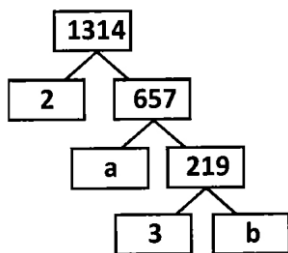


Real Numbers

1. The L.C.M. and H.C.F. of marks scored by Ajit and Amar in a math test are 5040 and 12 respectively. If Amar's score is 144, what is Ajit's score?
 (a) 288 (b) 132
 (c) 564 (d) 420

2. 'p' is the remainder obtained when a perfect square is divided by 3. What is the value of 'p'?
 (a) 1
 (b) 0
 (c) Either (a) or (b).
 (d) Neither (a) nor (b).

3. The factor tree shows the prime factorization of 1314.



Find the respective values of 'a' and 'b'.

- (a) 3, 37 (b) 3, 73
 (c) 73, 3 (d) 9, 73
4. The following are the first and last steps in finding the H.C.F. of 408 and 1032 using Euclid's algorithm.
Step 1: $1032 = 408 \times 2 + 216$
Step 2: _____
Step 3: _____
Step 4: $192 = 24 \times 8 + 0$
 Choose the steps 2 and 3.
 (i) $408 = 216 \times 1 + 192$
 (ii) $408 = 216 + 180 + 12$
 (iii) $216 = 192 \times 1 + 24$
 (iv) $192 = 24 \times 8 + 0$
 (a) (i) and (ii) (b) (i) and (iii)
 (c) (ii) and (iii) (d) (iii) and (iv)
5. For what value of 'x' does 6^x end with 5?
 (a) 0
 (b) 1
 (c) 5
 (d) Never ends with 5.

6. If 4 divides 1728, which of the following statements is true?
 (a) 4 divides 12. (b) 6 divides 1728.
 (c) 2 divides 1728. (d) 4 divides 144.

7. Dimensions of a rectangle are $(2^5 \times 7) \text{ cm}$ and $(2 \times 5^2 \times 7^3) \text{ cm}$. Express the area of the rectangle in prime factorization form.
 (a) $2 \times 5 \times 7 \text{ cm}^2$ (b) $2 \times 73 \text{ cm}^2$
 (c) $26 \times 52 \times 74 \text{ cm}^2$ (d) $25 \times 52 \times 73 \text{ cm}^2$

8. Choose the irrational number.
 (a) $2 - \sqrt{4}$ (b) $(\sqrt{5})^2$
 (c) $\sqrt{9} - \sqrt{4}$ (d) $\sqrt{2} - \sqrt{3}$

9. Given $a = 3 - \sqrt{2}$ and $b = 3 + \sqrt{2}$, which of the following is correct?
 (a) $a + b$ is irrational.
 (b) $a - b$ is rational.
 (c) ab is rational.
 (d) $\frac{a}{b}$ is rational.

10. **Euclid's division lemma:** For any two positive integers 'a' and 'b', there exist unique integers 'q' and 'r' such that $a = bq + r$.

What is the condition that 'r' must satisfy?

- (a) $0 \leq r \leq b$ (b) $0 < r \leq b$
 (c) $0 \leq r < b$ (d) $0 < r < b$

11. Which of the following is a non-terminating repeating decimal?

- (a) $\frac{24}{1600}$
 (b) $\frac{171}{800}$
 (c) $\frac{123}{2^2 \times 5^3}$
 (d) $\frac{145}{2^3 \times 5^2 \times 7^2}$

