1. Prove that $\sqrt{2}$ is irrational

2. Prove that $\sqrt{11}$ is irrational.

3. Prove that $(3+5\sqrt{2})$ is irrational.

4. Prove that $(\sqrt{2}+\sqrt{3})$ is irrational.

5. Find the largest number which divides 129 and 545, leaving remainders 3 and 5 respectively.

6. An army contingent of 612 members is to march behind an army band of 48 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?

7. Find the largest number that will divide 398, 436 and 542, leaving remainders 7, 11 and 15 respectively.

8. Find the largest number which divides 245 and 1037, leaving remainder 5 in each case.

9. The HCF of two numbers is 23 and their LCM is 1449. If one of the numbers is 161, find the other.

10. Find the least number of square tiles required to pave the ceiling of room 15 m 17 cm long and 9 m 2 cm broad.

11. Find the largest number which divides 438 and 606, leaving remainder 6 in each case.

12. Find the smallest number which when increased by 17 is exactly divisible by both 468 and 520.

13. Find the least number which should be added to 2497 so that the sum is exactly divisible by 5, 6, 4 and 3.

14. Find the least number which when divided by 20, 25, 35 and 40 leaves remainders 14, 19, 29 and 34 respectively.

15. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10, 12 minutes respectively. In 30 hours, how many times do they toll together?