MATHEMATICS

SpeedLabs
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Board – CBSE	Class – 8th	Topic – Factorization

Q.1 Factorise:

(i) $12x^3y^4 + 16x^2y^5 - 4x^5y^2$

(ii) $18a^3b^2 + 36ab^4 - 24a^2b^3$

Q.2 Factorise:

(i) $(x + y)(2x + 3y) - (2x + 3y) - (x + y)(x + 1)$

(ii) $(x + y)(2a + b) - (3x - 2y)(2a + b)$

Q.3 Factorise:

(i) $x^2 + xy + 8x + 8y$

(ii) $15xy - 6x + 10y - 4$

(iii) $n - 7 + 7lm - lmn$

Q.4 Factorise:

(i) $a^2 + 2a + ab + 2b$

(ii) $x^2 - xz + xy - xz$

Q.5 Factorise each of the following expressions:

(i) $a^2 - b + ab - a$

(ii) $xy - ab + bx - ay$

(iii) $6ab - b^2 + 12ac - 2bc$

(iv) $a(a + b - c) - bc$

(v) $a^2x^2 + (ax^2 + 1)x + a$

(vi) $3ax - 6ay - 8by + 4bx$

Q.6 Factorise:

(i) $x^3 - 2x^2y + 3xy^2 - 6y^3$

(ii) $6ab - b^2 + 12ac - 2bc$

Q.7 Factorise:

(i) $x^4 - y^4$ (ii) $16x^4 - 81$

(iii) $x^4 - (y + z)^4$ (iv) $2x - 32x^5$

(v) $3a^4 - 48b^4$ (vi) $81x^4 - 121x^2$

Q.8 Factorise each of the following algebraic expressions:

(i) $16(2x - 1)^2 - 25z^2$

(ii) $4a^2 - 9b^2 - 2b - 3b$

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

(iv) $3 - 12\ (a - b)^2$

(v) $x\ (x + z) - y(y + z)$

(vi) $a^2 - b^2 - a - b$

Q.9 Factorise:

(i) $4x^2 - 4xy + y^2 - 9z^2$

(ii) $16 - x^2 - 2xy - y^2$

(iii) $x^4 - (x - z)^4$

Q.10 Factorise:

(i) $4(x + y)^2 - 28y\ (x + y) + 49y^2$

(ii) $(2a + 3b)^2 + 2(2a + 3b)\ (2a - 3b) + (2a - 3b)^2$

Q.11 Factorise each of the following expressions:

(i) $9x^2 - 4y^2$

(ii) $36x^2 - 12x + 1 - 25y^2$

(iii) $a^2 - 1 + 2x - x^2$

Q.12 Factorise:

(i) $9 - a^6 + 2a^3b^3 - b^6$

(ii) $x^{16} - y^{16} + x^8 + y^8$

Q.13 Factorize: $(2x + 3y)^2 - 5(2x + 3y) - 14$

Q.14 Factorise: $3m^2 + 24m + 36$

Q.15 Divide:

(i) $6x^4yz - 3xy^3z + 8x^2yz^4$ by $2xyz$

(ii) $\frac{2}{3}a^2b^2c^2 + \frac{4}{3}ab^2c^3 - \frac{1}{5}ab^3c^2$ by $\frac{1}{2}abc$

Q.16 If x and y are non-zero rational unequal numbers, then find the value of $\frac{(x+y)^2 - (x-y)^2}{x^2y - xy^2}$

(A) $\frac{1}{xy}$ (B) $\frac{1}{x-y}$ (C) $\frac{4}{x-y}$ (D) $\frac{2}{x-y}$

Q.17 Let $\frac{a}{b} - \frac{b}{a} = x : y$. If $(x - y) = \left(\frac{a}{b} + \frac{b}{a}\right)$, then find the value of x -

(A) $\frac{a+b}{a}$ (B) $\frac{a+b}{b}$

(C) $\frac{a-b}{a}$ (D) None of these

Q.18 If $(x - 2)$ is a factor of $(x^2 + 3qx - 2q)$, then find the value of q.

Q.19 If $x^3 + 6x^2 + 4x + k$ is exactly divisible by $(x + 2)$, then find the value of k.

Q.20 Let $f(x) = x^3 - 6x^2 + 11x - 6$. Then, which one of the following is not factor of f(x)?

