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| ***Techniques for Documenting with Proof or Supporting Evidence, and Related Strategies for Problem Solving***  **By David Alderoty © 2016**  **Chapter 9) Technique 9, Reasoning Based on Common Sense, to Support Your Writing and for Problem Solving**  [**This e-book presents 28 techniques for supporting the validity of the statements you write**](http://www.TechForText.com/DP/List)**.**  **Left click on the above for a list of the techniques**  **This chapter contains a little over 2,900 words**  **If you want to go to chapter 8, left click on the following link:**  [**www.TechForText.com/DP/chapter-8**](http://www.TechForText.com/DP/chapter-8)  **To contact the author use David@TechForText.com**  [**or left click for a website communication form**](http://www.david100.com/Mail)  **Table of Contents, and an Outline of this Chapter**  The following is a hyperlink table of contents, as well as an outline of this chapter. If you left click on a blue underlined heading, the corresponding topic or subtopic will appear on your computer screen. Alternatively, you can scroll down to access the material listed in the table of contents, because this chapter is on one long webpage.  [PART ONE 4](#_Toc465771883)  [Topic 1.) Technique-9, Reasoning Based on Common Sense 4](#_Toc465771884)  [**Subtopic, Common Sense Reasoning Defined in 500 words** 5](#_Toc465771885)  [Topic 2.) The Complexity of Common sense Reasoning 7](#_Toc465771886)  [**Subtopic, Communication and Common sense Reasoning** 8](#_Toc465771887)  [**Subtopic, Perception, Locomotion, and Common sense Reasoning** 8](#_Toc465771888)  [PART TWO 9](#_Toc465771889)  [Topic 3.) Deriving New Information, Solutions to Problems, and Answers to Unusual Questions, with Common sense Reasoning 9](#_Toc465771890)  [**Subtopic, Deriving New Information, With Common Sense Reasoning, Illustrated with a Series of Questions** 9](#_Toc465771891)  [Topic 4.) Technique 9, Writing, and Common sense reasoning 14](#_Toc465771892)  [**Subtopic, Writing Documents so they are at Least Partly, if Not Totally, Supported by Common Sense** 15](#_Toc465771893)  [Topic 5.) Understanding the Limitations of Common Sense Reasoning, to Avoid Failed Efforts with Writing, Problem Solving, and Goal Attainment. 16](#_Toc465771894)  [**Subtopic, How to Improve Common sense Reasoning** 17](#_Toc465771895)  [**Web-Based Articles for Additional and Supporting Information for the Material Presented in this Topic** 18](#_Toc465771896)  [**Web-Based Videos for Additional and Supporting Information for the Material Presented in this Topic** 19](#_Toc465771897)  **This E-Book Provides Additional and Supporting Information from other Authors, with Web Links**  This e-book contains links to web-based articles and videos from other authors, for **additional, alternative, and supporting information.** The links are the blue underlined words, presented throughout this e-book. However, some of these links are to access different sections of this e-book, or material on my own websites.  Quotes and paraphrases in this e-book have hyperlinks to access the original source. The quotes are presented in brown text, which is the same color of these words. (The precise text color is RGB Decimal 165, 42, 42, or Hex #a52a2a)  Some of the web links in this e-book will probably fail eventually, because websites may be removed from the web, or placed on a new URL. If a link fails, use the blue underlined words as a search phrase, with [www.Google.com](http://www.google.com/) If the link is for a video, use [www.google.com/videohp](http://www.google.com/videohp) The search will usually bring up the original website, or one or more good alternatives. |

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| ***For those who prefer listening, as an alternative to reading, this book is recorded in an audio format.***  [***For an audio narration of PART ONE, left click on these words (requires 6 minutes, and 22 seconds).***](P1.mp3)  [***For an audio narration of PART TWO, left click on these words (requires 14 minutes, and 21 seconds).***](P2.mp3) |

