Q1. What is Euclid's Division Lemma ?

Q2. Show that every positive even integer is of the form $2q$ *and that of every positive odd integer is of the form* $2q + 1$, where q is some integer.

Q3. Show that any positive odd integer is of the form $4q + 1$ or $4q + 3$, where q is some integer.

Q4. Show that any positive odd integer is of the form $6q + 1$, or $6q + 3$, or $6q + 5$, where q is some integer.

Q5. Show that any positive odd integer is of the form $8q + 1$, or $8q + 3$, or $8q + 5$, or $8q + 7$ where q is some integer.

Q6. Show that any positive even integer is of the form $6m$, or $6m + 2$, or $6m + 4$, where m is some integer.

Q7. Use Euclid's division lemma to show that square of any positive integer is either of the form 3m or 3m + 1 for some integer m.

Q8. Use Euclid's division lemma to show that cube of any positive integer is either of the form 9m, or 9m + 1, or 9m + 8 for some integer m.

Q9. Explain why $7 \times 11 \times 13 + 13$ is a composite number.

Q10. Explain why $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ is a composite number.

Q11. Explain why $7 \times 5 \times 3 \times 2 + 3$ is a composite number.

Q12. Explain why $7 \times 9 \times 13 \times 15 + 15 \times 14$ is a composite number.

Q13. Check whether 4^n can end with the digit 0 for any natural number n.

Q14. Check whether 6^n can end with the digit 0 for any natural number n.

Q15. Check whether 8^n can end with the digit 0 for any natural number n.

Q16. Check whether 15^n can end with the digit 0 for any natural number n.

Q17. Prove that $\sqrt{2}$ *is an irrational number*.

Q18. Prove that $\sqrt{3}$ *is an irrational number*.

Q19. Prove that $\sqrt{5}$ *is an irrational number*.

Q20. Prove that $\sqrt{7}$ *is an irrational number*.

Q21. Prove that $\sqrt{11}$ *is an irrational number*.