Subject: Maths Class:8 Topic: Ch.6 Algebraic Expressions

Watch video #19, and solve the following exercise:

EXERCISE 6.5

Use **Cordova Smart Class Software** on the **smart board** in class to do Exercise.

1. Evaluate each of the following using appropriate identities :

   (i) $(a^2 + b^2)^2$ (ii) $(xy + 2z)^2$ (iii) $(a^2 - b^2)^2$

   (iv) $(4x - 5)^2$ (v) $(7x - 4)^2$ (vi) $(4l + 5m)^2$

2. Use suitable identity to find each of the following products :

   (i) $(x + 5)(x + 5)$ (ii) $(3x - 7)(3x - 7)$ (iii) $(a - c)(-a + c)$

   (iv) $\left(2a - \frac{1}{2}\right)\left(2a + \frac{1}{2}\right)$ (v) $\left(\frac{2}{3}m + \frac{3}{2}n\right)\left(\frac{2}{3}m - \frac{3}{2}n\right)$ (vi) $(2x + 5y)(2x - 5y)$

3. Use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$ to find the following products :

   (i) $(x + 4)(x + 3)$ (ii) $(3x + 5y)(3x + 2y)$ (iii) $(2x + 3)(2x + 5)$

   (iv) $(4p + 3q)(4p + 7q)$ (v) $(a + 3b)(a + 5b)$ (vi) $(7x + 9)(7x + 8)$

4. Simplify the following expressions :

   (i) $(2x - 1)^2 - (x - 1)^2$ (ii) $(6x + 3)(6x - 3)$

   (iii) $(2m - 3n)(2m + 3n) + (2m + 3n)^2$ (iv) $(4a + 5b)(4a + 7b) - (3a + 4b)(3a + 6b)$

5. If $a^2 + b^2 = 100$, $ab = 48$, find the value of $a + b$.

6. If $a + b = 9$, $ab = 4$, find the value of $a^2 + b^2$.

7. If $a - b = 5$, $a^2 + b^2 = 49$, find the value of ab.

8. If $x + \frac{1}{x} = 5$, find the value of $x^4 + \frac{1}{x^4}$.

9. If $x - \frac{1}{x} = 3$, find the values of $x^2 + \frac{1}{x^2}$ and $x^4 + \frac{1}{x^4}$.

10. Find the continued product :

(*i*) $(x + 1)(x - 1)(x^2 + 1)$ (*ii*) $(2m - 3)(2m + 3)(4m^2 + 9)$

11. Given that $x - y = 8$, $xy = 5$, find the value of $x^2 + y^2$.

12. Using identities, evaluate the following :

(*i*) $(81)^2$ (*ii*) $(198)^2$ (*iii*) 165×155

(*iv*) $(7.25)^2 - (2.75)^2$ (*v*) $(5.6)^2 - (4.4)^2$

13. Find the value of each of the following :

(*i*) $\frac{176 \times 176 - 124 \times 124}{52}$ (*ii*) $\frac{324 \times 324 - 276 \times 276}{48}$ (*iii*) $(12.9)^2 - (7.1)^2$

14. If $x^2 + \frac{1}{x^2} = 27$, find the value of $x - \frac{1}{x}$.

15. Find the value of p in each of the following :

(*i*) $3p = (28)^2 - (23)^2$ (*ii*) $7p = (25 \times 25) - (24 \times 24)$

16. If $x^4 + \frac{1}{x^4} = 119$, find the value of $x - \frac{1}{x}$.

17. Find the value of each of the following expressions :

(*i*) $36x^2 + 49y^2 + 84xy$, when $x = \frac{1}{4}$, $y = \frac{2}{7}$ (*ii*) $16x^2 + 25y^2 + 40xy$, when $x = \frac{1}{4}$, $y = \frac{1}{5}$.

18. Show that :

(*i*) $\frac{(4ab + 3cd)^2 - (4ab - 3cd)^2}{48} = abcd$ (*ii*) $\frac{(7pqr - 5)^2 - (7pqr + 5)^2}{(pqr + 1)^2 - (pqr - 1)^2} = -35$