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| ***PART ONE***  **Topic 1.) Technique-9, Reasoning Based on Common Sense**  |||  You might think that common sense reasoning is less than adequate for solving problems, and for supporting the validity of the statements in your document. However, if **used under the right set of circumstances**, it can be an excellent technique for problem solving and for supporting the material in your document.  Common sense reasoning might appear to be an oversimplified technique, but it is actually a relatively complex process. We are not aware of the complexity, because usually it takes place an automatic or semiautomatic fashion. To explain common sense reasoning, required two chapters, and to define it in detail required about 500 words.  **Subtopic, Common Sense Reasoning Defined in 500 words**  |||  Based on the way I am using the terminology common sense reasoning is a type of reasoning and information retrieval technique that is commonly used by children and adults, regardless of their level of education. Common sense reasoning takes place in the mind. It usually involves retrieval of **information from long-term memory**, which usually is coupled with **sensory data** from the environment. The reasoning process, often involves manipulating or modifying the above in various ways usually in the mind, to solve a problem or obtain a goal. At the **simplest level** the goal may be to move from one section of the room to another, and the problem might be avoiding an obstacle that presents a tripping hazard. At a more complex level, the goal and problem they involve relatively complicated major life decisions.  Common sense reasoning includes the mental reasoning and information retrieval techniques used to communicate, to interpret the environment, and to carry out daily activities. The exact nature and process of common sense reasoning is determined by the individual, and the problem or goal he or she is dealing with at a specific point in time. However, common sense reasoning involves one or more of the following:  **1)** **Basic information, facts, etiquette, rules, and ways of interpreting reality, and performing basic tasks, known by most people within a society:** This material is learned primarily by observing the physical environment, and watching and talking to family, friends, neighbors, and peers.  **2)** **General knowledge obtained from experiences that most people encounter in daily life, within a specific society:** This involves common experiences that most people encounter in childhood, adolescence, and in adult life. For example, we learn from experience how to walk, talk, and how to perceive and interpret our environment. We also learn from experience how to perform basic tasks, and how to avoid problems. We learn from experience that if you drop a fragile object, it will usually break when it hits the floor. We learn if we trip, we might hurt ourselves, if we break rules, we might be punished, and if you fight with someone, they might fight back, etc.  **3)** **The ability to derive new information, and solutions to problems, which are not based on prior learning or experience:** This includes retrieving from long-term memory, basic information, experiences, and most importantly sensory data, which is processed and/or manipulated in various ways to solve a problem, or obtain a goal. This is a complex component, and it is explained in detail in topic 3.  Based on the above definition, any type of logic or information retrieval that involves the computer, or pencil and paper is not common sense reasoning. Common sense reasoning primarily takes place in the mind, usually at a relatively quick pace.  **Keep in mind that the definition presented in this subtopic, represents the material and focus of this chapter.** I am presenting educated common sense reasoning in another chapter, which involve more complex learning, and experiences. |

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| **Topic 2.) The Complexity of Common sense Reasoning**  |||  Most of us are probably not fully aware of the complexity involved with common sense reasoning, because it takes place more or less automatically. This is very different from formal deductive and inductive reasoning, which involves consciously and deliberately evaluating a set of premises that leads to a conclusion.  With common sense reasoning, the steps leading to the conclusion are usually carried out quickly and somewhat automatically. This represents very efficient and quick processing, which was probably necessary for the survival of early human beings, living in forests and jungles with dangerous wild animals. When the early humans encountered an animal, they had to decide quickly if they should run, climb a tree, hold still, ignore the animal, or attempt to kill it for food. A miscalculation might mean death, severe injury, or starvation. The rapid processing involved with common sense reasoning is essential for communication, which is explained in the following subtopic:  **Subtopic, Communication and Common sense Reasoning**  |||  When we talked to other people, we are primarily using common sense reasoning to process the verbal information we receive, and to construct the phrases we verbalize. This involves quick evaluations of the phrases we hear, as well as a quick construction of our verbal responses. This rapid processing could not be obtained with any type of formal logic.  **Subtopic, Perception, Locomotion, and Common sense Reasoning**  |||  The way we perceive our environment, and the objects we encounter in daily life, involves common sense reasoning. This involves rapid perception and interpretation of the objects, people, and animals in our environment. All of this is done without any awareness of the specific steps and/or premises involved with the mental processing. |

