

DAV PUBLIC SCHOOL, POKHARIPUT
SUBJECT-MATHEMATICS, CLASS-IX
CHAPTER-1 (NUMBER SYSTEM)
WORKSHEET(BASIC)

TIME-45 Min

MAX.MARKS:20

Choose the correct option: (2 X1=2)

1. Every rational number is
a. A natural number b. an integer c. a real number d. a whole number
2. Between two rational numbers
a. There is no rational number c. There are infinitely many rational number
b. There is exactly one rational number. d. there only rational numbers and no irrational numbers.

Fill in the blanks: (2 X1=2)

3. The decimal expansion of $\sqrt{7}$ is _____
4. The only even prime number is ____

Answer the following: (2 X1=2)

5. Find an irrational number between $\frac{1}{7}$ and $\frac{2}{7}$
6. Find the rationalising factor for $\frac{1}{3+\sqrt{5}}$

Short Answer Type Question –I (2 X 2=4)

7. Express $0.1\overline{25}$ in the form of $\frac{p}{q}$ where p and q are integers and $q \neq 0$.
8. Locate $\sqrt{3}$ on the number line.

Short Answer Type Question –II (2 X 3=6)

9. If $a = 2 + \sqrt{3}$, find the value of $a - \frac{1}{a}$
10. Simplify $\frac{\sqrt{25}}{\sqrt[3]{64}} + \left(\frac{256}{625}\right)^{-\frac{1}{4}} + \frac{1}{\left(\frac{64}{125}\right)^{\frac{2}{3}}}$

Long answer type question: (1 X 4= 4)

11. Evaluate $\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} + \dots + \frac{1}{\sqrt{9}+\sqrt{8}}$
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DAV PUBLIC SCHOOL, POKHARIPUT
SUBJECT-MATHEMATICS, CLASS-IX
CHAPTER-1 (NUMBER SYSTEM)
WORSHEET(STANDARD)

TIME-45 Min

MAX.MARKS:20

Choose the correct option: (2 X1=2)

1. A rational number between $\sqrt{2}$ and $\sqrt{3}$ is
a. $\frac{\sqrt{3}+\sqrt{2}}{2}$ b. 1.52 c. 1.92 d. $\frac{\sqrt{3}\sqrt{2}}{2}$
2. Decimal expansion of a rational number cannot be
a. Terminating b. non-terminating c. non-terminating repeating d. non-terminating non-repeating

Fill in the blanks: (2 X1=2)

3. The product of $\sqrt[3]{2}$ $\sqrt[4]{2}$ $\sqrt[12]{32}$ is _____
4. The value of $\frac{\sqrt{112}-\sqrt{80}}{\sqrt{20}-\sqrt{28}}$ is _____

Answer the following: (2 X1=2)

5. Is product of two irrational numbers always irrational? Justify?
6. Which is greater $\sqrt[3]{3}$ or $\sqrt[4]{4}$? *justify?*

Short Answer Type Question –I (2X 2=4)

7. Simplify $\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225}$
8. Simplify $(256)^{-\left(4\frac{-3}{2}\right)}$

Short Answer Type Question –II (2X 3=6)

9. Locate $3\sqrt{5}$ on the number line.
10. If $a = 3 + 2\sqrt{2}$, then find the value of $a^3 + \frac{1}{a^3}$

Long answer type question: (1 X 4= 4)

11. Find the value of a and b : $\frac{7+\sqrt{5}}{7-\sqrt{5}} + \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + \frac{7}{11}\sqrt{5}b$
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DAV PUBLIC SCHOOL, POKHARIPUT
SUBJECT-MATHEMATICS, CLASS-IX
CHAPTER-1 (NUMBER SYSTEM)
WORSHEET(ADVANCE)

TIME-45 Min

MAX.MARKS:20

Choose the correct option: (2 X1=2)

- The value of $2.999\dots$ in the form of $\frac{p}{q}$ where p and q are integers and $q \neq 0$, is
a. $\frac{2999}{1000}$ b. $\frac{19}{10}$ c. 3 d. $\frac{26}{9}$
- The value of $\sqrt[5]{\sqrt[4]{3^2}}$ is equal to
a. 3^{10} b. $\frac{1}{3^{-10}}$ c. $3^{\frac{1}{10}}$ d. 3^{-10}

