

Guidelines for Doing Risk Assessment Problem Sets

Overview: The problem sets in this class are probably quite different from those you will find in other classes. Most problems have an analytical component, but it is at least as important to demonstrate that you understand the problem as it is that you calculate or compute a solution. Hence submitted solutions should have a narrative, a solution summary, and an appendix with actual calculations. Think of the solution as a report to someone who is smart enough to understand complex ideas, but doesn't necessarily know what the question is.

Philosophy: Problem solving is mostly about understanding how to structure and describe complex risk issues. Computations are important but secondary. So, before you begin a problem read it through and jot down some notes about what you think it is asking. Each problem should have a big picture. Once you know what that is, your calculations should help inform you about that big picture.

- **Narrative.** The narrative can be anywhere from a couple sentences to a paragraph. It should explain the problem and how it is solved.
- **Solution Summary.** The solution should be summarized using (as applicable) tables, graphs, equations and other figures. Each figure should have a clear explanation of content.
- **Appendix.** The appendix should contain all calculations...with enough information that the reviewer will be able to follow each of your steps.

Some pointers

Units. Always include units, both as you work and in your solution. Don't say "he walked 15," say "he walked 15 miles." Units will help you catch computational errors, too. If you find that your solution is in "miles per pound" and you're trying to calculate a distance, you've missed something!]

Significant figures. Your answers can never be more precise than the LEAST precise of your inputs. If you know your car went about 1100 miles, and you know it gets exactly 42.34 miles per gallon, you must say that you used about 26 gallons, not that you used 25.98 gallons.

Uncertainty. There are many sources and types of uncertainty, and a variety of ways to describe uncertainty. At MINIMUM, you should always comment on your sources of information, your assumptions, your data, your model. This can include formal quantitative methods, but often qualitative discussion is enough.

Copyright 2002

David M. Hassenzahl, Ph.D.