- 12.** Choose the terminating decimal.
 (a) $\frac{141}{1000}$ (b) $\frac{17}{30}$
 (c) $\frac{271}{90}$ (d) $\frac{53}{343}$
- 13.** Find the number which when divided by 43 leaves a remainder 32 and gives a quotient 25.
 (a) 1045 (b) 1107
 (c) 1150 (d) 1105
- 14.** By what number must 1789 be divided to get a quotient 29 and remainder 49?
 (a) 60 (b) 61
 (c) 59 (d) 52
- 15.** What is the L.C.M. of 140 and 605 if their H.C.F. is H?
 (a) 8000 (b) 5500
 (c) 8400 (d) 7700
- 16.** 910 blue pens and 1001 red pens are distributed to students of class X so that each student gets the same number of pens of each kind. What is the maximum strength of the class?
 (a) 91 (b) 80
 (c) 94 (d) 86
- 17.** Books in a library are stacked in such a way that they are stored subject wise and the stacks are of the same size. If there are 144 Geography books, 384 History books and 240 Economics books, in the library, in how many stacks can the books be arranged?
 (a) 18 (b) 14
 (c) 16 (d) 12
- 18.** What is the L.C.M. of $\frac{6}{14}$ and $\frac{2}{7}$?
 (a) $\frac{3}{7}$ (b) $\frac{6}{7}$
 (c) $\frac{4}{7}$ (d) $\frac{5}{7}$
- 19.** Which of the following is an incorrect statement?
 (a) If $\sqrt{a} + \sqrt{b}$ is an irrational number, then \sqrt{ab} is also an irrational number.
 (b) The reciprocal of an irrational number is always an irrational number.
 (c) There are infinitely many rational numbers between any two irrational numbers.
 (d) $7 \times 13 + 13$ is a prime number.
- 20.** Which of the following is true for two co-prime numbers?
 (a) Their H.C.F. is 1.
 (b) Their L.C.M. is 1.
 (c) Their H.C.F. is equal to their product.
 (d) Their L.C.M. is twice their H.C.F.
- 21.** The difference of the L.C.M. and H.C.F. of 210 and 55 is expressed as $210 \times 6 + 55y$. What is the value of y^3 ?
 (a) 361 (b) 19
 (c) 55 (d) 6859
- 22.** Choose the methods that can be used to find the H.C.F. of any two numbers.
 (i) Euclid's division lemma
 (ii) Prime factorization
 (iii) Division of the numbers
 (iv) Product of numbers
 (a) (i) and (iv) only
 (b) (i), (ii) and (iii) only
 (c) (i), (iii) and (iv) only
 (d) (ii), (iii) and (iv) only
- 23.** A positive number 'n' when divided by 8 leaves a remainder 5. What is the remainder when $2n + 4$ is divided by 8?
 (a) 8 (b) 1
 (c) 6 (d) 0
- 24.** The remainder when a number is divided by 143 is 31. What is the remainder when the same number is divided by 11?
 (a) 5 (b) 7
 (c) 6 (d) 9

- 25.** Three ropes are 7 m, 12 m 95 cm and 3 m 85 cm long. What is the greatest possible length which can be used to measure these ropes?
 (a) 35 cm (b) 55 cm
 (c) 1 m (d) 65 cm
- 26.** Three bulbs are connected in such a manner that they glow for every 24 seconds, 36 seconds and 54 seconds respectively. All of them glow at once at 8 a.m. When will they again glow simultaneously?
 (a) 8:30:36 a.m. (b) 8:03:36 a.m.
 (c) 8:36:03 a.m. (d) 8:36:30 a.m.
- 27.** Find The largest number which divides the numbers 120, 224 and 256.
 (a) 8 (b) 6
 (c) 4 (d) 5
- 28.** A book seller purchased 117 books out of which 45 books are of mathematics and the remaining 72 books are of physics. Each book has the same size. Mathematics and physics books are to be packed in separate bundles and each bundle must contain the same number of books. Find the least number of bundles which can be made of these 117 books.
 (a) 8 (b) 11
 (c) 13 (d) 9
- 29.** Sandeep donated 75 glucose biscuits and 45 monaco biscuits to the students of a class. These are to be packed in identical packets. The two type of biscuits are to be packed separately and each containing the equal number of biscuits. Find the least number of glucose and monaco biscuit packets respectively.
 (a) 5, 15 (b) 5, 3
 (c) 2, 3 (d) 3, 2
- 30.** An army contingent of 616 members is to march behind an army band of 32 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?
 (a) 3 (b) 8
 (c) 12 (d) 4
- 31.** 96 books of English, 240 books of hindi and 336 books of mathematics have to be packed in bundles with each bundle containing equal number of books of each of the subjects. What is the difference of the largest number of books which can be packed in each bundle and the least number of bundles which can be made?
 (a) 1
 (b) 3
 (c) 34
 (d) 48
- 32.** Which of the following is true about $17 \times 41 \times 43 \times 61 + 43$?
 (a) It is a prime number.
 (b) It is a composite number.
 (c) It is an odd number.
 (d) Both (a) and (c)
- 33.** A circular field has a circumference of 360 km. Two cyclists Sumeet and John start together and cycle at speeds of 12 km/hr and 15 km/hr respectively, a round the circular field. After how many hours will they meet again at the starting point?
 (a) 100 hours (b) 171 hours
 (c) 120 hours (d) 140 hours
- 34.** Find the H.C.F. of 6930 and 8085.
 (a) 1155 (b) 2205
 (c) 1515 (d) 2025
- 35.** If 0.2317 is expressed in the form of $\frac{p}{q}$ where 'p' and 'q' are co-prime and also 'q' is in the form $2^n \times 5^m$ what are the values of 'm' and 'n' respectively?
 (a) 4 and 3 (b) 4 and 5
 (c) 4 and 4 (d) 3 and 4
- 36.** If 0.737373..... is expressed in the form of $\frac{p}{q}$, where 'p' and 'q' are co-primes, what are the prime factors of 'q'?
 (a) 4 and 7 (b) 3 and 11
 (c) 7 and 11 (d) 4 and 3

