

# Number Theory Course Notes

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Cathy's recommended book: Rosen

Cathy's Suggestions:

- Learn peer review from my homeworks
- Peer review
  - If on Canvas, print and handwrite comments
  - 2.5 inch margins
- L<sup>A</sup>T<sub>E</sub>X
  - Easy to read
  - Easy to peer review
- Group work!
  - Devoted about one class a week to group work
- Make sure things are consistent!
- End first

Topics to cover (347)

- Congruences
- Chinese remainder theorem
- Prime numbers and divisors
- Diophantine equations
- Quadratic Reciprocity

Topics to cover (348)

- Nonlinear Diophantine equations
- Sums of squares
- Theory of partitions
- Geometric number theory
- Distribution of primes

Corresponding Textbook Chapters

- Fun: Chapter 12

- For sure: 7.1—7.5, 9.1—9.4, 13.1—13.3
- Maybe: 13.4

Changes to make

- Add reasoning at the end of the horse argument on HW 2 to “prove” that Winnie’s color equals Tigger’s color
- Note that one of the homework questions is theorem 4.8...
- Possible portfolio problem. Suppose  $n \in \mathbb{Z}_{>0}$  and  $d \mid n$  with  $d < n$ . Explain why knowing that  $x \equiv a \pmod d$  gives less information than knowing  $x \equiv a \pmod n$  or something like that.
- Peer review went okay. Try to add reading comprehension assignments.