1. Compare and contrast the availability heuristic and the representativeness heuristic.

2. List and describe three characteristics of a good scientist.

3. Tavris and Aronson (2007) believe that "science is a form of arrogance control." Use what you learned in this chapter to provide support for their claim.

4. In talking with her friends, Fabiana realizes that many college-aged students still believe in the existence of Santa Claus. Although few think he is a rosy-cheeked, bearded character who goes down chimneys, many do believe that he exists in spirit, instilling a sense of "Christmas cheer" and goodwill during the holiday season. Use you understanding of belief perseverance to explain why adults may still believe in Santa Claus.

5. Mark wonders whether he should pursue a degree in psychology. Help him see the merit in this major by describing three career skills that he will acquire by studying research methods and the discipline of psychology.

Answer Key

1. Both the availability and representativeness heuristics represent biases in human thinking. These mental shortcuts are used when processing information and making decisions. By employing heuristics, people save time and energy and they free up cognitive resources for other tasks. However, both the availability and representativeness heuristics lead to processing errors. The availability heuristic is the tendency to assume that events that are easiest to recall occur most frequently. For instance, those things that make the biggest impact on one's memory are likely to be given disproportional weight. People may assume that plane crashes are more frequent than car crashes, because examples of plane crashes are salient in their memory. However, this bias obscures the fact that many more people die from car crashes each year. The representativeness heuristic is the tendency to judge an outcome by how similar it is to the "typical" example of that event. An individual who "looks like a criminal" may be more likely to receive a conviction from a jury, because he/she is representative of that mental category. An individual who does not look like a "typical" criminal may be judged less harshly, as jurors have trouble associating that person with the schema they hold for that category.
2. Scientists, whether in the field of psychology or in other disciplines, share certain core characteristics. These include (but are not limited to): skepticism — the tendency to ask questions about claims in an effort to seek the truth; open-mindedness — a willingness to pursue a deeper understanding about the nature of the world regardless of whether a topic or idea is unpopular or controversial; objectivity — basing claims on scientific data rather than on personal beliefs or opinions, even on topics with which one has extensive familiarity or experience; empiricism — the willingness to test ideas using the scientific method (systematic observation, experience, or measurement) to draw conclusions and admit when personal beliefs are unsupported; creativity — the ability to "think outside the box" and design novel approaches to answer scientific questions; and communication — the ability to share findings in writing or oral presentations with other scientists in an effort to extend the collective of knowledge and serve the common good.
3. Thinking is fraught with flaws and biases. These include (but are not limited to): the availability heuristic, representativeness heuristic, better-than-average effect, overconfidence, hindsight bias, confirmation bias, focusing effect, "what you see is all there is" phenomenon, and belief perseverance. Science counters these natural fallacies by requiring empirical evidence collected through systematic observation, experience, and/or measurement in order to make claims. By using science as a foundation, people are better able to evaluate claims, avoid biases, and make more objective and well-informed decisions. In doing this, however, people are made aware of the flaws, biases, and unscientific nature of their own thinking. It is often uncomfortable for people to accept that they are incorrect. Accordingly, by using science, our errors are brought to light and our arrogance (about being correct) is controlled.
4. Belief perseverance is the tendency to maintain a belief despite encountering contradictory information. Beliefs remain intact by interpreting information in a way that does not invalidate the original belief. In the case of Santa Claus, this belief is often one associated with important, cherished memories of one's childhood and family.

Accordingly, it is not one that is easily dismissed, even in the face of evidence that Santa Claus does not exist. Rather, people alter their perceptions in a way that maintains the belief in Santa Claus, while incorporating enough of the truth that they remain in touch with socially acceptable perceptions (and some semblance of reality).

5. Psychologists gain a number of skills, including research methods skills that can facilitate future career success. These include (but are not limited to): project management skills — the ability to plan, organize, and execute complex tasks; problem solving skills — the ability to identify, define, and effectively implement solutions to potential problems; critical thinking skills — the ability to actively evaluate, analyze, and synthesize information; analytical skills — the ability to summarize and make sense of potential findings; interpretation of numerical information — the ability to draw conclusions from numerical data; and communication skills — the ability to present findings through clear, direct, and succinct writing.