

# Real Number Extra Questions

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## Short Answer Questions

- 1) Find the LCM and HCF of the numbers by 16 and 256 by Fundamental theory of Arithmetic's
- 2) Find the HCF of 12 and 256 by Euclid Division Formula
- 3) If a and b are two consecutive positive integers, Find the HCF of a and b
- 4) If a and b are Prime numbers ,find the LCM of a and b
- 5) Find the HCF and LCM of 84 and 270

## True and False

- a)  $\sqrt{16}$  is a rational number
- b)  $2 + \sqrt{144}$  is an irrational number
- c) Terminating decimal number are rational numbers
- d) Non Terminating repeating decimal number are irrational number
- e) Non terminating non repeating decimal number are rational number
- f) The average 2 and 11 is a rational number
- g) The product of an irrational number and rational may be rational number

## Long Questions

- 1) Show that the square of an odd positive integer is of the form  $8p + 1$ , for some whole number p.

Solution:

Any positive odd integer is of the form  $2n + 1$ ,

Where n is a whole number.

Therefore,

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$$(2n + 1)^2 = 4n^2 + 4n + 1$$

Now it can be written as

$$=4n(n+1)+1$$

Now  $n$  and  $n+1$  are two consecutive integers, so the product must be even,

$$n(n+1)=2p \quad \text{where } p \text{ is a whole number}$$

So

$$=4 \times 2p+1$$

$$=8p+1$$

Hence Proved

2) If  $n$  is an odd integer, then show that  $n^2 - 1$  is divisible by 8.

Solution

Any odd integer can be written as  $(2q+1)$  where  $q$  is positive number

So

$$n^2-1=(2q+1)^2 -1$$

$$=4q^2+4q +1 -1$$

$$=4q(q+1)$$

Now  $q$  and  $q+1$  are two consecutive integers, so the product must be even,

$$q(q+1)=2p \quad \text{where } p \text{ is a positive number}$$

So

$$=8p$$

Hence it is divisible by 8

3) Show that the product of 3 consecutive positive integers is divisible by 6.

Solution

Three consecutive positive integers can be of the form

$(3q+1)$ ,  $(3q+2)$  and  $(3q+3)$  where  $q$  is a whole number

Now product of these numbers

$$(3q+1)(3q+2)(3q+3) = (9q^2+9q+3)(3q+3) = 3(q+1)(3q^2+3q+1)$$

So it is divisible by 3

4. Given that  $\text{HCF}(306, 657) = 9$ , find  $\text{LCM}(306, 657)$ .

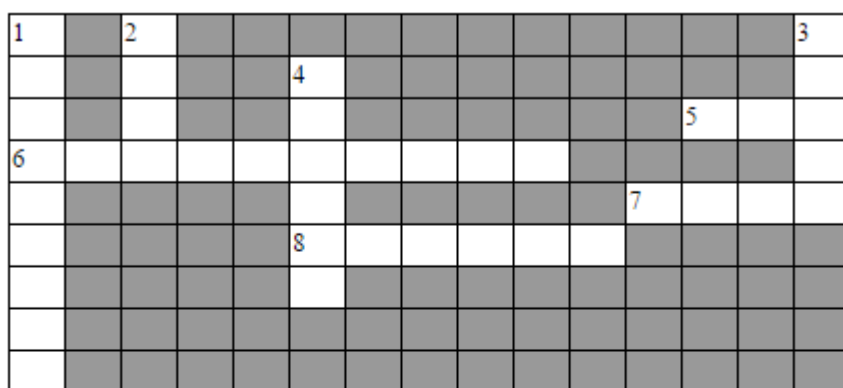
5. Use Euclid's division algorithm to find the HCF of 196 and 38220

6. Find the prime factors of number 1024

7. Prove that  $\sqrt{10}+2$  is an irrational number

8. Find the two irrational number between  $\sqrt{5}$  and  $\sqrt{11}$

### Crossword Puzzle



#### ACROSS

5. Two consecutive positive numbers are divisible by
6. Non Terminating Non repeating decimal numbers
7. Square root of number 25
8. Mathematician who gave the formula for finding HCF

#### DOWN

1. Non terminating repeating decimal numbers
2. Square root of number 16
3. Positive integers including zero are called
4. A numbers which are not divisible by any number except 1

#### Solution

- 1) Rational
- 2) Four
- 3) Whole
- 4) Prime

- 5) Two
- 6) Irrational
- 7) Five
- 8) Euclid

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