



INDIAN SCHOOL AL WADI AL KABIR

Department of Mathematics

Class X

Worksheet – Real Numbers

20-04-2021

1mark questions

Q.1.	If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$; a, b being prime numbers, then find LCM (p, q).
Q.2.	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 find the HCF of a and b.
Q.3.	Find the product of the HCF and LCM of the smallest prime number and the smallest composite number.
Q.4.	Write the decimal expansion of the rational number $\frac{33}{2^2 \times 5}$.
Q.5.	If a and b are two consecutive natural numbers, then find HCF (a, b).
Q.6.	Write whether the rational number $\frac{93}{1500}$ will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
Q.7.	The decimal expansion of $\frac{147}{120}$ will terminate after how many places of decimal?

Case study-based question (1 x 4 = 4 marks)

Q.8 Indian Army is the third biggest military contingent in the World next to USA and China. However, there are many firsts that make Indian army stand out in the world, making us all Indians very proud.



On a Republic day, the Parade of the following two groups were planned:

(a) First group of Army contingent of 624 members behind an army band of 32 members.

(b) Second group of CRPF troops with 468 soldiers behind the 228 members of bikers.

These two groups are to march in the same number of columns. This sequence of soldiers is followed by different states which are showing the culture of the respective states.

- (a) What is the maximum number of columns in which the army troop can march?
(i) 8 (ii) 16 (iii) 4 (iv) 32
- (b) What is the maximum number of columns in which the CRPF troop can march?
(i) 4 (ii) 8 (iii) 12 (iv) 1
- (c) What is the maximum number of columns in which total army troop and CRPF troop together can march past?
(i) 2 (ii) 4 (iii) 6 (iv) 8
- (d) What should be subtracted with the numbers of CRPF soldiers and the number of bikers so that their maximum number of column is equal to the maximum number of column of army troop?
(i) 4 Soldiers and 4 Bikers (ii) 4 Soldiers and 2 Bikers
(iii) 2 Soldiers and 4 Bikers (iv) 2 Soldiers and 2 Bikers

2 marks questions

- Q.9.** Can two numbers have 18 as their HCF and 380 as their LCM? Justify your answer.
- Q.10.** Explain why $(17 \times 11 \times 2 + 17 \times 11 \times 5)$ is a composite number.
- Q.11.** Check whether 12^n can end with the digit zero for any natural number n .
- Q.12.** The HCF of two numbers 'a' and 'b' is 5 and their LCM is 200. Find the product of 'a' and 'b'.
- Q.13.** Three bells ring at an interval of 4, 7 and 14 minutes. All three bells rang together at 6am, at what time will the three bells ring together next?

3 marks questions

- Q.14.** Prove that $\sqrt{2} + \sqrt{5}$ is irrational.
- Q.15.** Using Euclid's division algorithm, find whether the pair of numbers 847 and 2160 are co-prime or not.
- Q.16.** Show that one and only one out of $n, n + 2, n + 4$ is divisible by 3, where 'n' is any positive integer.
- Q.17.** Three tankers contain 403 litres, 434 litres and 465 litres of diesel respectively. Find the maximum capacity of a container that can measure the diesel of the three containers exact number of times.
- Q.18.** Complete the following factor theorem:
- ```
graph TD; x[x] --- 2[2]; x --- y[y]; y --- 3[3]; y --- 1855[1855]; 1855 --- 5[5]; 1855 --- 371[371]; 371 --- 7[7]; 371 --- z[z];
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- Q.19.** Prove that the square of any positive integer is of the form  $4m$  or  $4m + 1$  for some integer.

|                          |                                                                                                                                                                                                                                                                   |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Q.20.</b>             | Given that $\sqrt{3}$ is an irrational number. Prove that $\frac{2+\sqrt{3}}{5}$ is irrational.                                                                                                                                                                   |
| <b>5 marks questions</b> |                                                                                                                                                                                                                                                                   |
| <b>Q.21.</b>             | Find the largest number that divides 1251, 9377 and 15628 leaving remainders 1, 2 and 3 respectively.                                                                                                                                                             |
| <b>Q.22.</b>             | In a seminar, the number of participants in Hindi, English and Mathematics are 60, 84 and 108 respectively. Find the minimum number of rooms required if in each room the same number of participants are to be seated and all of them being in the same subject. |
| <b>Q.23.</b>             | State the Fundamental theorem of Arithmetic. Find HCF and LCM of 378, 180 and 420 by prime factorization method. Is HCF x LCM of these numbers equal to the product of the given three numbers?                                                                   |

### ANSWERS

|             |                                        |             |                                  |             |        |             |                                     |             |                                    |
|-------------|----------------------------------------|-------------|----------------------------------|-------------|--------|-------------|-------------------------------------|-------------|------------------------------------|
| <b>Q.1</b>  | $a^3b^2$                               | <b>Q.2</b>  | $xy^2$                           | <b>Q.3</b>  | 8      | <b>Q.4</b>  | 1.65                                |             |                                    |
| <b>Q.5</b>  | 1                                      | <b>Q.6</b>  | terminating                      | <b>Q.7</b>  | 3      | <b>Q.8</b>  | (a) (ii) (b) (iii) (c) (ii) (d) (i) |             |                                    |
| <b>Q.9</b>  | No, because 18 is not a factor of 380. | <b>Q.12</b> | 1000                             | <b>Q.13</b> | 6:28am | <b>Q.15</b> | Co-prime                            |             |                                    |
| <b>Q.17</b> | 31 litres                              | <b>Q.18</b> | x = 11,130<br>y = 5565<br>z = 53 | <b>Q.21</b> | 625    | <b>Q.22</b> | 12                                  | <b>Q.23</b> | HCF = 6<br>LCM = 3780<br>Not equal |

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