

Extra Questions from section 1.1

#8. (a) Divide 5^2 , 7^2 , 11^2 , 15^2 , 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.

#5. Prove that the square of any integer a is either of the form $3k$ or of the form $3k + 1$ for some integer k . [*Hint*: By the Division Algorithm, a must be of the form $3q$, $3q + 1$, or $3q + 2$.]