, equals 25.</p>
<p>Square</p>	<p><i>Noun use 1:</i> a two-dimensional geometric shape with four equal sides and four right angles</p> <p><i>Example 1:</i> A phone app icon typically appears in the shape of a square.</p> <p><i>Nouns use 2:</i> a public gathering place often in the center of a town</p> <p><i>Example 2:</i> The art festival was held in the town square so that everyone could have access.</p>	<p><i>Noun use in Algebra:</i> the product of multiplying a number by itself</p> <p><i>Example:</i> The square of five is twenty-five. ($25 = 5 \cdot 5$ or $25 = 5^2$)</p>

<p>Tangent</p>	<p><i>Noun use:</i> a completely different line of thought</p> <p><i>Example:</i> I was talking with a friend about my health concerns when she interrupted me to go off on a different tangent to discuss her car problems.</p>	<p><i>Noun use in Geometry:</i> a line touching a circle, ellipse, or arc at a point without crossing it</p> <p><i>Example:</i> If a circle is inside a square, each side of the square that touches the circle exactly once is a tangent.</p> <p><i>Noun use in Trigonometry:</i> one of the six trigonometric functions</p> <p><i>Example:</i> The tangent of an angle is found by dividing the length of the side opposite the angle by the length of the side adjacent to the angle.</p>
<p>Variable</p>	<p><i>Adjective use:</i> not consistent, likely to change</p> <p><i>Example:</i> The variable spring weather in Virginia makes it difficult to plan outdoor events since it is hard to predict the temperature or the chance of snow.</p>	<p><i>Noun use in Algebra:</i> a characteristic or attribute that can take on different values</p> <p><i>Example:</i> The value of the variable x can change depending on the numbers in an equation.</p>