Exercises

Question 1:

With a 5 second time limit, try to estimate the following:

$$1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$$

Would your answer be any different if you tried to estimate the following?

$$8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$$

In each case, are your answers above or below the correct answer of 40,320?

Remarkably, a study showed that a group of high school students who were presented with the first problem had a median estimate of 512 while another group who were presented with the second had a median estimate of 2,250. Which of the biases discussed in the resources could be causing this? Note that with only a 5-second time limit, most people will compute the product of the first few numbers, starting from the left, and predict the overall answer by extrapolating their answer.

For the solution and a discussion of the underlying reasons for this result, read this paper starting from the bottom of page 6.

Question 2:

Consider the following experiment:

> *Imagine that you face the following pair of concurrent decisions. First examine both decisions, then indicate the options you prefer.*
>
> *Decision (i). Choose between:*
> *A. a sure gain of $240*
> *B. 25% chance to gain $1000, and 75% chance to gain nothing.*
>
> *Decision (ii). Choose between:*
> *C. a sure loss of $750*
> *D. 75% chance to lose $1000, and 25% chance to lose nothing.*

Considering the different ways in which these options are framed, which of these options would you expect to be most popular? To see which one was most popular you can read this paper starting from the heading *The Framing of Acts* on page 2.

Question 3:

Consider the following experiment:

> *Students were given the opportunity to write a two-page essay as an extra-credit assignment. Students were randomly given either 6 or 30 potential essay topics on which they could write.*

What would you expect the impact is of having more or fewer options on the proportion of students who handed in the extra-credit assignment? What about the quality of the

assignments? For the results of this experiment and some further detail, read this paper starting from *Study 2* on page 4.