Chapter 5.

**1.** Fractions are represented as an integer numerator over an integer denominator.  There are three types of fractions:  proper fractions (numerator less than denominator), improper fractions (numerator greater than denominator), and mixed fractions (a whole number combined with a proper fraction).  
  
To change an improper fraction into a mixed fraction, you can use **integer division** and the **remainder** operator (modulo).  Write a program that will allow the user to enter two integer values, a numerator and denominator.  The program should output these values as an improper fraction, and then output the equivalent mixed fraction.  
  
For example:  
numerator? 8    
denominator? 3

8 / 3 is equivalent to 2 and 2 / 3

**2.**Write a program which numbers from 1 to 300 to the screen.  To improve formatting, use modulo to change to a new line every 10 numbers printed.  Extend this program by allowing the user to specify how many numbers per line.

**3.** Write a program that uses modulo and integer division to make change using coins: $2, $1, $0.25, $0.10, $0.05, and $0.01.

**4.** Ask the user to answer 3 math problems and either tell them they are right (IF), or show them the correct answer (ELSE). Make this program more interesting by using random numbers.

**5**. Write a program that plays one round of rock, paper, scissors.  Rock beats scissors.  Paper beats rock.  Scissors beats paper.

* 1. Assume two players, and each player will enter their selection either as words ("rock", "paper", "scissors") or using a menu (1 = rock, 2 = paper, etc).
  2. Make the game more interesting by having the computer play against the human.  Use random numbers for the computer's choice (1, 2, or 3) and compare against the user's choice.

**6.** In the country of Rahmania, the cost of mailing a letter is 40 sinas for letters up to 30g, 55 sinas for letters over 30g and up to 50g, 70 sinas for letters over 50g and up to 100g, and then an additional 25 sinas for each additional 50g or part thereof. Write a program that prompts the user for a mass and then gives the cost of mailing a letter having that mass. Note: To do the last part of this program properly, you will need to make use of MODULO arithmetic.