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| ***PART TWO***  **Topic 3.) Deriving New Information, Solutions to Problems, and Answers to Unusual Questions, with Common sense Reasoning**  |||  This topic contains about 18 very simple questions, which I created for **ILLUSTRATION** purposes. You probably will be able to easily derive, (or figure out) the answers to these questions with common sense reasoning. However, these questions probably could **not** be answered based on your prior knowledge or experience. **After you answer each question, try to figure out how you obtain the answer.** **Think about the mental steps you used to derive the answer, which can be achieved by deriving the answer to the question again.** **This will provide insight into how we derive NEW: information, solutions to problems, and plans for obtaining goals, with common sense reasoning.** This is one of the most interesting components of common sense reasoning.  **Subtopic, Deriving New Information, With Common Sense Reasoning, Illustrated with a Series of Questions**  |||  Deriving new information with common sense reasoning, involves various types of mental processing. **This includes retrieving from long-term memory, basic information, experiences, and sensory data**, such as images, that relate to a problem, goal, or question. The data retrieved from long-term memory is manipulated in various ways to synthesize a solution, a plan to reach a goal, or the answer to a question. For example, this process might involve***retrieving images from long-term memory****,* and***focusing in on sections of the images*** to***carry out qualitative and/or quantitative evaluations****.* If you attempt to answer the following question, you probably will carry out the mental steps underlined in bold type above, automatically.  ***How many lighting fixtures do you have on the ceiling of your house or apartment?*** *(To answer this question, do* ***not*** *look at the ceiling and* ***lighting fixtures*** *in your house.)* The way I answered this question, was by visualizing the ceilings in each room of my apartment, then I counted the lighting fixtures. You might use a mental strategy that is slightly different from the one I used. However, the important idea is to figure out how you derived the answer.  Keep in mind, that the mental processing described above is only one example. With common sense reasoning, the nature and sequence of the mental processing is primarily determined by the question. Below there are approximately 18 questions that require several types of mental processing to derive the answers. They are not trick questions, and they have obvious common sense answers. They were created to illustrate different types of mental processing. **Do not look at the items mentioned in the questions**, but you may look at the mental images of the items obtained from long-term memory.  The following four questions involve the same type of mental processing that was previously described. **Specifically, the questions require** **retrieving visual images from long-term memory for a qualitative and quantitative evaluation**.   * **How many windows do you have in your house or apartment?** * **How many furniture pieces, such as cabinets, dressers, desks, night tables, do you have in your home that CONTAIN DRAWS? You can also try and answer how many DRAWS do you have in your home.** * **How many doors do you have in your home? This includes the doors for each room, and the doors for each closet and cabinet.** * **How many appendages does an elephant have?**   **The following three questions require** **retrieval of tactile information from long-term memory to carry out qualitative evaluations**.   * **How does felt feel when you rub your hands over it? Is it soft like cotton, rough like sandpaper, or smooth like glass?** * **If you soaked a piece of felt in liquid glue, and let it dry, how would it feel? Would it feel soft like cotton, stiff like cardboard, or very hard like a rock?** * **How would a bucket of small stones feel, if you mix them with one bucket of honey? Would the mixture feel, smooth and slippery, rough and very sticky, or slippery like oil.**   **The following three questions require** **retrieval of data involving gustatory sensations (taste) from long-term memory, to carry out qualitative evaluations**.   * **If you mix five gallons of vinegar, and ¼ teaspoon of sugar, would the mixture taste sour, suite or salty** * **If you mix 20 gallons of honey, and 1 teaspoon of lemon juice, would the mixture taste sweet, sour, or salty?