"Struck by Lightning" Supplementary Materials

Supplementary exercise about "utility functions"

(To be completed <u>after</u> completing the original utility functions exercise.)

Consider the following questions. Assume throughout that the scale for utilities is such that seeing a pretty good movie is +10.

1. Suppose Frank gives utility −50 to getting caught in the rain.

   (a) Would Frank choose to walk to a pretty good movie in the rain?

   (b) Would Frank choose to walk to a pretty good movie if there was a 50% chance of rain during the walk?

   (c) Would Frank choose to walk to a pretty good movie if there was a 10% chance of rain during the walk?

   (d) Would Frank choose to walk to a pretty good movie if there was a 20% chance of rain during the walk?

2. Suppose George says that he wouldn't walk to a pretty good movie in the rain, but he *would* walk to a pretty good movie if there was a 70% chance of rain during the walk. What does this say about George's utility for getting caught in the rain?

3. Suppose Harry *says* that he gives utility −50 to getting caught in the rain, but you think he *really* gives utility −100 to getting caught in the rain. What hypothetical choice could you give him, to determine whether his utility was really −50 or −100?

4. Suppose Igor doesn't know (or won't tell you) *what* utility he gives to getting caught in the rain. However, for any probability p, he will answer Yes or No if you ask him whether he would choose to walk to a pretty good movie if there was probability p of rain during the walk. Could you figure out Igor's utility for getting caught in the rain, to within ±1? How?

5. Suppose Jerome says that he wouldn't walk to a pretty good movie in the rain, nor would he walk to a pretty good movie if there was a 20% chance of rain during the walk, but he *would* walk to a pretty good movie if there was a 70% chance of rain during the walk. What does this say about Jerome?