class 10th maths

Chapter 1 Real Numbers practice questions solutions

Class 10 Maths Ch 1 Real Numbers Practice

Q1. The LCM (P,48) is 144 and HCF is 12 then vale of P:

(a)24 **(b)16**

(c)36 **(d)40**

Q2. If HCF of 42 and 455 is expressible in the form of 42p+455 then value of p:

(a) 19/2 **(b)21/4**

(c) -32/3 **(d) -20/7**

Q3. p^2-1 is divisible by 8, if p is:

(a)An even integer **(b)An odd integer**

(c)Natural number **(d)Any integer**

Q4 The prime factorization of 21252 = 2^nx 3x 7 x 11 x 23 then n will be

(a)2 **(b)1**

(c)3 **(d)4**

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A.1 Product of numbers = LCM x HCF

$\Rightarrow P \times 48 = 144 \times 12$

$\Rightarrow P = \frac{144 \times 12}{48_4}$ (36)

$\Rightarrow \boxed{P = 36}$ (C) Ans.

A.2 $455 = 13 \times 7 \times 5$

$42 = 6 \times 7$

HCF = 7

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Now $42p+455=7$

$42p=-448$

$p=-\frac{448}{42}$ 32 / 3

$p=-\frac{32}{3}$ (c) Ans

A.3 (b) An odd integer Ans

A.4 $21252=2^2\times3\times7\times11\times23$

(a) 2 Ans.

Q.5 Prove that $7+3\sqrt{2}$ is an irrational no.

Let the given no. $7+3\sqrt{2}$ is rational number

then $\frac{p}{q} = 7+3\sqrt{2}$ (where p and q are coprime integers)

$\frac{p}{q} - 7 = 3\sqrt{2}$

$\frac{p-7q}{q} = 3\sqrt{2}$

$\frac{p-7q}{3q} = \sqrt{2}$

In LHS expression is rational and in RHS $\sqrt{2}$ is irrational

this contradiction arises due to our wrong assumption

therefore given no. $7+3\sqrt{2}$ is irrational

Hence proved

Q 6 Find the square root of $8+2\sqrt{15}$

Solution : $8+2\sqrt{15}$

$= 5 + 3 + 2\sqrt{15}$

$= (\sqrt{5})^2 + (\sqrt{3})^2 + 2\sqrt{15}$

$= (\sqrt{5}+\sqrt{3})^2$ using $(a+b)^2$

$= (\sqrt{5}+\sqrt{3})$

so the square root of $8+2\sqrt{15}$ is $\sqrt{5}+\sqrt{3}$ Ans.

Q 7. What is fundamental theorem of arithmetic, using it Check 14^n would end with zero or not ?

Solution : "Every composite number can be written as a product of prime numbers, and this factorisation is unique, except for the order of the prime numbers."

It means every composite number can factorized in prime factors in only one way, (here order of writing prime nos can be change)

Any composite number end with 0 when it contain 2 and 5 . In a given question $14^n = (2x7)^n$ i.e. prime factorization doesn't contain 2 and 5 so 14^n would never end with 0

Q8. Find the largest number that divides 70 and 125 leaving remainder 5 and 8 respectively

Solution : $70-5=65$

$125-8=117$

HCF (65, 117) :-

$117 = 13 \times 9$

$65 = 13 \times 5$

$\Rightarrow$ HCF = 13

Now let us verify

$13)125(9$
-117
$\overline{8}$

$13)70(5$
65
$\overline{5}$

Verified

So the required largest No is 13 Ans

Q9 CASE STUDY QUESTION:

In a school, ₹306 and ₹657 are to be distributed among students of two different sections of class 10 so that:

Each student gets the same amount

***The amount given to each student is maximum possible**

***No money is left undistributed**

Now answer the following questions:

1. What mathematical concept is used to solve this problem?

(a) LCM

(b) HCF

(c) Prime Factorization only

(d) both LCM & HCF

Solution: Since amount to be distributed is less than given amounts so it must be HCF option (b) Ans

2. Find the maximum amount each student can receive.

Solution: max. amount mean , highest common factor

306 = 2x3x3x17 here H.C.F. is 9

657 = 3x3x73 so max. amount is Rs 9 each student get Ans.

3. How many students are there in each house?

Solution : Sec A – 306/9 = 34, Sec B – 657/9 = 73

so in Sec A = 34 students and in Sec B = 73 students Ans

4. If ₹306 decrease to ₹300 and ₹ 657 increase to ₹ 700 will the HCF increase or decrease? Justify logically.

Solution: 300 = 3x100 now HCF is 100 , so now HCF increased by 91

700 = 7x100

Thank You!