

1. Three whole numbers  $a, b, c$ . The sum of the squares of  $a, b, c$  is a perfect square. Prove at least two of the three numbers  $a, b, c$  are even numbers.
2. When dividing 1270 by a natural number (divisor), the quotient is 74. What are the divisor and remainder.
3. Four digit number  $\overline{abcd}$  can be divided by 11 with no remainder while  $a, b, c, d$  are numbers 0 to 9 and  $a$  is not equal to 0.  $b + c = a$ , and  $bc$  is a perfect square. What is  $\overline{abcd}$ ?
4. 1, 2, 3, 4, 5, 6 are 6 numbers forming  $\overline{abcdef}$ .  $2|\overline{ab}$ ,  $3|\overline{abc}$ ,  $4|\overline{abcd}$ ,  $5|abcde$  and  $6|\overline{abcdef}$ . Please find  $\overline{abcdef}$ .
5. 17 classmates are having a meeting and shake hands. Please prove it is impossible that everyone shakes hands with 3 and only 3 people.