

NISCORT FATHER AGNEL SCHOOL, VAISHALI (2017-18)
SELF LEARNING WORKSHEET
CLASS-VIII
CH- 9 ALGEBRIC EXPRESSIONS

1. Add the following -:

- a) $6a + 8b - 7c$, $2b + c - 4a$ and $a - 3b - 2c$
- b) $5x^2 + 7y - 8$, $4y + 7 - 2x^2$ and $6 - 5y + 4x^2$.
- c) $8x^2 - 5xy + 3y^2$, $2xy - 6y^2 + 3x^2$ and $y^2 + xy - 6x^2$.
- d) $11a^2 + 8b^2 - 9c^2$, $5b^2 + 3c^2 - 4a^2$ and $3a^2 - 4b^2 - 4c^2$.
- e) $2x + 3y + z$ and $2x - y - z$
- f) $a^2 + b^2 + c^2 - 3abc$ and $a^2 - b^2 + c^2 + abc$
- g) $5x^2 + 7y - 6z^2$, $4y + 3x^2$, $9x^2 + 2z^2 - 9y$ and $2y - 2x^2$.

2. Subtract the following-:

- a) $4a + 5b - 3c$ from $6a - 3b + c$
- b) $3x^2 - 6x - 4$ from $5 + x - 2x^2$.
- c) $3x + y - 3z$ from $9x - 5y + z$

3. Find each of the following products:

- a) $5a^2b^2 \times (3a^2 - 4ab + 6b^2)$
- b) $(-3x^2y) \times (4x^2y - 3xy^2 + 4x - 5y)$
- c) $(3x + 5y)$ and $(5x - 7y)$.
- d) $(3x^2 + y^2)$ by $(2x^2 + 3y^2)$
- e) $(5x^2 - 6x + 9)$ by $(2x - 3)$
- f) $(2x^2 - 5x + 4)$ by $(x^2 + 7x - 8)$

4. From the sum of $3x - 2y + 4z$ and $3y - 2z$, subtract $x - y - z$.

5. Subtract $a - 2b - c$ from the sum of $3a - b + c$ and $a + b - 3c$.

6. How much should $a + 2b - 3c$ be increased to get $3a$?

7. What should be added to $2p - q + r$ to make it $p + q - 2r$?

8. The sum of two expressions is $3x^2 + 2xy - y^2$. If one of them is $2x^2 + 3y^2$, find the other.

9. From the sum of $4b^2 + 5bc$, $-2b^2 - 2bc - 2z^2$ and $2bc + 4c^2$, subtract the sum of $5b^2 - c^2$ and $-3b^2 + 2bc + c^2$.

10. What should be subtracted from $3x + 5y + 9$ to get $-2x + 3y + 15$?

11. What should be taken away from $p^2 - q^2 + 2pq + 10$ to obtain $-2p^2 - 2q^2 + 7pq + 10$?

12. Subtract $2a^2b - 3b^2$ from $3a^2 - 5ab^2 + 2b^2$ and subtract your result from the sum of the two expressions $3ab^2 + 5b^2 - 2a^2b$ and $a^2b + 5a^2 - 3ab^2$.

13. Using suitable identities find the product

a) $(x + 3)(x - 7)$

b) $(a - 3)(a - 2)$

c) 80×81

d) 97×103

e) 197×205

f) $(2x + 7y)(2x - 7y)$

g) $50^2 - 49^2$

h) $11.1^2 - 9.9^2$

i) $729^2 - 271^2$

j) $(2a - 1/2)(2a - 1/2)$

k) $(1.1m - 0.4)(1.1m + 0.4)$

l) $(a^2 + b^2)(-a^2 + b^2)$

k) $(6x - 7)(6x + 7)$

l) $(-a/2 + c/2)(-a/2 + c/2)$

m) $2(a - 9)^2$

n) $[(p/8) + (3q/4)][(p/8) + (3q/4)]$

o) $(3a + 9b)(3a - 9b)$

p) $5(xy - 3z)^2$

q) $(6x + 5y)^2$

r) $36[(3p/2) + (2q/3)]^2$

14. Find the value of x if $23^2 - 17^2 = 6x$

15. Simplify the following

(i) $(x^2 - y^2)^2 + 4x^2y^2$

(ii) $(p + q)^2 - (p - q)^2 + p^2q^2$

(iii) $(2m - 8n)^2 + (2m + 8n)^2$

(iv) $(4m + 5n)^2 + (5m + 4n)^2 + (4m + 5n)(4m - 5n)$

(v) $(0.5p - 1.5q)^2 - (0.5p - 1.5q)^2 + p^2q^2$

(vi) $(ab - bc)^2 + 2ab^2c$

(vii) $(m^2 - n^2m)^2 + 2m^3n^2$

16. a) If $a - 1/a = 4$, find the value of $a^2 + 1/a^2$

b) If $p + q = 13$ and $pq = 22$, then $p^2 + q^2$

17. Find the value of $(4x + 5y)^2 - (4x - 5y)^2$

18. Simplify using suitable identity:- $\frac{(3.9)^2 - (1.7)^2}{3.9 - 1.7}$

19. Evaluate the product $(a - \frac{1}{a})(a + \frac{1}{a})(a^2 - 1/a^2)$ for $a = (-2)$

20. Find the value of $(x^2 + 1/x^2)$ if $(x - 1/x) = 11/5$

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CLASS-VIII
CH-14 FACTORISATION