- 37.** Which of the following is correct about $\frac{41}{37500}$
- It is a non-terminating repeating decimal.
 - It is a terminating repeating decimal.
 - It is a terminating and not repeating decimal.
 - It is a non-terminating and not repeating decimal.
- 38.** Find the L.C.M. of 3465 and 5460.
- 181080
 - 180180
 - 108108
 - 108801
- 39.** If the LCM Of (480,672) = 3360, find H.C.F. of (480,672).
- 75
 - 69
 - 67
 - 96
- 40.** Find the respective values of H.C.F. and L.C.M. of 5474, 9775 and 11730.
- 391 and 410550
 - 319 and 401550
 - 410550 and 319
 - 405150 and 193
- 41.** The circumferences of the front wheel and the rear wheels of a tricycle are 120 cm and 90 cm respectively. Before beginning to ride the tricycle, Ruth marks the points where the tyres touch the ground as A and B respectively on the front and the rear wheels. How many revolutions do the front and rear wheel make when both A and B touch the ground again simultaneously?
- 6, 8
 - 3, 4
 - 9, 12
 - 1, 4
- 42.** Which of the following is a correct statement
- π is a natural number.
 - π is an irrational number.
 - π is not defined.
 - The value of π is $\frac{22}{7}$.
- 43.** The product of L.C.M. and H.C.F. of two numbers is 88288. If one of the numbers is 248, find the other number.
- 356
 - 635
 - 365
 - 653
- 44.** The L.C.M. of 318 and 477 is expressed as $159 \times p + 318$. What is the value of 'p'?
- 2
 - 4
 - 3
 - 0
- 45.** A rectangular metal piece of dimensions 360 cm by 280 cm is cut into some identical small squares. If the side of each square has the largest possible length, find the number of square pieces formed.
- 126
 - 20
 - 40
 - 63
- 46.** In a school, the duration of a period in junior section is 40 minutes and in senior section is 60 minutes. If the first bell for each section rings at 9 a.m., when will the two bells ring together again?
- 10:45 a.m.
 - 10:15 a.m.
 - 12:00 p.m.
 - 11:00 a.m.
- 47.** M The prime factorization of two numbers are $3^2 \times 7^3 \times 11$ and $3 \times 7^2 \times 11^3 \times 17$. Which of the following is a common factor of the numbers?
- 1683
 - 5831
 - 1089
 - 539

Answer - Keys

1. D	2. C	3. B	4. B	5. D	6. A
7. C	8. D	9. C	10. C	11. D	12. A
13. B	14. A	15. D	16. A	17. C	18. B
19. D	20. A	21. D	22. B	23. C	24. D
25. A	26. B	27. A	28. C	29. B	30. B
31. C	32. B	33. C	34. A	35. C	36. B
37. A	38. B	39. D	40. A	41. B	42. B
43. A	44. B	45. D	46. D	47. D	

Solutions

1. (d) The product of two numbers is equal to the product of their L.C.M. and H.C.F.
Let Ajit's score be ' x '.
Then $1441 \times x = 5040 \times 12$
 $\Rightarrow x = \frac{5040 \times 12}{144} = 420$

2. (c) The square of a positive integer ' m ' is of the form $3m$ or $3m + 1$ (for some ' m ').
Hence, the remainder obtained when a perfect square is divided by 3 is either 0 or 1.

3. (b) $219 \times \boxed{3} = 657$
and $3 \times \boxed{73} = 219$
Hence, $a = 3$ and $b = 73$.

4. (b) Using Euclid's algorithm, H.C.F. of 408 and 1032 is:
Step 1: $1032 = 408 \times 2 + 216$
Step 2: $408 = 216 \times 1 + 192$
Step 3: $216 = 192 \times 1 + 24$
Step 4: $192 = 24 \times 8 + 0$
Hence, the required steps are (i) and (iii) only.

5. (d) If 6^x ends with 5, then 6^n would contain the prime 5.
But $6^x = (2 \times 3)^x = 2^x \times 3^x$.
 \Rightarrow The only prime numbers in the factorization of 6^x are 2 and 3.
 \therefore By uniqueness of fundamental theorem, there are no primes other than 2 & 3 in 6^x .
So, 6^n will never end with 5.

6. (a) If ' p ' divides x^3 , then ' p ' divides ' x '.
Here, $1728 = 12^3$.
So, 4 divides 1728 means 4 divides 12.
Thus, 4 divides 12 is the required statement.

7. (c) The dimensions of a rectangle are (25×7) cm and $(2 \times 52 \times 73)$ cm.
Its area $= (25 \times 7)(2 \times 5^2 \times 7^3)$ cm²
 $= 2^6 \times 5^2 \times 7^4$ cm²

8. (d) $2 - \sqrt{4} = 2 - 2 = 0$
(Rational number)
 $(\sqrt{5})^2 = 5$ (Rational number)
 $\sqrt{9} - \sqrt{4} = 3 - 2 = 1$
(Rational number)
Also, the sum or difference of two irrational numbers is irrational. Thus, $\sqrt{2} - \sqrt{3}$ is irrational.

