



**ÉCOLE GLOBALE**  
INTERNATIONAL GIRLS' SCHOOL  
Dehradun

**HOLIDAY HOMEWORK**  
**CLASS IX CBSE**

**SUMMER BREAK 2018-19**  
**SUBJECT : MATHEMATICS**

**Project:**

**1. Prepare a presentation on any one of the following topics assigned and bring the project in a pen drive/ CD.**

**(a) History of Indian mathematicians which includes their contribution, relevant pictures.**

**(b) History of Zero with relevant pictures.**

**(c) Time line on history of mathematics with relevant pictures.**

**(d) Mathematics in daily life.( architecture, music, spirituality etc)**

**(e) Mathematics in nature.**

**2. Complete the following activities from Mathematics Lab Manual:**

**(a) Activity 1( square roots of natural numbers)**

**(b) Activity 6 ( Factorization of polynomials)**

## MCO WORKSHEET -1 ( Number System)

- Which of the following is true?  
(a) Every whole number is a natural number (b) Every integer is a rational number  
(c) Every rational number is an integer (d) Every integer is a whole number
- For Positive real numbers a and b, which is not true?  
(a)  $\sqrt{ab} = \sqrt{a}\sqrt{b}$  (b)  $(a+\sqrt{b})(a-\sqrt{b}) = a^2 - b$   
(c)  $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$  (d)  $(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b}) = a + b$
- Out of the following, the irrational number is  
(a)  $1.\bar{5}$  (b)  $2.4\bar{77}$  (c)  $1.2\bar{77}$  (d)  $\pi$
- To rationalize the denominator of  $\frac{1}{\sqrt{a+b}}$ , we multiply this by  
(a)  $\frac{1}{\sqrt{a+b}}$  (b)  $\frac{1}{\sqrt{a-b}}$  (c)  $\frac{\sqrt{a+b}}{\sqrt{a+b}}$  (d)  $\frac{\sqrt{a-b}}{\sqrt{a-b}}$
- The number of rational numbers between  $\sqrt{3}$  and  $\sqrt{5}$  is  
(a) One (b) 3 (c) none (d) infinitely many
- If we add two irrational numbers, the resulting number  
(a) is always an irrational number (b) is always a rational number  
(c) may be a rational or an irrational number (d) always an integer
- The rationalizing factor of  $7-2\sqrt{3}$  is  
(a)  $7-2\sqrt{3}$  (b)  $7+2\sqrt{3}$  (c)  $5+2\sqrt{3}$  (d)  $4+2\sqrt{3}$
- If  $\frac{1}{7} = 0.\overline{142857}$ , then  $\frac{4}{7}$  equals  
(a)  $0.\overline{428571}$  (b)  $0.\overline{571428}$  (c)  $0.\overline{857142}$  (d)  $0.\overline{285718}$
- The value of n for which  $\sqrt{n}$  be a rational number is  
(a) 2 (b) 4 (c) 3 (d) 5
- $\frac{3\sqrt{12}}{6\sqrt{27}}$  equals  
(a)  $\frac{1}{2}$  (b)  $\sqrt{2}$  (c)  $\sqrt{3}$  (d)  $\frac{1}{3}$
- $(3+\sqrt{3})(3-\sqrt{2})$  equals  
(a)  $9-5\sqrt{2}-\sqrt{6}$  (b)  $9-\sqrt{6}$  (c)  $3+\sqrt{2}$  (d)  $9-3\sqrt{2}+3\sqrt{3}-\sqrt{6}$

**WORKSHEET – 2 (Solve and show the steps also)**

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

2 If a and b are rational numbers and  $\frac{4+3\sqrt{5}}{4-3\sqrt{5}} = a + b\sqrt{5}$ , find the values of a and b.

3 If a and b are rational numbers and  $\frac{2+\sqrt{3}}{2-\sqrt{3}} = a + b\sqrt{3}$ , find the values of a and b.

4 If a and b are rational numbers and  $\frac{\sqrt{11}-\sqrt{7}}{\sqrt{11}+\sqrt{7}} = a - b\sqrt{77}$ , find the values of a and b.

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

6 Rationalize the denominator of the following:

(i)  $\frac{2}{\sqrt{3}-\sqrt{5}}$  (ii)  $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$  (iii)  $\frac{6}{\sqrt{5}+\sqrt{2}}$  (iv)  $\frac{1}{8+5\sqrt{2}}$

(v)  $\frac{3-2\sqrt{2}}{3+2\sqrt{2}}$  (vi)  $\frac{\sqrt{3}-1}{\sqrt{3}+1}$  (vii)  $\frac{4}{\sqrt{7}+\sqrt{3}}$  (viii)  $\frac{1}{5+3\sqrt{2}}$

7 Rationalise the denominator of the following:

(i)  $\frac{2}{3\sqrt{3}}$  (ii)  $\frac{16}{\sqrt{41}-5}$  (iii)  $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}}$

(iv)  $\frac{\sqrt{40}}{\sqrt{3}}$  (v)  $\frac{3+\sqrt{2}}{4\sqrt{2}}$  (vi)  $\frac{2+\sqrt{3}}{2-\sqrt{3}}$

(vii)  $\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}}$  (viii)  $\frac{3\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$  (ix)  $\frac{4\sqrt{3}+5\sqrt{2}}{\sqrt{48}+\sqrt{18}}$

8 Evaluate the following expressions:

$$(i) \left( \frac{625}{81} \right)^{-\frac{1}{4}} \quad (ii) 27^{\frac{2}{3}} \times 27^{\frac{1}{3}} \times 27^{-\frac{4}{3}} \quad (iii) (6.25)^{\frac{3}{2}}$$

$$(iv) (0.000064)^{\frac{5}{6}} \quad (v) (17^2 - 8^2)^{\frac{1}{2}}$$

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

10 Simplify, by rationalizing the denominator  $\frac{2\sqrt{6}}{\sqrt{2} + \sqrt{3}} + \frac{6\sqrt{2}}{\sqrt{6} + \sqrt{3}} - \frac{8\sqrt{3}}{\sqrt{6} + \sqrt{2}}$

Simplify, by rationalizing the denominator

$$11 \frac{1}{3 - \sqrt{8}} - \frac{1}{\sqrt{8} - \sqrt{7}} + \frac{1}{\sqrt{7} - \sqrt{6}} - \frac{1}{\sqrt{6} - \sqrt{5}} + \frac{1}{\sqrt{5} - 2}$$