CLASS VIII – MATHEMATICS – CHAPTER 14
FACTORIZATION

Name: Date:

01. Factorise $12a^2b + 15ab^2$

(a). 3ab (4a + 5b) (b). 3ab (c). (4a + 5b) (d). 3ab (5a + 4b)

02. Factorise 6xy – 4y + 6 – 9x.

(a). (3x – 2) (b). (3x – 2) (2y – 3) (c). (2y – 3) (d). (2x – 3) (3y – 2)

03. Factorise: $x^2 + 8x + 16$

(a). $(x + 2)^2$ (b). $(x + 3)^2$ (c). $(x + 4)^2$ (d). $(x + 5)^2$

04. Solve: $–20x^4 \div 10x^2$

(a). ½ xy (b). xyz (c). ½ xz (d). ½ xyz

05. Find the common factors of 2y, 22xy.

(a). 2y (b). 2 (c). y (d). 22

06. Factorise: $10x^2 – 18x^3 + 14x^4$

(a). $2x^2(7x^2 –9x + 5)$ (b). $2x^2$ (c). $(7x^2 –9x + 5)$ (d). $2x^2(9x^2 – 5x + 7)$

07. Factorise: $x^2 + xy + 8x + 8y$

(a). (x + 8) (b). (x + 8) (x + y) (c). (x + y) (d). (x + 9) (x – y)

08. Factorise: $4y^2 – 12y + 9$

(a). $(7y – 5)^2$ (b). $(5y – 3)^2$ (c). $(2y – 3)^2$ (d). $(2y – 5)^2$

09. Solve: $7x^2y^2z^2 \div 14xyz$

(a). 2 (b). 4 (c). 3 (d). 5

10. Find the common factors of $2y$, $22xy$.

(a). 2y (b). 2 (c). y (d). 22

11. Factorise: $12x + 36$

(a). 12 (x + 3) (b). 12 (c). (x + 3) (d). 12 (x + 4)

12. Factorise: $15xy – 6x + 5y – 2$

(a). (3x + 1) (b). (3x + 1) (5y – 2) (c). (5y – 2) (d). (3x – 1) (7y – 3)

13. Factorise: $49p^2 – 36$

(a). (7p + 6) (7p + 6) (b). (7p – 6) (7p – 6) (c). (7p – 6) (7p + 6) (d). (6p – 7) (7p – 6)

14. Divide $24xy^2z^3$ by $6yz^2$.

(a). 4xz (b). 4xy (c). 4yz (d). 4xyz

15. Find the common factors of 14 pq, $28p^2q^2$.

(a). 14pq (b). 14 (c). p (d). q

16. Factorise: $22y – 33z$

(a). 11 (2y – 3z) (b). (2y – 3z) (c). 11 (d). 11 (3y – 2z)

17. Factorise: $ax + bx – ay – by$

(a). $(a – b)(x – y)$ (b). $(a + b)(x – y)$ (c). $(a + b)(x + y)$ (d). $(a – b)(x + y)$

18. Factorise: $a^2 - 2ab + b^2 - c^2$

(a). $(a - b - c)(a - b - c)$ (b). $(a - b - c)(a + b + c)$ (c). $(a - b - c)(a - b + c)$ (d). $(a + b + c)(a + b + c)$

19. Divide $63a^2b^4c^6$ by $7a^2b^2c^3$.

(a). $9b^2$ (b). $9b^2c$ (c). $9c^3$ (d). $9b^2c^3$

20. Find the common factors of $2x$, $3x^2$ and 4.

(a). 1 (b). 2 (c). 3 (d). 4

21. Factorise: $14pq + 35pqr$

(a). 7pq (2 + 5r) (b). 7pq (c). (2 + 5r) (d). 7pq (3 – 5r)

22. Factorise: $15pq + 15 + 9q + 25p$

(a). $(5p + 3)$ (b). $(5p + 3)(3q + 5)$ (c). $(3q + 5)$ (d). $(5p - 3)(3q - 5)$

23. Factorise:$2 + 8a + 16$

(a). $(a - 4)^2$ (b). $(a + 5)^2$ (c). $(a + 4)^2$ (d). $(a - 3)^2$

24. Solve: $-36y^3 \div 9y^2$

(a). -4 (b). 4y (c). -y (d). -4y

25. Find the common factors of $6abc$, $24ab^2$ and $12\ a^2(b)$.

(a). 6ab (b). 6 (c). a (d). b

Q01. Fill in the blanks:

a). When we factorise an expression, we write it as a _____- of factors.

b). The _____ may be numbers, algebraic variables or algebraic expressions.

c). An irreducible factor is a factor which cannot be expressed further as a _____ of

d). In factorisation by regrouping, we should remember that any regrouping (i.e., rearrangement) of the terms in the given expression may not lead to _____.

e). In expressions which have factors of the type (x + a) (x + b), remember the numerical term gives _____.

