

INTERNATIONAL INDIAN SCHOOL – TABUK

Formative Assessment – I – Mathematics – Class IX

NUMBER SYSTEM

Name : _____

Date : _____

Multiple Choice Questions

- Which of the following is true?
 - Every whole number is a natural number
 - Every integer is a rational number
 - Every rational number is an integer
 - Every integer is a whole number
- For positive real numbers a and b , which of the following is false?
 - $\sqrt{ab} = \sqrt{a} \sqrt{b}$
 - $(a + \sqrt{b})(a - \sqrt{b}) = a^2 - b$
 - $\frac{\sqrt{a}}{\sqrt{b}} = \frac{\sqrt{a}}{\sqrt{b}}$
 - $(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b}) = a + b$
- Out of the following, the irrational number is
 - $1.\bar{5}$
 - $1.2\bar{77}$
 - π
 - $2.4\bar{77}$
- To rationalise the denominator of $\frac{1}{\sqrt{a} + b}$, we multiply this by
 - $\frac{1}{\sqrt{a} + b}$
 - $\frac{\sqrt{a} - b}{\sqrt{a} - b}$
 - $\frac{1}{\sqrt{a} - b}$
 - $\frac{\sqrt{a} + b}{\sqrt{a} + b}$
- The number of rational numbers between $\sqrt{3}$ and $\sqrt{5}$ is
 - One
 - 3
 - None
 - Infinitely many
- If we add two irrational numbers, the resulting number
 - is always an irrational number
 - is always a rational number
 - may be a rational or an irrational number
 - always an integer
- The rationalising factor of $7 - 2\sqrt{3}$ is
 - $7 + 2\sqrt{3}$
 - $7 - 2\sqrt{3}$
 - $4 + 2\sqrt{3}$
 - $5 + 2\sqrt{3}$
- If $\frac{1}{7} = 0.\overline{142857}$, then $\frac{4}{7}$ equals
 - $0.\overline{428571}$
 - $0.\overline{285718}$
 - $0.\overline{857142}$
 - $0.\overline{571428}$
- The value of n for which $\sqrt{n}$ be a rational number is
 - 2
 - 4
 - 3
 - 5
- $\frac{3\sqrt{12}}{6\sqrt{27}}$ equals
 - $\frac{1}{2}$
 - $\sqrt{3}$
 - $\frac{1}{3}$
 - $\sqrt{2}$

11. $(3 + \sqrt{3})(3 - \sqrt{2})$ equals

A. $9 - 5\sqrt{2} - \sqrt{6}$

B. $9 - \sqrt{6}$

C. $3 + \sqrt{2}$

D. $9 - 3\sqrt{2} + 3\sqrt{3} - \sqrt{6}$

12. The arrangement of $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$ in ascending order is

A. $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$

B. $\sqrt{5}$, $\sqrt{3}$, $\sqrt{2}$

C. $\sqrt{2}$, $\sqrt{5}$, $\sqrt{3}$

D. $\sqrt{3}$, $\sqrt{2}$, $\sqrt{5}$

13. If m and n are two natural numbers and $m^n = 32$, then n^m is

A. 5^2

B. 5^3

C. 5^{10}

D. 5^{12}

14. If $\sqrt{10} = 3.162$, then the value of $\frac{1}{\sqrt{10}}$ is

A. 0.3162

B. 3.162

C. 31.62

D. 316.2

15. If $\left(\frac{3}{4}\right)^6 \times \left(\frac{16}{9}\right)^5 = \left(\frac{4}{3}\right)^{x+2}$, then the value of x is

A. 4

B. -2

C. 2

D. 6

Short / Long Questions

1. Prove that $\sqrt{5} - \sqrt{3}$ is not a rational number.

2. Arrange the following in descending order of magnitude: $\sqrt[3]{90}$, $\sqrt[4]{10}$, $\sqrt{6}$

3. Simplify the following: $(4\sqrt{3} - 2\sqrt{2})(3\sqrt{2} + 4\sqrt{3})$

4. If $a = 6 - \sqrt{35}$, find the value of $a^2 + \frac{1}{a^2}$

5. Simplify, by rationalising the denominator

$$\frac{2\sqrt{6}}{\sqrt{2} + \sqrt{3}} + \frac{6\sqrt{2}}{\sqrt{6} + \sqrt{3}} - \frac{8\sqrt{3}}{\sqrt{6} + \sqrt{2}}$$

6. If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, find the value of $x^2 + y^2 + xy$

7. If $\frac{5+2\sqrt{3}}{7+\sqrt{3}} = a - \sqrt{3}b$, find a and b where a and b are rational numbers.

8. Evaluate:

$$\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} + \dots + \frac{1}{\sqrt{9}+\sqrt{8}}$$

9. If $x = \frac{1}{2+\sqrt{3}}$, find the value of $2x^3 - 7x^2 - 2x + 1$