1. The areas of various continents of the world in millions of square kilometer are presented in Table below. Explain how to construct its pie chart giving all intermidate calculations.

Continent	Area (km^2)
Asia	43.820.000
America	42.330.000
Africa	30.370.000
Antarctica	13.720.000
Europe	10.180.000
Australia	9.008.500

2. It is common in social science statistics texts to omit the superscripts and subscripts. We will follow this simplification here. In other words, when we mean $\sum_{i=1}^{n} x_i$ where n refers to the last value of x in the given set, we will merely write $\sum x$. For all 3 of the following datasets, calculate a) to i) below:

   (a) $x = 4.2, 3.5, 6.7, 8.6 \quad y = 3.5, 2.3, 7.8, 8.5$

   (b) $x = 12, 19, 16, 18, 35 \quad y = 19, 13, 23, 18, 11$

   (c) $x = 102, 121, 231, 143, 119 \quad y = 112, 98, 231, 119, 103$

   a) $\sum x$, b) $\sum x^2$, c) $(\sum x^2)$, d) $\sum y$, e) $(\sum y)^2$, f) $\sum yx$,
   g) $\sum x^2 - (\sum x)^2$, h) $\frac{(\sum y^2 - (\sum y)^2)}{n-1}$, i) $\sum x \sum y$

3. For the datasets x, y and z, below, calculate:

   (a) $x = 2, 6, 4, 5, 5, 1$

   (b) $y = 3, 6, 5, 2, 2, 1$

   (c) $z = 4, 2, 8, 1, 2, 7$

   $\sum_{i=3}^{6} x_i$, $\quad \sum_{i=1}^{2} y_i$, $\quad \sum (x-4)(y-3)$, $\quad (\sum z^2 x)/\sum y$

4. Given $\sum_{i=1}^{4} x_i = 7$, $\sum_{i=1}^{4} y_i = -3$, $\sum_{i=1}^{4} x_i y_i = 5$, find

   (a) $\sum_{i=1}^{4}(2x_i + 5y_i)$
   (b) $\sum_{i=1}^{4}(x_i - 3)(2y_i + 1)$

   Write down, explicitly, all the intermidiate calculations you do to obtain the final result.

5. Calculate the average growth rate for a portfolio with the following consecutive annual interest rates 5%, 10%, −5%, 20%, 15%. (Here the average growth rate is an equivalent term for average annual interest rate.)

6. The management board of a small mental hospital is budgeting to re-plan facilities for patients, and needs to decide on how to apportion funds to fit the needs of various disorders. They find that in the past 6 months they have had the following pattern of admissions: 8 patients with anxiety disorders, 41 with mood disorders, 35 with schizophrenia, 4 with substance abuse disorders, and 8 with cognitive disorders. What measure of central tendency would you use to identify a "typical" patient at the hospital? Explain your answer.

   Note: The three most commonly used measures of central tendency are the mean, median, and mode. The mean is the arithmetic average of a group of scores, the median is the middle score when scores are arranged from smallest to largest, and the mode is the most common score.

7. Answer the following questions:

   (a) In a skewed histogram, which measure (mean, median, or mode) is a better reflection of central tendency? Explain.

   (b) Explain why would a government report the median national income, while reporting the mean educational level?.