Fill in the blanks: (2 X1=2)

- The value of $\frac{4\sqrt{3}+5\sqrt{2}}{\sqrt{48}+\sqrt{18}}$ is _____
- The value of $2^3\sqrt{40} + 3^3\sqrt{625} - 4^3\sqrt{320}$ is _____

Answer the following: (2 X1=2)

- If $a = b^{2x}$, $b = c^{2y}$, $c = a^{2z}$, find the value of xyz
- Show that: $\frac{x^{a(b-c)}}{x^{b(a-c)}} \div \left(\frac{x^b}{x^a}\right)^c = 1$

Short Answer Type Question –I (2X 2=4)

- If $x = 9 - 4\sqrt{5}$, find the value of $\sqrt{x} - \frac{1}{\sqrt{x}}$
- If $2^x = 3^y = 6^{-z}$, prove that $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 0$

Short Answer Type Question –II (2X 3=6)

- Find the value of $\frac{2(\sqrt{2}+\sqrt{6})}{3\sqrt{2+\sqrt{3}}}$
- Find the value of $\frac{\sqrt{\sqrt{5}+2}}{\sqrt{\sqrt{5}+1}} + \frac{\sqrt{\sqrt{5}-2}}{\sqrt{\sqrt{5}+1}}$

Long answer type question: (1 X 4= 4)

- If $x = \frac{1}{2-\sqrt{3}}$, find the value of $x^3 - 2x^2 - 7x + 4$
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DAV PUBLIC SCHOOL, POKHARIPUT
SUBJECT-MATHEMATICS, CLASS-IX
CHAPTER-1 (NUMBER SYSTEM)
WORSHEET(HOTS)

1. If $a = 5 + 2\sqrt{6}$ and $b = \frac{1}{a}$ then find the value of $a^2 + b^2$
 2. If $x = 2 + \sqrt{3}$, find the value of $x^2 + \frac{1}{x^2}$
 3. Rationalise the denominator $\frac{1}{\sqrt{2}+\sqrt{3}+\sqrt{5}}$
 4. Rationalise the denominator and simplify: $\frac{y^2}{x+\sqrt{x^2+y^2}}$
 5. If $x = 9 - 4\sqrt{5}$, find the value of $\sqrt{x} - \frac{1}{\sqrt{x}}$
 6. Locate $5\sqrt{3} + 2$ on the number line.
 7. Find the value of $\frac{4}{216^{\frac{-2}{3}}} + \frac{1}{256^{\frac{-3}{4}}} + \frac{2}{243^{\frac{-1}{5}}}$
 8. If $x = 3 - 2\sqrt{2}$, find the value of $x^4 + \frac{1}{x^4}$
 9. If $x = (2 + \sqrt{5})^{\frac{1}{2}} + (2 - \sqrt{5})^{\frac{1}{2}}$ and $y = x = (2 + \sqrt{5})^{\frac{1}{2}} - (2 - \sqrt{5})^{\frac{1}{2}}$, evaluate $x^2 + y^2$
 10. If $x = \frac{\sqrt{a+2b}+\sqrt{a-2b}}{\sqrt{a+2b}-\sqrt{a-2b}}$, show that $bx^2 - ax + b = 0$
 11. Simplify $\frac{\sqrt{a+x}+\sqrt{a-x}}{\sqrt{a+x}-\sqrt{a-x}}$ and find its value when $x = \frac{2ab}{1+b^2}$
 12. If $x = \frac{5-\sqrt{21}}{2}$ prove that $\left(x^3 + \frac{1}{x^3}\right) - 5\left(x^2 + \frac{1}{x^2}\right) + \left(x + \frac{1}{x}\right) = 0$
 13. Find the value of a and b : $\frac{1+\sqrt{48}}{5\sqrt{3}+4\sqrt{2}-\sqrt{72}-\sqrt{108}+\sqrt{8}+2} = a + b\sqrt{3}$
 14. Simplify : $\frac{x+\sqrt{x^2-1}}{x-\sqrt{x^2-1}} - \frac{(x-\sqrt{x^2-1})}{x+\sqrt{x^2-1}}$
 15. Express the following with rational denominator: $\frac{14}{\sqrt{6}-\sqrt{5}-\sqrt{11}}$
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