MATHS

BOOKS - AGRAWAL PUBLICATION

REAL NUMBERS

Example

1. If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$ where a

and b are prime numbers, then the LCM(p,q) is:

A. ab

B. a^2b^2

C. a^3b^2

D. a^3b^3

Answer:

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2. $7 \times 11 \times 13 \times 15 + 15$ is a:

A. Composite number

B. Whole number

C. Prime number

D. (a) and (b) both

Answer:

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3. LCM of $\left(2^3 \times 3 \times 5\right)$ and $\left(2^4 \times 5 \times 7\right)$ is

A. 40

B. 560

C. 1120

D. 1680

Answer:

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4. 1.23451326... is

A. an integer

B. an irrational number

C. a rational number

D. none of these

Answer:

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5. A decimal number $0.\overline{8}$ can be expressed in its simplest form as _____

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6. Product of two numbers is 18144 and their HCF is 6, thn their LCM is_____.

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7. The decimal expression of the rational number $\frac{23}{2^2 \times 5}$ will terminate after decimal place(s).

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8. If a and b are positive integers, then $\frac{HCF(a,b) \times LCM(a,b)}{ab} =$ _____

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9. _____ is the H.C.F. of two consecutive even numbers.

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10. If two positive integers p and q can be expressed as $p = a^2b^3$ and $q = a^4b$ a,b being prime numbers, hen LCM(p,q) is_____

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11. The LCM of two numbers is 182 and their HCF is 13. If one of the numbers is 26, find the other.

12. Given that HCF(135,225)=45, find the LCM (135,225).

13. After how many decimal places will the decimal representation of the rational number $\frac{229}{2^2 \times 5^7}$ terminate?

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14. Are the smallest prime and the smallest composite numbers co-prime? Justify.

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15. The HCF of two numbers a and b is 5 and their LCM is 200. Find the product ab.

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16. Can two numbers have 18 as their HCF and 380 as their LCM? Give reasons.

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17. Find a rational number between $\sqrt{2}$and $\sqrt{7}$

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18. Write the number of zeroes in the end of a number whose prime factorisation is $2^2 \times 5^3 \times 3^2 \times 17$.

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19. If the HCF of (336.,54)=6, find the LCM(336,54).

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20. Find a rational number between $\sqrt{2}$and $\sqrt{3}$

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21. Write one rational and one irrational number lying between 0.25 and 0.32

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22. Write the exponent of 3 in the prime factorization of 144.

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23. Check whether 12^n can end with the digit 0 for any natural number n.

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24. The product of the LCM and HCF of two natural numbers is 24. The difference of two numbers is 2. Find the numbers.

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25. Two alaram clocks ring their alarms at regular intervals of 72 seconds and 50 seconds if they first beep together at 12 noon, at what time will they beep again for the first time?

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26. Find the HCF of 612 and 1314 using prime factorisation.

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27. Write the smallest number which is divisble by both 306 and 657.

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28. A rational number in its decimal expansion is 327.7081. What can you say about the prime factors of q, which this number is expressed in the form $\frac{p}{q}$? Give reasons.

