KALYAN ACADEMY

BHARATH NAGAR, HYD-18

REAL NUMBERS │ CLASS X │ WORK SHEET-1

1. Show that any positive integer is of the form 3q or 3q+1 or 3q+2 for some integer q?

2. Show that $n^2 - 1$ is divisible by 8, if n is an odd positive integer?

3. Show that the square of any positive integer is of the form 3m or 3m+1 for some integer m?

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

5. Show that the square of any positive integer is of the form 5q or 5q+1 or 5q+4 for some integer q?

6. Use Euclid's division algorithm to find HCF of the followings

   a) 135 and 225   b) 210 and 55   c) 867 and 1155

7. Express the followings as a product of its prime factors

   a) 468   b) 945   c) 420

8. Explain why 7 X 11 X 13 +13 and 7 X 6 X 5 X 4 X 3 X 2 X 1+5 are composite numbers?

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

10. Find the LCM and HCF of the following numbers by prime factorization method

   a) 12,15,21   b) 24,15,36   c) 17,23,29   d) 8,9,25

11. Find HCF of 96 and 404 by prime factorization method. Hence find their LCM?

12. Prove the followings are irrational numbers

   a) $\sqrt{2}$ b) $\sqrt{3}$ c) $3\sqrt{2}$ d) $5-\sqrt{3}$ e) $\sqrt{2} + \sqrt{5}$ f) $4 - 5\sqrt{2}$

13. Let a,b,c,d be positive rationals such that $a+\sqrt{b} = c+ \sqrt{d}$, then either a=c and b=d or b and d are square of rationals.

14. Without actually performing the long division, state whether the followings are terminating, non terminating decimal expansions

   a) 23/8   b) 35/50   c) 77/210   d) 13/3125   e) 29/343   f) 15/1600

15. Write down the decimal expansions of the following rational numbers by writing their denominators in the form of $2^m X 5^n$, where m and n are non negative integers

   a) 13/125   b) $129/2^2 X 5^7$ c) 49/500

16. Write down the following fractions denominators in the form of $2^m X 5^n$

   a) 1.512   b) 0.01764   c) 0.875   d) 27.7624