Mathematics Problems for weeks thirty-four to thirty-six for www.u3a.org.uk posed by Gordon Burgin, Andrew Holt and David Martin

Problems

Week Thirty-four

Question 1.

A group of friends decided to divide the £800 cost of a trip equally among themselves. When two of the friends decided not to go on the trip, those remaining still divided the £800 cost equally, but each friend's share of the cost increased by £20. How many friends were in the group originally?

Question 2

Jaime is preparing for a cycle race. His goal is to cycle an average of at least 280 miles per week for four weeks. He cycled 240 miles the first week, 310 miles the second week, and 320 miles the third week. How miles must Jaime cycle in the fourth week to meet his goal?

Question 3.

How many integers α are there such that the roots of $x^2 + \alpha x + 2020 = 0$ are all integers?

Question 4.

Five perfect squares have a mean of 59, a median of 4, and a mode of 1. The second largest of the numbers is a two-digit number 'ab'. What is a – b?