ECO239 Homework Questions 2 [Describing Data: Numerical]

1. The ages of a sample of 12 students enrolled in an on-line macroeconomics course are
   21 22 27 36 18 19 22 23 22 28 36 33
   a. What is the mean age for this sample?
   b. Find the median age.
   c. What is the modal age? [= Mode]
   d. Comment on symmetry

2. Compute the variance and standard deviation of the following sample data:
   6 8 7 10 3 5 9 8

3. The following stem-and-leaf display contains sample data:

Stem	Leaf
3	0 1
4	5 8 8
5	0 3 4 5 7 8 9
6	1 4 7 9
7	3 6 9
8	0 3 7

   a. Calculate IQR
   b. Find the five-number summary
   c. Find the 92nd percentile

4. Use Chebychev's theorem to approximate each of the following observations if the mean is 250 and the standard deviation of 20. Approximately what proportion of the observations is
   a. Between 190 and 310?
   b. Between 210 and 290?
   c. Between 230 and 270?

5. Consider the following sample of five values and corresponding weights:

Xi	Wi (weight)
4.6	8
3.2	3
5.4	6
2.6	2
5.2	5

   a. Calculate the arithmetic mean of the xi values without weights.

b. Calculate the weighted mean of the xi values.

6. Following is a random sample of five (x, y) pairs of data points:
   (12, 200) (30, 600) (15, 270) (24, 500) (14, 210)
   a. Compute the covariance.
   b. Compute the correlation coefficient.

7. Following is a random sample of price per piece of plywood, X, and quantity sold, Y (in thousands):

Price per Piece (X) ($)	Thousands of Pieces Sold (Y)
6	80
7	60
8	70
9	40
10	0

   a. Compute the covariance.
   b. Compute the correlation coefficient.

8. For these (x, y) pairs of data points:
   (1, 5) (3, 7) (4, 6) (5, 8) (7, 9)
   a. Compute b_1.
   b. Compute b_0.
   c. What is the equation of the regression line?

9. A random sample for 7 days of operation produced the following (price, quantity) data values:

Price per Gallon of Paint (X)	Quantity Sold (Y)
10	100
8	120
5	200
4	200
10	90
7	110
6	150

   a. Describe the data numerically (compute the covariance and correlation).
   b. Compute and interpret b1.
   c. Compute and interpret b0.
   d. How many gallons of paint should we expect to sell if the price is $7 per gallon?

Note: In the exams, the formulas for variance, covariance, correlation coefficient, b_1, b_0 or any others will NOT be given. Practice with numerical examples and prepare for the exam.