** * **If you added 1 pound of salt to one gallon of water, would the mixture taste sweet like sugar, salty**, or **sour**   **The following four questions involve retrieving data from long-term memory, which relate to the ability to manipulate or break certain objects, for a qualitative evaluation.**   * **Which animal can you lift, an elephant, a cat, or a hippopotamus?** * **Can you lift a cockroach, hold it in your hand firmly, and run with it?** * **Which item can you cut with a kitchen knife, a chunk of iron, a stone, or a bar of butter?** * **If you had to break a large stone, would you use a nutcracker, or a heavy steel bar.**   **The following three questions require** **retrieving data from long-term memory about specific entities, to carry out quantitive evaluations or estimates.**  **If you mixed 1 cup of milk, and 1 cup of orange juice, would the total volume be more than 2 cups, less than 2 cups, or 2 cups?**  **If you mixed 1 cup of marbles, and 1 cup of water, would the total volume be more than 2 cups, less than 2 cups, or 2 cups?**  **What is older, your house, or the Rocky Mountains?** |

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| **Topic 4.) Technique 9, Writing, and Common sense reasoning**  |||  It is sometimes possible to write statements or configure them, so they are obviously true, based on common sense, such as the following example: *I accidentally dropped the new sheet of glass that was ordered yesterday, and it broke into pieces.* This statement does not require any additional supporting evidence.  It is also possible to create arguments based on common sense, such as the following example: *The new equipment arrived last week. However, we were unable to assemble the new equipment, because the crates were too heavy to move. They weigh over 700 pounds each, and we need a forklift to move them. We also need an experienced forklift operator, because no one on staff knows how to operate a forklift.*  The hypothetical argument presented above makes three primary points, which are adequately supported by common sense. The implied assumption supporting the argument are **to assemble the equipment the crates must be moved to the proper location**, **no one can move 700 pound crates to the proper location, without a forklift**, and an **untrained individual could not operate a forklift.**  **Subtopic, Writing Documents so they are at Least Partly, if Not Totally, Supported by Common Sense**  |||  Technique-9 (common sense reasoning), ideally involves devising statements and/or arguments that will be perceived as obviously correct by your readers, without additional supporting evidence. **This of course, cannot be done with all writing projects, especially if it involves academic, technical, or scientific material.**  However, very often statements and arguments that are technical, scientific, or academic in nature, can be configured so they are at least partly self-evident, or believable based on common sense. In such a case, it probably will be necessary to provide additional evidence to support the validity of the statements in your document.  To clarify the above, let us assume you wrote a document with long sentences and technical terminology that your readers would find very difficult to comprehend. A document of this nature obviously will **not** be self-evident based on common sense. However, such documents can sometimes be rewritten, so that they are partly, if not totally, self-evident based on common sense. This would involve using shorter sentences, coupled with explanations and terminology that the readers can easily understand. Good explanations, examples, and graphics, can be especially useful in this regard.  In general, the way events, concepts, techniques, and theories, and history, described might make them at least partly self-evident to varying degrees. Describing something out of context, without adequate background information, or in a mysterious way, will result in statements that are **not** self-evident. Writing statements in a logical way, with adequate explanations and background information is more likely to result in statements that are partly or totally, self-evident based on common sense. However, when this technique is used, it is often necessary to provide additional evidence to support the validity of your statements. |