Q02. Factorise:

(a). $a^4 - b^4$ (b). $p^4 - 81$ (c). $x^4 - (y + z)^4$

(d). $x^4 - (x - z)^4$ (e). $x^4 - (x - z)^4$ (f). $a+ - 2a^2b^2 + b^4$

(g). $p^2 + 6p + 8$ (h). $q^2 - 10q + 21$ (i). $q^2 - 10q + 21$

(j). $p^2 + 6p - 16$ (k). $21x^2y^3 + 27x^3y^2$ (l). $a^3 - 4a^2 + 12 - 3a$

Q03. Divide the given polynomial by the given monomial:

(a). $(5x^2 - 6x) \div 3x$ (b). $(3y^8 - 4y^6 + 5y^4) \div y^4$ (c). $8\ (x^3y^2z^2 + x^2y^3z^2 + x^2y^2z^3) \div 4x^2y^2z$

(d). $(x^3 + 2x^2 + 3x) \div 2x$ (e). $(x^3 + 2x^2 + 3x) \div 2x$ (f). $(p^3q^6 - p^6q^3) \div p^3q^3$

(g). $(10x - 25) \div 5$ (h). $(10x - 25) \div (2x - 5)$ (i). $10y\ (6y + 21) \div 5\ (2y + 7)$

(j). $9x^2y^2\ (3z - 24) \div 27xy\ (z - 8)$

Q04. Divide as directed:

(a). $5(2x + 1)(3x + 5) \div (2x + 1)$

(b). $26xy(x + 5)(y - 4) \div 13x(y - 4)$

(c). $52pqr(p + q)(q + r)(r + p) \div 104pq(q + r)(r + p)$

(d). $20(y + 4)(y^2 + 5y + 3) \div 5(y + 4)$

(e). $x(x + 1)(x + 2)(x + 3) \div x(x + 1)$

(f). $(y^2 + 7y + 10) \div (y + 5)$

(g). $(m^2 - 14m - 32) \div (m + 2)$

(h). $(5p^2 - 25p + 20) \div (p - 1)$

(i). $4yz(z^2 + 6z - 16) \div 2y(z + 8)$

(j). $5pq(p^2 - q^2) \div 2p(p + q)$

(k). $15(y + 3)(y^2 - 16)$ by $5(y^2 - y - 12)$

(l). $10(x^3y^2x^2 + x^2y^3z^2 + x^2y^2z^3)$ by $5x^2y^2z^2$

Q05. Find and correct the errors in the following mathematical statements.

(a). $4(x - 5) = 4x - 5$

(b). $x(3x + 2) = 3x^2 + 2$

(c). $2x + 3y = 5xy$

(d). $x + 2x + 3x = 5x$

(e). $5y + 2y + y - 7y = 0$

(f). $3x + 2x = 5x^2$

(g). $(2x)^2 + 4(2x) + 7 = 2x^2 + 8x + 7$

(h). $(2x)^2 + 5x = 4x + 5x = 9x$

Q06. Find and correct the errors in the following mathematical statements. Substituting $x = -3$ in

(a). $x^2 + 5x + 4$ gives $(-3)^2 + 5(-3) + 4 = 9 + 2 + 4 = 15$

(b). $x^2 - 5x + 4$ gives $(-3)^2 - 5(-3) + 4 = 9 - 15 + 4 = -2$

Q07. Find the expansion of the following using a suitable identity.

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

(b). $(4x/5 + y/4)\ 4x/y + 3y/4)$

(c). $(ax + by)(nx - my)$

(d). $(yx + xy)(yx - xy)$

(e). $(Xx + Yy)(Xx - Yy)$

(f). $(21x/3 + 27y/3)(36x/4 - 24y)$

(e). $(2x + 3y)(2x + 3y + 5xy)$

(f). $(2x + 3xy)(2x + 3y + 5xy - 3xyz)$

Q08. Factorise:

(a) $54x^2 + 42x^3 - 30x^4$

(b) $2x^2yz + 2xy^2z + 4xyz$

(c) $30xy - 12x + 10y - 4$

(d) $100x^2 - 80xy + 16y^2$

(e) $16x^4 - y^4$

(f) $x^2 + 6x + 8$

(g) $49y^2 - 1$

(h) $p^2 - 10p + 25$.

Q09. Divide $10(x^3y^2x^2 + x^2y^3z^2 + x^2y^2z^3)$ by $5x^2y^2z^2$.

Q10. Regroup the terms and factorise: $z - 19 + 19xy - xyz$

Q11. Simplify: $12(y^2 + 7y + 10) \div 6(y + 5)$

Q12. (a). If $x + 1/x = 6$, find $x^2 + 1/x^2$.

(b). If $x + y = 12$ and $xy = 32$, find the value of $x^2 + y^2$.

(c). Show that $(a - b)(a + b) + (b - c)(b + c) + (c - a)(c + a) = 0$.