

**DELHI PUBLIC SCHOOL .BANGALORE EAST**

**MATHEMATICS**

**REAL NUMBERS-WORKSHEET**

**NAME:** \_\_\_\_\_ **CLASS: X** **SEC:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

1. If two positive integers  $a$  and  $b$  are written as  $a = x^3y^2$  and  $b = xy^3$ , where  $x, y$  are prime numbers, then HCF ( $a, b$ ) is
  - (a)  $xy$
  - (b)  $xy^2$
  - (c)  $x^3y^3$
  - (d)  $x^2y^2$
2. There are 576 boys and 448 girls in a school that are divided into equal sections of either boys or girls alone. The total numbers of sections thus formed are:
  - (a) 22
  - (b) 16
  - (c) 36
  - (d) 21
3. If  $p_1$  and  $p_2$  are two odd prime numbers such that  $p_1 > p_2$ , then  $p_1^2 - p_2^2$  is
  - (a) An even number
  - (b) An odd number
  - (c) An odd prime number
  - (d) None of the above
4. If  $a = 2^3 \times 3$ ,  $b = 2 \times 3 \times 5$ ,  $c = 3^n \times 5$  and  $\text{LCM}(a, b, c) = 2^3 \times 3^2 \times 5$ , then  $n =$ 
  - a. 1
  - b. 2
  - c. 3
  - d. 4
5. The decimal expansion of the rational number  $\frac{14587}{1250}$  will terminate after
  - a. one decimal place
  - b. two decimal places
  - c. three decimal places
  - d. four decimal places
6. The smallest number by which  $\sqrt{27}$  should be multiplied so as to get a rational number is\_\_\_\_\_.
7. . The LCM and HCF of two rational numbers are equal, and then the numbers must be-----.
8. If the LCM of  $a$  and 18 is 36 and the HCF of  $a$  and 18 is 2, then  $a =$ \_\_\_\_\_.
9. Use Euclid's Algorithm to find the HCF of 858 and 325. Express it in the form  $858x + 325y$ .
10. Prove that  $\sqrt{p} + \sqrt{q}$  is irrational, where  $p, q$  are primes.
11. Show that one and only one out of  $n, n+2$  or  $n+4$  is divisible by 3 where  $n$  is positive integer.
12. Show that the cube of any positive integer is of the form  $4m, 4m+1$  or  $4m+3$ , for some integer  $m$ .

13. Without actually performing the long division, find if  $\frac{987}{10500}$  will have terminating or non terminating repeating decimal expansion. Explain your answer.
14. Show that  $n^2-1$  is divisible by 8 where  $n$  is an odd integer.
15. Express each of the following is a rational number in the simplest form  
 a)  $0.\overline{18}$   
 b)  $0.\overline{326}$
16. Find the HCF and LCM of  $\frac{8}{9}$ ,  $\frac{10}{27}$  and  $\frac{16}{81}$
17. Check whether  $\frac{2\sqrt{45}+3\sqrt{20}}{2\sqrt{5}}$  on simplification gives a rational or an irrational number
18. For any positive integer  $n$ , prove that  $n^3-n$  is divisible by 6.
19. Show that there is a positive integer  $n$  for which  $\sqrt{n-1} + \sqrt{n+1}$  is rational

### CASE STUDY:

20. A seminar is being conducted by an Educational Organization, where the participants will be educators of different subjects. The number of participants in Hindi, English and Mathematics are 60, 84 and 108 respectively.



- In each room the same number of participants are to be seated and all of them being in the same subject, hence maximum number participants that can accommodated in each room are
  - 14
  - 12
  - 16
  - 18
- What is the minimum number of rooms required during the event?
  - 11
  - 31
  - 41
  - 21
- The LCM of 60, 84 and 108 is
  - 3780

b) 3680

c) 4780

d) 4680

4. The product of HCF and LCM of 60,84 and 108 is

a) 55360

b) 35360

c) 45500

d) 45360

5. 108 can be expressed as a product of its primes as

a)  $2^3 \times 3^2$

b)  $2^3 \times 3^3$

c)  $2^2 \times 3^2$

d)  $2^2 \times 3^3$

