

Homework 1

Due Tuesday, September 5

- I. Remainders
 - A. Read problem #7 on page 6. It says: Let n be a positive integer. Prove that a and c leave the same remainder when dividing by n if and only if $a - c = nk$ for some integer k .
 - B. *Write your answer to the following exercise in a sentence or sentences that explains what you are doing.* Give an example of two numbers that have the same non-zero remainder when dividing by 6. Check that 6 divides the difference of the two numbers that you chose.
 - C. Copy problem #7 from page 6 (or as stated above) into your homework and solve it.
- II. Do problem #8 page 7. *Answer parts (a) and (b) in complete sentences.* Problem #8 page 7 says:
 - (a) Divide 5^2 , 7^2 , 9^2 , 11^2 , 15^2 , and 27^2 by 8 and note the remainder in each case.
 - (b) Make a conjecture about the remainder when the square of an odd integer is divided by 8.
 - (c) Prove your conjecture.