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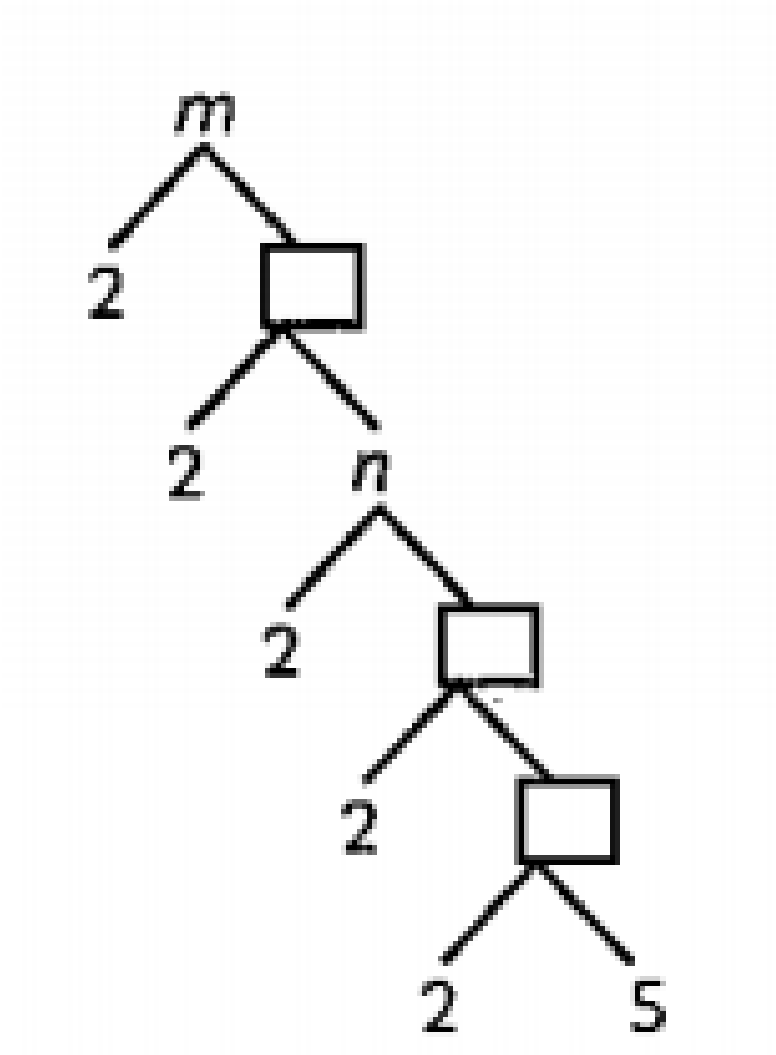
29. In the adjoining factor tree, find the numbers m and n.



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30. Using prime factorisation method, find the HCF and LCM of 210 and 175.

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31. Prove that the number 4^n, n being a natural number, can never end with the digit 0.

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32. Find the two numbers which on multiplication with $\sqrt{360}$ gives a rational number. Are these numbers rational or irrational?

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33. Prove that $\sqrt{5}$ is an irrational number.

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34. Prove that $2+5\sqrt{3}$ is an irrational number, given that $\sqrt{3}$ is an irrational number.

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35. Prove that $\sqrt{2}$ is an irrational number.

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36. Find HCF and LCM of 404 and 96 and verify that $HCF \times LCM$ =Product of the two given

numbers.

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37. Write the denominator of rational number $\frac{257}{5000}$ in the form $2^m \times 5^n$, where m,n are non-negative integers. Then, write its decimalexpansion without actual division.

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38. Three bells toll at intervals of 12 minutes, 15minutes and 18minutes respectively, if they start tolling together, after what time will hey next toll together?

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39. Find if $\frac{987}{10500}$ will have terminating or non-terminating (repeating) decimal expansion. Give reason for your answer.

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40. On a morning walk, three people step off together and their steps measure 40cm, 42 cm and 45 cm respectively. What is the minimum distance each should walk, so that each can covers the same distance in complete steps?

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41. A merchant has 120 litres and 180 liters of two kinds of oil. He wants to sell oil by filling

the two kinds of oil in this of equal volumes. What is the greatest volume of such a tin?

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42. Using prime factorisation, find HCF and LCM of 18,45 and 60. Check if $HCF \times LCM$= product of the numbers.

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43. Show that the square of any positive odd integer is of the form 8m+1, for some integer m.

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44. Prove that $\sqrt{p}+\sqrt{q}$ is irrational, where p and q are primes.

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45. Prove that $3 + 2\sqrt{5}$ is irrational number.

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46. Show that the square of any positive integer cannot be of the form (5q+2) or (5q+3) for any integer q.

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47. Prove that one of every three consecutie positive integers is divisble by 3.

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48. Prove that $\sqrt{n}$ is not a rational number, if n is not perfect square.

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49. The decimal expansions of some real numbers are given below. In each case, decide whether they are rational or not. If they are rational, write it in the form $\frac{p}{q}$. What can you say about the prime factors of q? 0.14014001400014000....

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50. The decimal expansions of some real numbers are given below. In each case, decide

whether they are rational or not. If they are rational, write it in the form $\frac{p}{q}$. What can you say about the prime factors of q?$0.\overline{16}$

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