Subject – Maths. Class- 9 Topic – Ch. 2 Polynomials

Refer to Video #7 and solve the following exercise:

Prectice Exercise 2.5

1. Use suitable identities to find the following products :
   (i) $(x + 4)(x + 10)$ (ii) $(x + 8)(x - 10)$
   (iii) $(3x + 4)(3x - 5)$ (iv) $\left(y^2 + \frac{3}{2}\right)\left(y^2 - \frac{3}{2}\right)$
   (v) $(3 - 2x)(3 + 2x)$
2. Evaluate the following products without multiplying directly :
   (i) 103×107 (ii) 95×96
   (iii) 104×96
3. Factorise the following using appropriate identities
   (i) $9x^2 + 6xy + y^2$ (ii) $4y^2 - 4y + 1$
   (iii) $x^2 - \frac{y^2}{100}$
4. Expand each of the following using suitable identities :
   (i) $(x + 2y + 4z)^2$ (ii) $(2x - y + z)^2$
   (iii) $(-2x + 3y + 2z)^2$ (iv) $(3a - 7b - c)^2$
   (v) $(-2x + 5y - 3z)^2$ (vi) $\left[\frac{1}{4}a - \frac{1}{2}b + 1\right]^2$
5. Factorise :
   (i) $4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz$
   (ii) $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz$
6. Write the following cubes in the expanded form :
   (i) $(2x + 1)^3$ (ii) $(2a - 3b)^3$
   (iii) $\left[\frac{3}{2}x + 1\right]^3$ (iv) $\left[x - \frac{2}{3}y\right]^3$
7. Evaluate the following using suitable identities :
   (i) $(99)^3$ (ii) $(102)^3$ (iii) $(998)^3$
8. Factorise each of the following :
   (i) $8a^3 + b^3 + 12a^2b + 6ab^2$
   (ii) $8a^3 - b^3 - 12a^2b + 6ab^2$
   (iii) $27 - 125a^3 - 135a + 225a^2$
   (iv) $64a^3 - 27b^3 - 144a^2b + 108ab^2$
   (v) $27p^3 - \frac{1}{216} - \frac{9}{2}p^2 + \frac{1}{4}p$
9. Verify : (i) $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$
   (ii) $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$
10. Factorise each of the following :
    (i) $27y^3 + 125z^3$ (ii) $64m^3 - 343n^3$
11. Factorise : $27x^3 + y^3 + z^3 - 9xyz$
12. Verify that : $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)$
    $[(x - y)^2 + (y - z)^2 + (z - x)^2]$
13. Without actually calculating the cubes, find the value of each of the following :
    (i) $(-12)^3 + (7)^3 + (5)^3$
    (ii) $(28)^3 + (-15)^3 + (-13)^3$
14. Give possible expressions for the length and breadth of each of the following rectangles, in which their areas are given :
    (i) Area : $25a^2 - 35a + 12$
    (ii) Area : $35y^2 + 13y - 12$
15. What are the possible expressions for the dimensions of the cuboids whose volumes are given below ?
    (i) Volume : $3x^2 - 12x$
    (ii) Volume : $12ky^2 + 8ky - 20k$
16. Use suitable identities and find the following