MATHS

BOOKS - NCERT MATHS (HINGLISH)

NUMBER SYSTEMS

Number Systems

1. Every rational number is ?

A. a natural number

B. an integer

C. a real number

D. a whole number

Answer: C

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2. Between two rational numbers

A. there is no rational number

B. there is exactly one rational number

C. there are infinitely many rational number

D. there are only rational numbers and no irrational numbers

Answer: C

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3. Decimal representation of a rational cannot be

A. terminating

B. non-terminating non- repeating

C. non-terminating repeating

D. none of these

Answer: B

4. The product of any two irrational numbers is

A. always an irrational number

B. always a rational number

C. always an integer

D. sometimes rational, sometimes irrational

Answer: D

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5. The decimal expansion of the number $\sqrt{2}$ is

A. a finite decimal

B. $1.41421\ldots.$.

C. terminating after 6 digits

D. non-terminating repeating

Answer: B

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6. Which of the following irrational ?

A. $\sqrt{\left(\frac{4}{9}\right)}$

B. $\frac{\sqrt{(12)}}{\sqrt{(3)}}$

C. $\sqrt{(7)}$

D. $\sqrt{(81)}$

Answer: C

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7. Which of the following is irrational?

A. 0.14

B. $0.14\overline{16}$

C. $0.\overline{1416}$

D. $0.40140014000014\ldots\ldots$

Answer: D

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8. Write a rational number between $\sqrt{2}$ and $\sqrt{3}$

A. $\left(\frac{\sqrt{2}+\sqrt{3}}{2}\right)$

B. $\left(\frac{\sqrt{2}.\sqrt{3}}{2}\right)$

C. 1.5

D. 1.6

Answer: C

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9. The value of $1.999.....$ In the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is

A. $\frac{19}{10}$

B. $\frac{1999}{1000}$

C. 2

D. $\frac{1}{9}$

Answer: C

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10. The value of $2\sqrt{3} + \sqrt{3}$ is

A. $2\sqrt{6}$

B. 6

C. $3\sqrt{3}$

D. $4\sqrt{6}$

Answer: C

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11. $\sqrt{10}.\ \sqrt{15}$ is equal to

A. $6\sqrt{5}$

B. $5\sqrt{6}$

C. $\sqrt{25}$

D. $10\sqrt{5}$

Answer: B

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12. The number obtained on rationalising the denominator of $\frac{1}{\sqrt{7}-2}$ is

A. $\frac{\sqrt{7}+2}{3}$

B. $\frac{\sqrt{2}-2}{3}$

C. $\frac{\sqrt{7}+2}{5}$

D. $\frac{\sqrt{7}+2}{45}$

Answer: A

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13. $\frac{1}{\sqrt{9}-\sqrt{8}}$ is equal?

A. $\frac{1}{2}(3-2\sqrt{2})$

B. $\frac{1}{3+2\sqrt{2}}$

C. $3-2\sqrt{2}$

D. $3+2\sqrt{2}$

Answer: D

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14. After rationalizing the denominator of $\frac{7}{3\sqrt{3}-2\sqrt{2}}$, we get the denominator as

A. 13

B. 19

C. 5

D. 35

Answer: B

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15. Find the value of $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$

A. $\sqrt{2}$

B. 2

C. 4

D. 8

Answer: B

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16. If $\sqrt{2} = 1.4142$, then $\sqrt{\frac{\sqrt{2}-1}{\sqrt{2}+1}}$ is equal to

A. 2. 4142.....

B. 5.8282.....

C. 0.4142.....

D. 0.1718.....

Answer: C

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17. $\sqrt[4]{\sqrt[3]{2^2}}$ equal to

A. $2^{-\frac{1}{6}}$

B. 2^{-6}

C. $2^{\frac{1}{6}}$

D. 2^6

Answer: C

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18. The product $\sqrt[3]{2}.\ \sqrt[4]{2}.\ \sqrt[12]{32}$ equal to

A. $\sqrt{2}$

B. 2

C. $\sqrt[12]{2}$

D. $\sqrt[12]{32}$

Answer: B

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19. The value of $\sqrt[4]{(81)^{-2}}$ is

A. $\frac{1}{9}$

B. $\frac{1}{3}$

C. 9

D. $-\frac{1}{9}$

Answer: A

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20. $(256)^{0.16} \times (256)^{0.09} = ?$

A. 4

B. 16

C. 64

D. -4

Answer: A

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21. which of the following is equal to x ?

