From the book, do problems 2, 3, 4 on page 99.

Also do the following question.

1. Consider the congruence \( x^2 - 10x + 16 \equiv 0 \pmod{m} \).
   (a) Explain why this congruence has solutions for all positive integers \( m \).
   (b) Find the solutions when \( m = 150 \).
   (c) Find the solutions when \( m = 300 \).

2. Consider the equation \( x^2 - 10x + 13 \equiv 0 \pmod{m} \).
   (a) Find a positive integer \( m \) for which this congruence has no solutions.
   (b) What is the largest \( m \) for which the congruence has exactly one solution? Explain.
   (c) What is the smallest \( m \) for which the congruence has more than 2 solutions? Explain.

3. Consider the congruence \( x^2 + 14x - 35 \equiv 0 \pmod{m} \).
   (a) Use problem 2 from the book to find the solutions to this congruence when \( m = 67 \).
   (b) When \( m = 71 \), the congruence has no solutions. What happens when you try to use the method in problem 2 to find solutions?

For extra credit:

4. With regard to problems 1, 2 above, for which \( m \) do the congruences have an odd number of solutions?