1. A jar of Halloween candy contains an unknown amount of candy and if you can guess exactly how much candy is in the bowl, then you win all the candy. You ask the person in charge the following: If the candy is divided evenly among 5 people, how many pieces would be left over? The answer is 2 pieces. You then ask about dividing the candy evenly among 6 people, and the amount left over is 3 pieces. Finally, you ask about dividing the candy evenly among 7 people, and the amount left over is 2 pieces. By looking at the bowl, you can tell that there are less than 200 pieces. Write a program to determine how many pieces are in the bowl.

2. Write a program that lets the user play Rock-Paper-Scissors against the computer. There should be five rounds, and after those five rounds, your program should print out who won and lost or that there is a tie.

3. An integer is called squarefree if it is not divisible by any perfect squares other than 1. For instance, 42 is squarefree because its divisors are 1, 2, 3, 6, 7, 21, and 42, and none of those numbers (except 1) is a perfect square. On the other hand, 45 is not squarefree because it is divisible by 9, which is a perfect square. Write a program that asks the user for an integer and tells them if it is squarefree or not.

4. Ask the user to enter 10 test scores. Write a program to do the following:

(a) Print out the highest and lowest scores.

(b) Print out the average of the scores.

(c) Print out the second largest score.

(d) If any of the scores is greater than 100, then after all the scores have been entered, print a message warning the user that a value over 100 has been entered.

(e) Drop the two lowest scores and print out the average of the rest of them.

5. A simple and very old method of sending secret messages is the substitution cipher. Basically, each letter of the alphabet gets replaced by another letter of the alphabet, say a gets replaced with an x, and every b gets replaced by a z, etc. Write a program to implement this.