(A) $x - 1$ (B) $x - 2$ (C) $x + 3$ (D) $x - 3$

Q.21 The polynomial $(x^4 - 5x^3 + 5x^2 - 10x + 24)$ has a factor as -

(A) $x + 4$ (B) $x - 2$

(C) $x + 2$ (D) None of these

Q.22 $(x^{29} - x^{25} + x^{13} - 1)$ is divisible by -

(A) both $(x - 1)$ & $(x + 1)$

(B) $(x - 1)$ but not by $(x + 1)$

(C) $(x + 1)$ but not by $(x - 1)$

(D) neither $(x - 1)$ nor $(x + 1)$

Q.23 Value of k for which $(x - 1)$ is a factor of $(x^3 - k)$.

Q.24 Find the factors of $(8x^3 - 27y^3)$ -

(A) $(2x - 3y)(4x^2 + 9y^2 - 6xy)$

(B) $(2x - 3y)(4x^2 + 9y^2 + 6xy)$

(C) $(2x - 3y)(4x^2 - 9y^2 - 6xy)$

(D) $(2x - 3y)(4x^2 - 9y^2 + 6xy)$

Q.25 Find the factors of $(x^3 + y^3 + 2x^2 - 2y^2)$.

Q.26 Find the factors of $(x^3 - 5x^2 + 8x - 4)$.

Q.27 Find the factors of $(x^4 + 4)$.

Q.28 Find the factors of $(x + y)^3 - (x - y)^3$.

Q.29 If $(x^5 - 9x^2 + 12x - 14)$ is divided by $(x - 3)$, then find the remainder.

Q.30 If $(x^{11} + 1)$ is divided by $(x + 1)$, then find the remainder.

Answer

2. (i) $(x + y)(x + 3y - 1)$ (ii) $(-2x + 3y)(2a + b)$

4. (i) $(a + 2)(a + b)$ (ii) $(x + y)(x - z)$

5. (i) $(a + b)(a - 1)$ (ii) $(y + b)(x - a)$ (iii) $(b + 2c)(6a - b)$
(iv) $(a + b)(a - c)$ (v) $(x + a)(ax^2 + 1)$ (vi) $(3a + 4b)(x - 2y)$

6. (i) $(x - 2y)(x^2 + 3y^2)$ (ii) $(6a - b)(b + 2c)$

7. (i) $(x - y)(x + y)(x^2 + y^2)$ (ii) $(2x - 3)(2x + 3)(4x^2 + 9)$
(iii) $(x - y - z)(x + y + z)\{x^2 + (y + z)^2\}$ (iv) $2x(1 + 4x^2)(1 - 2x)(1 + 2x)$
(v) $3(a - 2b)(a + 2b)(a^2 + 4b^2)$ (vi) $x^2(9x - 11)(9x + 11)$

8. (i) $(8x - 5z - 4)(8x + 5z - 4)$ (ii) $(2a + 3b)(2a - 3b - 1)$
(iii) $(x - y)(x + y - 4)$ (iv) $3(1 + 2a - 2b)(1 - 2a + 2b)$
(v) $(x - y)(x + y + z)$ (vi) $(a + b)\{(a - b) - 1\}$

9. (i) $(2x - y + 3z)(2x - y - 3z)$ (ii) $(4 + x + y)(4 - x - y)$
(iii) $(2x^2 - 2xz + z^2)(2x - z)z$

10. (i) $(2x - 5y)^2$ (ii) $16a^2$

11. (i) $(3x + 2y)(3x - 2y)$ (ii) $(6x - 5y - 1)(6x + 5y - 1)$
(iii) $(a - 1 + x)(a + 1 - x)$

12. (i) $(a^3 - b^3 + 3)(-a^3 + b^3 + 3)$
(ii) $(x^8 + y^8)(x^8 - y^8 + 1)$
(iii) $(p + q - a + b)(p + q + a - b + 1)$

13. $(2x + 3y - 7)(2x + 3y + 2)$

14. $3(m + 2)(m + 6)$

15. (i) $3x^3 - \frac{3}{2}y^2 + 4xz^3$ (ii) $\frac{4}{3}abc + \frac{8}{3}bc^2 - \frac{2}{5}b^2c$

16. $\frac{4}{x - y}$ **17.** None of these **18.** -1

19. -8 **20.** $x + 3$ **21.** $x - 2$

22. $(x - 1)$ but not by $(x + 1)$ **23.** 1 **24.** $(2x - 3y)(4x^2 + 9y^2 + 6xy)$

25. $(x + y)(x^2 + y^2 + xy + 2x - 2y)$ **26.** $(x - 2)^2(x - 1)$

27. $(x^2 + 2x + 2)(x^2 - 2x + 2)$

28. $2y(3x^2 + y^2)$ **29.** 184 30. 0