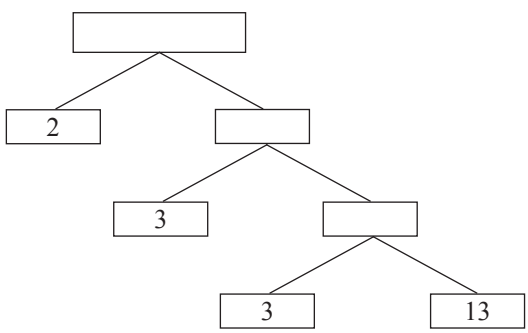
WORKSHEET 1

CHAPTER 1 – REAL NUMBERS

1. Prove that the product of two consecutive positive integers is divisible by 2.
2. Using Euclid's division algorithm, find the HCF of 960 and 1575.
3. A number when divided by 53 gives 34 as quotient and 21 as remainder. Find the number.
4. Find the simplest form of $\frac{148}{185}$.
5. The decimal expansion of the rational number $\frac{43}{2^4 \times 5^3}$, will terminate after how many places of decimals?
6. Find the largest number which divides 245 and 1029 leaving remainder 5 in each case.
7. Determine the prime factorisation of each of the following positive integer.
   (*i*) 20570
   (*ii*) 58500
   (*iii*) 945
8. Find the LCM and HCF of the following pairs of integers and verify that LCM × HCF = Product of the integers:
   (*i*) 26 and 91
   (*ii*) 510 and 92
   (*iii*) 336 and 54
9. Find the smallest number which when increased by 17 is exactly divisible by both 520 and 468.
10. If q is a prime number, prove that $\sqrt{q}$ is irrational.
11. Prove that $\sqrt{5}+\sqrt{3}$ is irrational.
12. Has the rational number $\frac{443}{2^2 \times 5^7 \times 7^2}$ a terminating or a non-terminating decimal representation?
13. Complete the missing entries in the following tree:



14. Find the HCF and LCM of 612 and 1314 using prime factorisation.
15. Two tanks contain 504 and 735 litres of milk respectively. Find the maximum capacity of a container which can measure the milk of either tank an exact number of times.

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16. Find the HCF of the following pair of integers and express it as a linear combination of them.
    (*i*) 963 and 657
    (*ii*) 592 and 252
    (*iii*) 506 and 1155
    (*iv*) 1288 and 575

17. Show that the following numbers are irrational:
    (*i*) $\frac{1}{\sqrt{2}}$
    (*ii*) $6+\sqrt{2}$
    (*iii*) $2-\sqrt{3}$
    (*iv*) $2\sqrt{3}-1$
    (*v*) $\frac{3}{2\sqrt{5}}$

18. The LCM and HCF of two numbers are 180 and 6 respectively. If one of the numbers is 30, find the other number.

19. Use Euclid's division algorithm to find the HCF of 4052 and 12576.

20. Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
    (*i*) $\frac{23}{8}$
    (*ii*) $\frac{125}{441}$
    (*iii*) $\frac{129}{2^5 \times 7^7 \times 5^7}$

ANSWERS

WORKSHEET 1

2. 15

3. 1823

4. $\frac{4}{5}$

5. 4

6. 16

7. (*i*) $2 \times 5 \times 11^2 \times 17$ (*ii*) $2^2 \times 3^2 \times 5^3 \times 13$ (*iii*) $3^3 \times 5 \times 7$

8. (*i*) LCM = 182, HCF = 13 (*ii*) LCM = 23460, HCF = 2 (*iii*) LCM = 3024, HCF = 6

9. 4663

12. non-terminating

13. 234, 117, 39

14. HCF = 18, LCM = 44676

15. 21 litres

16. (*i*) $9 = (-15) \times 963 + 22 \times 657$ (*ii*) $4 = 77 \times 252 + (-20) \times 592$
(*iii*) $11 = 16 \times 506 + (-7) \times 1155$ (*iv*) $23 = (-4) \times 1288 + 9 \times 575$

18. 36

19. 4

20. (*i*) terminating (*ii*) non-terminating repeating (*iii*) non-terminating repeating