MATHS

BOOKS - NCERT EXEMPLAR MATHS (HINGLISH)

REAL NUMBERS

Real Numbers

1. For some integer m, every even integer is of the form

A. m

B. $m + 1$

C. $2m$

D. $2m + 1$

Answer: C

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2. For some integer q, every odd integer is of the form

A. q

B. $q+1$

C. $2q$

D. $2q+1$

Answer: D

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3. n^2-1 is divisible by 8, if n is

A. an integer

B. a natural number

C. an odd number

D. an even number

Answer: C

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4. If HCF of 65 and 117 is expressible in the form $65m - 117$, then the value of m is

A. 4

B. 2

C. 1

D. 3

Answer: B

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5. The largest number which divides 70 and 125, leaving remainder 5 and 8 respectively, is

A. 13

B. 65

C. 875

D. 1750

Answer: A

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6. If two positive integers m and n are expressible in the form $m = pq^3$ and $n = p^3q^2$, where p, q are prime numbers, then HCF $(m,\ n) =$

A. pq

B. pq^2

C. p^3q^3

D. p^2q^2

Answer: B

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7. If two positive integers a and b are expressible in the form $a = pq^2$ and $b = p^3q$; $p,\ q$ being prime numbers, then LCM $(a,\ b)$ is

A. pq

B. p^2q^2

C. p^3q^2

D. p^3q^3

Answer: C

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8. The product of a non-zero rational number with an irrational number is always a/an

A. always irrational

B. always rational

C. rational or irrational

D. one

Answer: A

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9. What is the least number that is divisible by all the numbers 1 to 10

A. 10

B. 100

C. 504

D. 2520

Answer: D

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10. The decimal expansion of the rational number $\frac{14587}{1250}$ will terminate after how many decimal places?

A. one decimal place

B. two decimal places

C. three decimal places

D. four decimal places

Answer: D

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11. Write whether every positive integer can be of the form $4q + 2$ where q is an integer, Justify your answer

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12. The product of two consecutive integers is divisible by 2. Is this statement true or false. Give Reason?

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13. The product of any three consecutive natural numbers is divisible by 6 (True/false).

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14. Write whether the square of any positive integer can be of the form 3m+2, where m is a natural number. Justify answer.

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15. A positive integer is the form of 3q+1 q, being a natural number. Can you write its square in any form other than 3m+1 i.e. 3m or 3m+2 for some integer? Justify your answer.

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16. The number 525 and 3000 are both divisible only 3,5,15,25,75. What is HCF (525, 3000)? Justify your answer.

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17. Explain why $3 \times 5 \times 7 + 7$ is a composite number.

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18. Can two number have 18 as their HCF and 380 as their LCM? Give reason

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19. Without actually performing the long divison, find if $\frac{987}{10500}$ will have terminating or non-terminating (repeating) decimal expansion. Give reasons for your answer

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20. A rational number in its decimal expansion is 327.7081. What can you say about the prime factors of q, when this number is expressed in the from $\frac{p}{q}$? Give reason

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21. Prove that the square of any positive integer is of the form $4q$ or $4q+1$ for some integer q .

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22. Show that cube of any positive integer is of the form 4m, 4m+1 or 4m+3, for some integer m.

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23. Show that the square of any positive integer cannot of the form 5q+2 or 5q+3 for some integer q.

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24. Show that the square of any positive integer cannot be of the form 6m+2 or 6m+5 for some integer q.

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25. Show that the square of any odd integer is of the form 4m+1, for some integer m.

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26. If n is an odd positive integer, show that $\left(n^2-1\right)$ is divisible by 8.

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27. Prove that if $xandy$ are odd positive integers, then x^2+y^2 is even but not divisible by 4.

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28. Use Euclid division algorithm to find the HCF of 441, 567 and 693.

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29. Using Euclid's division algorithm, find the largest number that divides 1251, 9377 and 15628 leaving remainders 1, 2 and 3, respectively.

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30. Prove that $\sqrt{3}+\sqrt{5}$ is irrational

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31. Show that 12^n cannot end with the digits 0 or 5 for any natural number n

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32. In a morning walk, three persons step off together and their steps measure $40cm, 42cm$

and 45cm, respectively. What is the minimum distance each should walk so that each can cover thesame distance in complete steps?

A. 3520

B. 2520

C. 4520

D. 7520

Answer: B

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33. Write the denominator of the rational number $\frac{257}{5000}$ in the form $2^m \times 5^n$, where m, n and non-negative integers. Hence, write its decimal expansion without actual division.

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

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35. Show that the cube of a positive integer of the form $6q + r, q$ is an integer and r=0,1,2,3,4,5 is also of the form 6m+r

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36. Show that one and only one out of $n, n + 2$ or $, n + 4$ is divisible by 3, where n is any positive integer.

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37. Prove that one of every three consecutive positive integers is divisible by 3.

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38. For any positive integer n , prove that $n^3 - n$ divisible by 6.

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39. Show that one and only one out of $n, n+4, n+8, n+12$ and $n+16$ is divisible by 5, where n is any positive integer.

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