9. (c) Not available

10. (c) Not available

11. (d) Not available

12. (a) Not available

13. (b) Not available

14. (a) By Euclid's lemma,
 $1789 = 29x + 49$, where ' x ' is the divisor.
 $\therefore 1789 - 49 = 29x$
 $\Rightarrow x = \frac{1740}{29} = 60$

15. (d) The product of two numbers = The product of their L.C.M. and H.C.F.
 $\Rightarrow 140 \times 605 = 11 \times L.C.M.$
 $\Rightarrow L.C.M. = \frac{140 \times 605}{11} = 7700$

16. (a) The maximum strength of class X = H.C.F. (910, 1001)
 $1001 = 91 \times 10 + 91$
 $910 = 91 \times 10 + 0$

Hence the maximum strength of class X is 91.

17. (c) H.C.F. of 144, 384 and 240 is 48.

∴ Number of stacks

$$= \left(\frac{144}{48} + \frac{384}{48} + \frac{240}{48} \right) = 3 + 8 + 5 = 16$$

18. (b) L.C.M. of $\frac{a}{b}$ and $\frac{c}{d} = \frac{L.C.M.(a,c)}{H.C.F.(b,d)}$

$$\Rightarrow L.C.M. \text{ of } \frac{6}{14} \text{ and } \frac{2}{7}$$

$$\Rightarrow \frac{L.C.M.(6,2)}{H.C.F.(14,7)} = \frac{6}{7}$$

19. (d) $7 \times 13 + 13 = 104 = 23 \times 13$

The product of two prime numbers is composite.

∴ $7 \times 13 + 13$ is not a prime number.

20. (a) The H.C.F. of two co-prime numbers is 1.

21. (d) Not available

22. (b) Not available

23. (c) Not available

24. (d) Not available

25. (a) Not available

26. (b) All the three bulbs glow at once at 8 a.m.
The time when they glow simultaneously again = L.C.M. (24, 36, 54) seconds = 216 seconds = 3 minutes 36 seconds
∴ The time when the three bulbs glow together again is at 8 : 03 : 36 a.m.

27. (a) Let us find H.C.F. of 120 and 224.
 $224 = 120 \times 1 + 104$

$$120 = 104 \times 1 + 16$$

$$104 = 16 \times 6 + 8 \text{ and } 16 = 8 \times 2 + 0$$

Thus, H.C.F.

$$(224, 120) = 8.$$

Now, find the H.C.F. of 8 and the third number 256.

$$256 = 8 \times 32 + 0$$

$$\text{i.e., H.C.F. } (256, 8) = 8$$

Hence, the largest required number is 8.

28. (c) Not available

29. (b) Not available

30. (b) Not available

31. (c) Not available

32. (b) Not available

33. (c) Not available

34. (a) Not available

35. (c) Not available

36. (b) Not available

37. (a) Not available

38. (b) $3465 = 3^2 \times 5 \times 7 \times 11$
 $5460 = 22 \times 3 \times 5 \times 7 \times 13$
∴ L. C. M. (3465, 5460)
 $= 2^2 \times 3^2 \times 5 \times 7 \times 11 \times 13 = 180180$

39. (d) The two numbers are 480 and 672.
Their L.C.M. = 3360.
∴ $H.C.F. = \frac{\text{Product of the numbers}}{L.C.M.}$

40. (a) $5474 = 2 \times 7 \times 17 \times 23$
 $9775 = 5^2 \times 17 \times 23$
 $11730 = 2 \times 3 \times 5 \times 17 \times 23$
∴ H. C. F. (5474, 9775, 11730)
 $= 17 \times 23 = 391$ and

$$\begin{aligned} &\text{L. C. M.}(5474, 9775, 11730) \\ &= 2 \times 3 \times 5^2 \times 7 \times 17 \times 23 = 410550 \end{aligned}$$

41. (b) Not available

42. (b) π is an irrational number.

$\frac{22}{7}$ is the nearest value of π . Apart from $\frac{22}{7}$, π also has other nearest values

43. (a) Not available

44. (b) Not available

45. (d) Not available

46. (d) The L.C.M. of 40 and 60 will give the number of minutes after which the two bells will ring together again.

$$\text{Now, } 40 = 2^3 \times 5$$

$$60 = 2^2 \times 3 \times 5$$

$$\therefore \text{L. C. M. } (40, 60)$$

$$= 2^3 \times 3 \times 5 = 120$$

Hence, the two bells ring together again after 120 minutes i.e., after 2 hours i.e., at 11: 00 a.m.

47. (d) Not available