1 Question

The following table contains the quantity and the price of a barrel of oil for twelve periods. Price is in dollars and quantity is in thousand of barrels.

period	World Q	oil price
1	61440	145.43
2	62083	145.21
3	62769	134.41
4	64494	121.29
5	66023	114.24
6	67769	107.88
7	69652	103.73
8	70206	94.62
9	73530	86.70
10	74540	75.07
11	76258	73.26
12	75502	67.35

(i) USING EXCELL, Estimate the relationship between Quantity Q and price using OLS; that is, obtain the intercept and slope estimates in the equation

$$\widehat{Q} = \hat{\alpha}_0 + \hat{\alpha}_1 price$$

Comment on the direction of the relationship. Does the intercept have a useful interpretation here? Explain. How much higher is the Quantity predicted to be if the price is increased by 25 dollars?

(ii) Compute the fitted values and residuals for each observation, and verify that the residuals (approximately) sum to zero.

(iii) What is the predicted value of Quantity when price = 100?

(iv) How much variation in Quantity for these twelve periods is explained by price? Explain.