Every year 15 schools take part in in a charity fund raiser. Children from the schools donate pennies which are then collected up and sent to the charity.

Mo works for the charity and receives the donations from the schools.

Challenge 1

In 2018 the charity received a total of £1440. Mo noticed that their records show that 15 payments were made (1 from each school), payments were received on 8 different dates, and the same total amount was received on each of those 8 dates.

Find two different ways that this could have happened.

Challenge 2

In 2019 the charity again received exactly £1440, Mo noticed that if the 15 payments were arranged in order from smallest to largest, the amounts went up in equal steps.

Find three different ways that this could have happened.

Challenge 3

Mo wondered if in 2020 the patterns they had noticed in 2018 and 2019 could both occur at the same time. In other words that the total received on each of the 8 dates are equal, the 15 different payments go up in equal steps and the total amount received is £1440 again.

In how many ways can this be done? How do you know?