

Math 210 - Dr. Miller - Weekly Assessment #9, Spring 2024 - Due in class Thursday, Apr. 4

Each WA is worth **10 points** total. Work right on these pages. You can work together or see a tutor, but NEVER copy. This WA is for a grade, so dishonesty or cutting corners may earn a 0 for all involved.

1. *[1 pt]* Precisely state YOUR choice of either definition we studied for *prime number*.

2. Think about a 1-to-1600 Sieve of Eratosthenes.
 - (a) *[0.5 pts]* During which prime number's "turn" will the number 65 get crossed out?

 - (b) *[0.5 pts]* 297 is a multiple of 11, so 297 will certainly get crossed out. But will it already have been crossed out by *another number* by the time we get to 11's turn? If so, which other number crosses it out earlier?

 - (c) *[1 pt]* What is the last number that will cause any crossing out? Show supporting work.

 - (d) *[0.5 pts]* What is the largest number that will BE crossed out?

 - (e) *[1 pt]* What is the LAST number that will BE crossed out? Show supporting work.

3. [1.5 pts] Fully demonstrate the Prime Number Test to determine whether 319 is prime.

4. [4 pts - 2 each] Demonstrate any meaningful method to find the prime factorization of each number below. Fit your work wherever suits you best, but write each final answer next to the original number.

(a) 13800

(b) $63^5 \cdot 24^7 \cdot 14^3$