A. $x^{\frac{12}{7}} - x^{\frac{5}{7}}$

B. $\sqrt[12]{\left(x^4\right)^{\frac{1}{3}}}$

C. $\left((x)^3\right)^{\frac{1}{3}}$

D. $x^{\frac{12}{7}} \times x^{\frac{7}{12}}$

Answer: C

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22. Let x and y be rational and irrational numbers , respectively. Is x+y necessarily an irrational number ?

A. True

B. False

C. Can not be determined

D. None of these

Answer: A

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23. If x is a rational number and y is an irrational number, then both $x + y \, and \, xy$ are necessarily rational both $x + y \, and \, xy$ are necessarily irrational xy is necessarily irrational, but $x + y$ can be either rational or

irrational $x + y$ is necessarily irrational, but xy can be either rational or irrational

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24. State whether the following statements is false ?

A. $\frac{\sqrt{2}}{3}$ is a rational number.

B. There are infinitely many rational between any two integers.

C. Number of rational numbers between 15 and 18 is infinite.

D. Rational are numbers which can be written in the form $\frac{p}{q}$, $q \neq 0$, p and q both are integers.

Answer: A

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25. Check which of the following numbers is rational .

A. $\sqrt{\frac{9}{27}}$

B. $\sqrt{196}$

C. $\left(1+\sqrt{5}\right)+\left(4+\sqrt{5}\right)$

D. 1.010010001...

Answer: B

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26. Find which of the variables x, y, z and u represent irrational numbers :(i) $x^2 = 5$ (ii) $y^2 = 9$(iii)$z^2 = 0.04$(iv) $u^2 = \frac{400}{4}$

A. z

B. y

C. x

D. u

Answer: C

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27. find three rational numbers between (i) –1 and –2 (ii) 0.1 and 0.11 (iii) 5/7 and 6/ 7 (iv) 1/4 and 1/ 5

A. -1 and -2

B. 0.1 and 0.11

C. $\frac{5}{7}$ and $\frac{6}{7}$

D. $\frac{1}{4}$ and $\frac{1}{5}$

Answer:

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28. Inset a rational number and an irrational number between the following

(i) 2 and 3 , (ii) 0 and 0.1, (iii) $\frac{1}{3}$ and $\frac{1}{2}$

(iv) $\frac{-2}{5}$ and $\frac{1}{2}$, (v) 0.15 and 0.16 , (iv) $\sqrt{6}$ and $\sqrt{3}$

(vii) 2.357 and 3.121 , (vii) .0001 and .001

(ix) 3.623623 and 0.484848 , (x) 3.375289 and 6.375738

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29. Represent the following numbers on the number line $7, 7.2, -\frac{3}{2}$ and $-\frac{12}{5}$

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30. Locate $\sqrt{10}$ and $\sqrt{17}$ on number line.

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31. Express the following in the form $\frac{P}{q}$ where p and q are integers and $q \neq 0$. (i) 0.2 , (ii)

0.888.... , (iii) $5.\bar{2}$ (iv) $0.\overline{001}$, (v) 0.2555.... ,(vi) $0.1\overline{34}$ (vii) 0.00323232..... ,(vii) 0.404040...

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32. Show that 0.142857142857..... $= \frac{1}{7}$.

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33. Simplify the following (i) $\sqrt{45} - 3\sqrt{20} + 4\sqrt{5}$ (ii) $\frac{\sqrt{24}}{8} + \frac{\sqrt{54}}{9}$ (iii) $\sqrt[4]{12} \times \sqrt[7]{6}$ (iv) $4\sqrt{28} \div 3\sqrt{7} \div \sqrt[3]{7}$ (v)

$3\sqrt{3}+2\sqrt{27}+\frac{7}{\sqrt{3}}$ (vi) $\left(\sqrt{3}-\sqrt{2}\right)^2$ (vii)

$\sqrt[4]{81}-8\sqrt[3]{216}+15\sqrt[5]{32}+\sqrt{225}$ (viii)

$\frac{3}{\sqrt{8}}+\frac{1}{\sqrt{2}}$ (ix) $\frac{2\sqrt{3}}{3}-\frac{\sqrt{3}}{6}$

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34. Rationalise the denominator of the following (i) $\frac{2}{3\sqrt{3}}$, (ii) $\frac{\sqrt{40}}{\sqrt{3}}$,(iii)$\frac{3+\sqrt{2}}{4\sqrt{2}}$ $(iv)\frac{16}{\sqrt{41}-5}$,(v)$\frac{2+\sqrt{3}}{2-\sqrt{3}}$, (vi)$\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}}$ (vii) $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$,(viii)$\frac{3\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$, (ix)$\frac{4\sqrt{3}+5\sqrt{2}}{\sqrt{48}+\sqrt{18}}$

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35. find the values of a and b in each of the following (i) $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a - 6\sqrt{3}$ (ii)

