

INTERNATIONAL INDIAN SCHOOL

BURAI DAH

Worksheet For The Academic Year 2025-26

CLASS: IX SUBJECT: Mathematics DATE: 22/04/2025

LESSON-1 Number System

1) State True or False:

- a) 0 is a rational number.
- b) Every rational number is an integer.
- c) Every real number is either rational or irrational.

2) Represent $\sqrt{2}$, $\sqrt{3}$ & $\sqrt{5}$ on a number line.

3) Write the decimal expansion and its kind for:

- a) $\frac{4}{13}$ b) $\frac{34}{100}$ c) $5\frac{1}{8}$

4) Express in the form $\frac{p}{q}$.

- a) 0.2525..... b) 0.444.....

5) Simplify:

- a) $2\sqrt{3} \times 3\sqrt{3}$ b) $(3 - \sqrt{2})(3 + \sqrt{2})$ c) $4\sqrt{21} \div 2\sqrt{3}$
d) $(\sqrt{2} + \sqrt{5})^2$ e) $(\sqrt{5} + \sqrt{2})(\sqrt{3} - \sqrt{7})$
f) $5\sqrt{2} + 10\sqrt{3} - 7\sqrt{2} - 7\sqrt{3}$

6) Rationalise:

- a) $\frac{5}{\sqrt{3} - \sqrt{5}}$ b) $\frac{\sqrt{2} - 1}{\sqrt{2} + 1}$ c) $\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ d) $\frac{5}{2 + \sqrt{5}}$

7) Simplify:

- a) $3^{\frac{1}{2}} \times 3^{\frac{3}{2}}$ b) $14^{\frac{1}{5}} \times 5^{\frac{1}{5}}$ c) $(\sqrt{16})^{\frac{1}{2}}$ d) $(243)^{\frac{1}{5}}$ e) $(\frac{625}{1296})^{-\frac{3}{4}}$

8) Find the value of $\frac{8}{\sqrt{3} + \sqrt{5}}$ if $\sqrt{3} = 1.732$ and $\sqrt{5} = 2.236$

9) Find the value of (i) $(a^b + b^a)^{-1}$ (ii) $(a^a + b^b)^{-1}$ if $a = 2$ & $b = 3$.

10) Write two irrational numbers between 1.732 and 2.236.

11) Write two irrational numbers between $\frac{1}{4}$ and $\frac{1}{2}$.

12) The decimal expansion of $\sqrt{3}$ will be _____.

13) The decimal expansion of a rational number is _____ or _____ .

- 14) The decimal expansion of $\frac{1}{11} = 0.0909....$, can you predict the decimal form of $\frac{3}{11}$ and $\frac{5}{11}$.
- 15) Find the number of repeated decimals in the decimal expansion of $\frac{3}{7}$.
- 16) Classify the following into rational or irrational:
 a) 0.5918 b) 0.010010001..... c) $\sqrt{289}$ d) $\sqrt{19}$
- 17) The collection of rational and irrational numbers form _____ numbers.
- 18) Find the value of 'a' and 'b' if
 a) $\frac{5+\sqrt{6}}{5-\sqrt{6}} = a + b\sqrt{6}$ b) $\frac{1-\sqrt{3}}{1+\sqrt{3}} = a + b$ c) $\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}} = a + b\sqrt{15}$
 d) $\frac{30}{4\sqrt{3}+3\sqrt{2}} = a\sqrt{3} - b\sqrt{2}$
- 19) Evaluate $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}}$, given $\sqrt{10} = 3.162$
- 20) Find the value of $\frac{1}{\sqrt{2}+1}$ using the value of $\sqrt{2}$.

ANSWERS

- 4) a) $\frac{25}{99}$ b) $\frac{4}{9}$
- 5) a) 18 b) 7 c) $2\sqrt{7}$ d) $7 + 2\sqrt{10}$ f) $3\sqrt{3} - 2\sqrt{2}$
- 7) a) 9 b) $70^{\frac{1}{5}}$ c) 2 d) 3 e) $\frac{216}{125}$
- 8) 2.016
- 9) a) $\frac{1}{17}$ b) $\frac{1}{31}$
- 15) 6 digits
- 18) a) $a = \frac{31}{19}$, $b = \frac{10}{19}$ b) $a = -2$, $b = \sqrt{3}$ c) $a = 4$, $b = 1$
 d) $a = 4$, $b = 3$
- 19) 4.441(approximately)
- 20) 0.414