

This section allows you - the student - to either print a copy of your work through this tutorial or email it to your instructor. Your teacher will inform you which format you should submit; either the filled out Word document or a printout of the pdf file with your comments written by hand. As for the Powerpoint form; this is available for teachers to use as an introduction to both the topic (such as this tutorial) or to the Notre Dame tutorial web site. Please feel free to download any of these to your own computer.

**Questions.** Of course, you provide the answers before submitting this assignment.

After completing *Activity #1: The Middle-Square method*, submit your answers to the following questions:

- a) Using 8193, complete six (6) steps. What are your last four (4) numbers in the sequence?
- b) Using 1049, complete six (6) steps. What are your last four (4) numbers in the sequence?
- c) Using 7600. Complete six (6) steps. What happens to this sequence?
- d) Using 279473, complete six (6) steps. What are your last four (4) numbers in the sequence?

After completing *Activity #2: The Linear Congruence method*, submit your answers to the following questions:

- a) Let  $X_0 = 4$  and integers  $a = 1$ ,  $b = 3$ , and  $c = 5$ . Complete six (6) steps. What are your last four (4) numbers in the sequence?
- b) Let  $X_0 = 12$  and integers  $a = 3$ ,  $b = 11$ , and  $c = 14$ . Complete six (6) steps. What are your last four (4) numbers in the sequence?
- c) Let  $X_0 = 87$  and integers  $a = 14$ ,  $b = 54$ , and  $c = 39$ . Complete six (6) steps. What are your last four (4) numbers in the sequence?

After completing *Activity #3: The Mersenne Twister*, submit your answers to the following questions:

1. Who was Marin Mersenne? What is a Mersenne prime?
2. Give an example of a sequence of numbers from the Mersenne Twister.
3. Give an example of how the Mersenne Twister could be used.

**Screenshots.**

In order to take a screenshot, simply hit **fn prt sc** and then *Paste* Ctrl+V into your Word document. For this tutorial, you will need to take three screenshots:

**Notes.**

It is important to keep a record of your work (and not just for evaluation by your instructor). Good record-keeping will allow you to refer back to your notes and make it easier to cement the basic concepts in your mind . . . where you will likely draw them out at the appropriate time.

Finally, submit one copy of the document to your teacher and keep a personal copy in your laboratory notebook/logbook.