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| **Topic 5.) Understanding the Limitations of Common Sense Reasoning, to Avoid Failed Efforts with Writing, Problem Solving, and Goal Attainment.**  |||  Common sense reasoning by itself, usually does not work well, when dealing with academic, technical, or scientific problems, goals, and writing projects. Common sense reasoning can sometimes result in erroneous conclusions, prejudicial beliefs, and unnecessary evasive actions. This can sometimes involve irrational evaluations of physical appearance, racial characteristics, and irrelevant factors, which can lead to erroneous conclusions.  **Subtopic, How to Improve Common sense Reasoning**  |  **Some of the difficulties and limitations of common sense reasoning, can be reduced, or eliminated by using strategies from deductive and inductive reasoning.** With deductive reasoning, and sometimes with inductive reasoning, each premise that leads to a conclusion is **written on paper, or displayed on a computer screen**. This makes it easy to evaluate each premise for validity and relevance, and to filter out incorrect, useless, irrational, and prejudicial assumptions. With inductive reasoning, the conclusion (hypothesis) may be tested by experimentation, to determine if it is valid.  **We can use the strategies presented above, with common sense reasoning.** We can evaluate our common sense reasoning, and related premises, by asking ourselves how we derive the conclusion. Ideally, this explanation should be written on paper or on a computer screen, so it can be critically evaluated. This can reveal the premises that we used in most cases, including any prejudicial, incorrect, or irrational assumptions. This provides the opportunity to make corrections in our common sense reasoning, and to repeat the reasoning process without the errors.  In some situations we can also evaluate our conclusions obtain with common sense reasoning, by experimentation, or simply by trying a strategy, technique, product, service, etc.  **Web-Based Articles for Additional and Supporting Information for the Material Presented in this Topic**  |  |  [Who’s Doing Common-Sense Reasoning And Why It Matters, by Catherine Havasi](https://techcrunch.com/2014/08/09/guide-to-common-sense-reasoning-whos-doing-it-and-why-it-matters/)  [Scientific and Common Sense Reasoning: A Comparison Donelson R. Forsyth](https://facultystaff.richmond.edu/~dforsyth/pubs/forsyth1979.pdf)  [Virginia Commonwealth University](https://facultystaff.richmond.edu/~dforsyth/pubs/forsyth1979.pdf)  [Encoding Knowledge of Common sense Psychology, by Jerry R. Hobbs](http://commonsensereasoning.org/2005/hobbsgordon.pdf)  [Physical Science and Common-sense Psychology, Gilbert Harman](https://www.princeton.edu/~harman/Papers/Sehon.pdf)  [Common Sense Reasoning Psychology Essay](https://www.ukessays.com/essays/psychology/common-sense-reasoning-psychology-essay.php)  [Common Sense Is Neither Common nor Sense, How often is common sense correct? Jim Taylor Ph.D. Jim Taylor Ph.D.](https://www.psychologytoday.com/blog/the-power-prime/201107/common-sense-is-neither-common-nor-sense)  [The Psychology of Common Sense, A review of studies that examined this question, by Ph.D. Adrian Furnham Ph.D.](https://www.psychologytoday.com/blog/sideways-view/201506/the-psychology-common-sense)  [Logical Thinking v Common Sense](http://logicsite.net/logical-thinking-v-common-sense/)  [Philosophy of Common Sense](http://www.newworldencyclopedia.org/entry/Philosophy_of_Common_Sense)  [Formal Ontology, Common Sense, and Cognitive Science, by Barry Smith](http://cogprints.org/309/1/formal_20ontology.html)  [Common Sense in Philosophical and Scientific Perspective, By Benjamin W. Redekop](https://cnu.edu/leadershipstudies/faculty/pdf/redekop_common_sense_author_preprint.pdf)  [When All Else Fails, Use Common Sense In Writing Proposals and Developing Budgets](http://seliger.com/2015/02/15/when-all-else-fails-use-common-sense-in-writing-proposals-and-developing-budgets/)  [The Difference Between Science and Common Sense](https://sciencebasedlife.wordpress.com/2011/10/25/communicating-science-the-difference-between-science-and-common-sense/)  **Web-Based Videos for Additional and Supporting Information for the Material Presented in this Topic**  |  ||  [What is Common Sense? By Rozelle De Lange](https://www.youtube.com/watch?v=EF8tdXwa-AE)  [Formal Ontology, Common Sense, and Cognitive Science, Barry Smith](http://www.newworldencyclopedia.org/entry/Philosophy_of_Common_Sense)  [Common Sense, MIT OpenCourseWare, Marvin Minsky](https://www.youtube.com/watch?v=o6suzoRLZD4)  [Development of Intelligence - Laura Schulz: Cognitive Development & Common sense Reasoning](https://www.youtube.com/watch?v=ZyYn5QC6t3s)  [Common Sense by Thomas Paine [Philosophy Audiobook, Free Audio Books for Intellectual Exercise](https://www.youtube.com/watch?v=aIkZ24ApdFs)  **There is more information on common sense reasoning in chapter 10, which involve educated common sense, as well as simulation of common sense by artificial intelligence software.**  **If you want to go to chapter 10 of this e-book, left click on the following link:**  [**www.TechForText.com/DP/chapter-10**](http://www.TechForText.com/DP/chapter-10) |