$\frac{3-\sqrt{5}}{3+2\sqrt{5}} = a\sqrt{5} - \left(\frac{19}{11}\right)$ (iii)

$\frac{\sqrt{2}+\sqrt{3}}{3\sqrt{2}-2\sqrt{3}} = 2 - b\sqrt{6}$ (iv)

$\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + \left(\frac{7}{11}\right)b\sqrt{5}$

A. $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a - 6\sqrt{3}$

B. $\frac{3-\sqrt{5}}{3+2\sqrt{5}} = a\sqrt{5} - \frac{19}{11}$

C. $\frac{\sqrt{2}+\sqrt{3}}{3\sqrt{2}-2\sqrt{3}} = 2 - b\sqrt{6}$

D. $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + \frac{7}{11}\sqrt{5}b$

Answer:

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36. if $a = 2 + \sqrt{3}$, then find the value of $\left(a - \frac{1}{a}\right)$.

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37. Ratonalise the denominator in each of the following and hence evalute by taking

$\sqrt{2} = 1.414, \sqrt{3} = 1.732$ and $\sqrt{5} = 2.236$

upto three places of decimal.

$(i)\dfrac{4}{\sqrt{3}}$, (ii) $\dfrac{6}{\sqrt{6}}$,$(iii)\dfrac{\sqrt{10}-\sqrt{5}}{2}$

$(iv)\dfrac{\sqrt{2}}{2+\sqrt{2}}$,(v) $\dfrac{1}{\sqrt{3}+\sqrt{2}}$

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38. simplify

$(i)\left(1^3+2^3+3^3\right)^{\frac{1}{2}}$ (ii) $\left(\dfrac{3}{5}\right)^4\left(\dfrac{8}{5}\right)^{-12}\left(\dfrac{32}{5}\right)^6$,

(iii) $\left(\dfrac{1}{27}\right)^{-\frac{2}{3}}$

(vi) $\left[\left((625)^{-\frac{1}{2}}\right)\right)^{-\frac{1}{4}}\Bigg]^2$,(v) $\dfrac{9^{\frac{1}{3}}\times 27^{-\frac{1}{2}}}{3^{\frac{1}{6}}\times 3^{-\frac{2}{3}}}$ (vi)

$64^{-\frac{1}{3}}\left[64^{\frac{1}{3}}-64^{\frac{2}{3}}\right]$

$$\frac{8^{\frac{1}{3}} \times 16^{\frac{1}{3}}}{32^{-\frac{1}{3}}}$$

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39. Express $0.6+0.\bar{7}+0.4\bar{7}$ in the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$.

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40. Simplify

$$\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}}-\frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}}-\frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$$

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41. if $\sqrt{2}=1.414$ and $\sqrt{3}=1.732$then find the value of

$$\frac{4}{3\sqrt{3}-2\sqrt{2}}+\frac{3}{3\sqrt{3}+2\sqrt{2}}$$

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42. If $a = \frac{3+\sqrt{5}}{2}$ then find the vaule of $a^2 + \frac{1}{a^2}$

A. 5

B. 6

C. 7

D. 8

Answer: C

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43. If $x = \dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ then find the value of $x^2 + y^2$?

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44. Simplify: $(256)^{-\left(4^{\left(\frac{-3}{2}\right)}\right)}$

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45. Simplify:

$$\frac{4}{(216)^{-\frac{2}{3}}} + \frac{1}{(256)^{-\frac{3}{4}}} + \frac{2}{(243)^{-\frac{1}{5}}}$$

A. 214

B. 215

C. 216

D. 217

Answer: A

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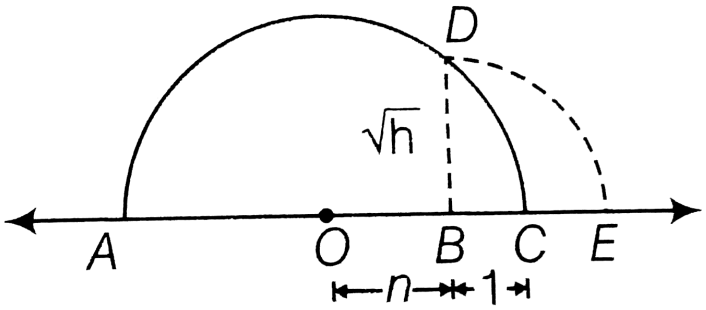
Short Answer Type Questions

1. Represent geometically the following numbers on the number line

$\sqrt{4.5}$



A. $\sqrt{4.5}$

B. $\sqrt{5.6}$

C. $\sqrt{8.1}$

D. $\sqrt{2.3}$

Answer:

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