**HOLIDAY HOMEWORK**

**CLASS IX**

***CHAPTER 1***

**1. Find six rational numbers between 3 and 4.**

**2. Find five rational numbers between** $\frac{3}{5} and \frac{4}{5}$

**3. Show how** $\sqrt{5}$ **can be represented on the number line.**

**4. Write the following in decimal form and say what kind of decimal expansion each has : i)** $\frac{36}{100}$ **ii)** $\frac{1}{11}$ **iii)** $\frac{3}{13}$ **iv)** $\frac{2}{11}$

**5. Express the following in the form** $\frac{p}{q}$ **, where p and q are integers and q**$\ne $**0**

 **i)** $0.\overbar{6}$ **ii)** $0.\overbar{001}$

**6. Write three numbers whose decimal expansions are non-terminating and non-recurring.**

**7. Visualise 3.765 on the number line , using successive magnification.**

**8. Visualise** $4.\overbar{26}$ **on the number line , up to 4 decimal places.**

**9. Simplify each of the following expressions :**

**i)**$\left(3+\sqrt{3}\right)\left(2+\sqrt{2}\right)$ **ii)** $\left(3+\sqrt{3}\right)\left(3-\sqrt{3}\right)$

**iii)** $\left(\sqrt{5}+\sqrt{2}\right)^{2}$ **iv)** $\left(\sqrt{5}-\sqrt{2}\right)\left(\sqrt{5}+\sqrt{2}\right)$

**10. Rationalise the denominators of the following :**

**i)** $\frac{1}{\sqrt{7}-\sqrt{6}}$ **ii)** $\frac{1}{\sqrt{5}+\sqrt{2}}$

**11. Find i)** $64^{^{1}/\_{2}}$ **ii)**$ 32^{^{1}/\_{5}}$

**12. Find i)** $32^{^{2}/\_{5}}$ **ii)** $16^{^{3}/\_{4}}$

***CHAPTER 2***

**1. Find p(0), p(1) and p(2) for each of the following polynomials :**

**i)** $p\left(y\right)=y^{2}-y+1$ **ii)** $p\left(t\right)=2+t+2t^{2}-t^{3}$

**2. Find zero of the polynomial in each of the following cases :**

**i) p(x)=x+5 ii) p(x)=2x+5 iii) p(x)=3x**

**3. Find the remainder when** $x^{3}+3x^{2}+3x+1$ **is divided by** $x+1$

**4. Find the remainder when** $x^{3}-ax^{2}+6x-a$ **is divided by** $x-a$

**5. Determine which of the following polynomials has (x+1) a factor :**

 **i)** $x^{3}+x^{2}+x+1$ **ii)** $x^{4}+x^{3}+x^{2}+x+1$

**6. Find the value of** $k$**, if** $x-1$ **is a factor of** $p(x)$ **in each of the following cases :**

 **i)** $p\left(x\right)=x^{2}+x+k$ **ii)**$p\left(x\right)=kx^{2}-3x+k$

**7. Factorise :**

 **i)** $2x^{2}+7x+3$ **ii)** $3x^{2}-x-4$

**8. Factorise :**

 **i)** $x^{3}-3x^{2}-9x-5$ **ii)** $x^{3}+13x^{2}+32x+20$

**9. Use suitable identities find the product (x+8)(x-10)**

**10. Evaluate the following products without multiplying directly :**

 **i) 95 x 96 ii) 104 x 96**

**10. Expand each of the following using suitable identities :**

 **i)** $\left(x+2y+4z\right)^{2}$ **ii)** $\left(3a-7b-c\right)^{2}$

**11. Factorise** $4x^{2}+9y^{2}+16z^{2}+12xy-24yz-16xz$

**12. Evaluate the following using suitable identities :**

 **i)** $\left(102\right)^{3}$ **ii)** $\left(998\right)^{3}$

**13. Factorise each of the following :**

 **i)** $27-125a^{3}-135a+225a^{2}$ **ii)** $64a^{3}-27b^{3}-144a^{2}b+108ab^{2}$

**14. Verify** $x^{3}+y^{3}=\left(x+y\right)\left(x^{2}-xy+y^{2}\right)$

**15. Factorise** $27x^{3}+y^{3}+z^{3}-9xyz$