1. Find the common factors of the given terms.

(a) $3x^2, 15xy$ (b) $33x^2y, -77xy^2$ (c) $9x^2y^2z, 54xyz^2$ (d) $x^3y^2, -5y^2$

(e) $4x^3, 10y^3, 6z^3$ (f) $2xyz^3, 3x^2y^2z, 5xyz$

2. Find the factors of the expression:

(a) $3x^4 - 9x^5 - 15x^3$

(b) $-10ab^3 + 30ba^3 - 50a^2b^3$

(c) $21xy + 49xyz$

(d) $-16p + 20p^3$

(e) $3x^2 - 9x^2y - 27x^3z$

(f) $7x^3 + 7xy^2 + 7xz^2$

(g) $9x^3 - 6x^2 + 12x$

(h) $8x^2 - 72xy + 12x$

(i) $18a^3b^3 - 27a^2b^3 + 36a^3b^2$

(j) $9a(3a - 5b) - 12a^2(3a - 5b)$

3. Solve by factoring:

(i) $(x - 2y)^2 + 4x - 8y$

(ii) $y^2 - xy(1 - x) - x^3$

(iii) $(ax + by)^2 + (bx - ay)^2$

(iv) $ab^2 + (a - 1)b - 1$

(v) $a^2m + b^2m + c^2m - a^2n - b^2n - c^2n$

4. Factorize by regrouping the terms:

(i) $7ab - 21bc - 7ax + 21xc$

(ii) $x - 9 - (x - 9)^2 + xy - 9y$

(iii) $4ax + 5bx - 12ay - 15by$

(iv) $ab^2 - bc^2 - ab + c^2$

5. Factor the given expressions using identity:

- (i) $m^2 + 8m + 16$ (ii) $4x^2 - 4x + 1$ (iii) $4m^2 - 12mn + 9n^2$
(iv) $X^4 + 9Y^4 + 6X^2Y^2$ (v) $(a^4 - 8a^2b^2 + 16b^4) - 16$ (vi) $256 - x^2 - 2xy - y^2$
(vii) $(3a - 2b)^2 + 2(3a - 2b)(2b - a) + (2b - a)^2$ (viii) $16x^2 - 36y^2$
(ix) $1 - 25(2a - 5b)^2$ (x) $m^4 - n^4$ (xi) $x^2 + 6x + 8$
(xii) $a^4 - (b + c)^4$ (xiii) $4x^2 - y^2 + 6y - 9$ (xiv) $25a^2 - (4x^2 - 12xy + 9y^2)$
(xv) $x^3 - 25x$ (xvi) $25(x + y)^2 - 36(x - 2y)^2$ (xvii) $48a^2 - 243b^2$
(xviii) $(502)^2 - (498)^2$

6. Factorise by splitting middle term:

- (i) $x^2 - 11x - 42$ (ii) $x^2 - 12x - 45$ (iii) $x^2 - 7x - 30$ (iv) $x^2 - 5x - 24$
(v) $3x^2 + 10x + 8$ (vi) $3x^2 + 14x + 8$ (vii) $2x^2 + x - 45$ (viii) $6x^2 + 11x - 10$
(ix) $3x^2 - 10x + 8$ (x) $2x^2 - 17x - 30$ (xi) $10p^2q^2 - 11pq + 3$
(xii) $12x^2 + 11x - 5$ (xiii) $15a^2b^2 - 21ab + 6$ (xiv) $9x^2 - y^2 - 8y - 16$
(xv) $x^4 - 10x^2 + 9$

7. Factor trinomials using substitution:

- (i) $(x - 2y)^2 + 7(x - 2y) - 18$
(ii) $3(a - b)^2 - (a - b) - 44$
(iii) $(5a - 3b)^2 + 8(5a - 3b) + 16$
(iv) $(x - 4y)^2 - 10(x - 4y) + 25$
(v) $(3r - 4)^2 - 4(3r - 4) - 12$

8. Factor the difference of two perfect squares:

- (i) $16m^2 - (3n + 2y)^2$
(ii) $(3a + 4b)^2 - (4b + 5b)^2$
(iii) $(x + y)^2 - (x - y)^2$
(iv) $50p^2 - 72q^2$
(v) $a^4 - (b + c)^4$
(vi) $m^2 - 1/169$