Problems on LCM, HCF and Simplification

**Factors:** Factors of a number are the numbers which will divide the given number without leaving any remainders.

**Multiples:** Multiples of a number are generated by multiplying other integers with the given number.

**Highest Common Factor**: The highest common factor of two numbers is the largest number that will divide both the numbers without leaving a remainder. It is also called as the greatest common divisor or GCD.

**Least Common Mulitiple:** The least common multiple of two numbers is the lowest number that is a multiple of both the numbers.

**Formulae:Product of two numbers = Product of their H.C.F. and L.C.M.**

1. **H.C.F. and L.C.M. of Fractions:**

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| 1. H.C.F. = | H.C.F. of Numerators |
| L.C.M. of Denominators |

|  |  |
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| 2. L.C.M. = | L.C.M. of Numerators |
| H.C.F. of Denominators |

**Where to use HCF and LCM :**

1. Find the greatest number that will exactly divide a,b,c🡪 HCF(a,b,c)

2. Find the greatest number that will divide a,b and c leaving a remainders of x, y and z respectively 🡪 HCF(a-x,b-y,c-z)

3. Find the greatest number which when it divides a, b and c will leave the same remainder in each case 🡪 HCF (a-b,b-c,c-a)

4. Find the least number which is exactly divisible by a,b,c🡪 LCM (a,b,c)

5. Find the least number which when divided by a, b and c leaves the same remainder r in each case 🡪LCM(a,b,c) + r

6. Find the least number which when divided by a, b and c leaves the remainders x,y and z respectively🡪 Check if a-x = b-y = c-z = K. If this is the case, then LCM (a,b,c) – K

Q1. The LCM of 30 and 40 is

Q2. The LCM of 20, 15 and 35 is

Q3. The LCM of 12, 15 and 18 is

Q4. The HCF of 30 and 40 is

Q5. The HCF of 120 and 72 is

Q6.The HCF of 130 and 50 is

Q7 (i). The HCF of 24, 36 and 60 is and 7 (ii). HCF of 640,1320,1920

Q8. The least number of five digits which is exactly divisible by 12, 15 and 18 is

Q9. A, B, C are running around a circular field. A can complete a round in 36 sec, B can complete it in 54 sec and C in 72 sec. They start running from the starting point at 6 am. Then at what time will they meet again at starting point.

Q10.The H.C.F. of 9/10, 12/25, 18/35 and 21/40 is:

Q11.The largest number which divides 25, 73 and 97 to leave the same remainder in each case is

Q12.The smallest number which when diminished by 3 is divisible by 21, 28, 36 and 45 is

Q13. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together?

Q14. The greatest number of four digits which is divisible by 15, 25, 40 and 75 is

Q15. The least number, which when divided by 12, 15, 20 and 54 leaves in each case a remainder of 8 is:

Q16. The greatest number which on dividing 1657 and 2037 leaves remainders 6 and 5 respectively is:

Q17.A teacher brought a certain number of gifts to distribute equally among her ten students. But on the day of distribution four students were absent. Still the teacher was able to distribute the gifts equally. What is the least number of gifts that the teacher must have bought?

Q18. The L.C.M. of two numbers is 48. The numbers are in the ratio 2 : 3. Then sum of the numbers is:

Q19. Arrange the following fractions in ascending order  
3/4, 7/9, 5/7

Q20. If the sum of two numbers is 55 and the H.C.F. and L.C.M. of these numbers are 5 and 120 respectively, then the sum of the reciprocals of the numbers is equal to: