



ST. LAWRENCE HIGH SCHOOL



A JESUIT CHRISTIAN MINORITY INSTITUTION

CLASS 8

SUBJECT : Algebra and Geometry

Work sheet 14 answer key

Marks:15

Factorisation (continued)

Date:22.4.2020

Answer all the following questions(1×15=15)

1. H.C.F. of $6abc$, $24ab^2$, $12a^2b$ is

- (a) $6ab$
- (b) $6ab^2$
- (c) $6a^2b$
- (d) $6abc$

Solution:

$$\begin{aligned} &\text{H.C.F. of } 6abc, 24ab^2, 12a^2b \\ &= \text{H.C.F. of } 6, 24, 12 \times \text{H.C.F. of } abc, ab^2, a^2b \\ &= 6 \times a \times b = 6ab \text{ (a)} \end{aligned}$$

2. Factors of $12a^2b + 15ab^2$ are

- (a) $3a(4ab + 5b^2)$
- (b) $3ab(4a + 5b)$
- (c) $3b(4a^2 + 5ab)$
- (d) none of these

Solution:

$$12a^2b + 15ab^2 = 3ab(4a + 5b) \text{ (b)}$$

3. Factors of $6xy - 4y + 6 - 9x$ are

- (a) $(3y - 2)(2x - 3)$
- (b) $(3x - 2)(2y - 3)$
- (c) $(2y - 3)(2 - 3x)$
- (d) none of these

Solution:

$$\begin{aligned} & 6xy - 4y + 6 - 9x \\ &= 6xy - 9x - 4y + 6 \\ &= 3x(2y - 3) - 2(2y - 3) \\ &= (2y - 3)(3x - 2) \end{aligned}$$

4. Factors of $49p^3q - 36pq$ are

- (a) $p(7p + 6q)(7p - 6q)$
- (b) $q(7p - 6)(7p + 6)$
- (c) $pq(7p + 6)(7p - 6)$
- (d) none of these

Solution:

$$\begin{aligned} & 49p^2q - 36pq \\ &= pq(49p^2 - 36) \\ &= pq[(7p)^2 - (6)^2] \\ &= pq(7p + 6)(7p - 6) \end{aligned}$$

5. Factors of $y(y - z) + 9(z - y)$ are

- (a) $(y - z)(y + 9)$
- (b) $(z - y)(y + 9)$
- (c) $(y - z)(y - 9)$
- (d) none of these

Solution:

$$\begin{aligned} & y(y - z) + 9(z - y) \\ &= y(y - z) - 9(y - z) \\ &= (y - z)(y - 9) \text{ (c)} \end{aligned}$$

6. Factors of $(lm + l) + m + 1$ are

- (a) $(lm + l)(m + 1)$
- (b) $(lm + m)(l + 1)$
- (c) $l(m + 1)$
- (d) $(l + 1)(m + 1)$

Solution:

$$\begin{aligned} & \text{Factors of } lm + l + m + 1 \text{ are} \\ & l(m + 1) + l(m + 1) = (m + 1)(l + 1) \text{ (d)} \end{aligned}$$

7. Factors of $3ab + 6bc + 4ad + 8cd$ are

- (a) $(ab + 2c)(a + d)$
- (b) $(bc + a)(d + 1)$

(c) $(a+2c)(3b+4d)$

(d) $(a+4c)(b+2d)$

Solution: c) $3b(a+2c) + 4d(a+2c)$

8. Factors of $63a^2 - 112b^2$ are

(a) $63(a-2b)(a+2b)$

(b) $7(3a+2b)(3a-2b)$

(c) $7(3a+4b)(3a-4b)$

(d) none of these

Solution:

Factors of $63a^2 - 112b^2$ are

$$= 7(9a^2 - 16b^2)$$

$$= 7[(3a)^2 - (4b)^2]$$

$$= 7(3a+4b)(3a-4b) \text{ (c)}$$

9. Factors of $p^4 - 81$ are

(a) $(p^2 - 9)(p^2 + 9)$

(b) $(p+3)^2(p-3)^2$

(c) $(p+3)(p-3)(p^2+9)$

(d) none of these

Solution:

$$p^4 - 81 = (p^2)^2 - (9)^2$$

$$= (p^2 + 9)(p^2 - 9)$$

$$= (p^2 + 9)\{(p)^2 - (3)^2\}$$

$$= (p^2 + 9)(p+3)(p-3) \text{ (c)}$$

10. Factors of $9x^2 + 12x + 4$ are

(a) $(3x-2)(x+3)$

(b) $(3x+2)(x-3)$

(c) $(3x-2)(3x-2)$

(d) $(3x+2)(3x+2)$

Solution: d), $(3x)^2 + 2 \times 3x \times 2 + 2^2$

11. Factors of $16x^2 + 40x + 25$ are

(a) $(4x+5)(4x+5)$

(b) $(4x+5)(4x-5)$

(c) $(4x+5)(4x+8)$

(d) none of these

Solution:

$$\begin{aligned} & 16x^2 + 40x + 25 \\ &= (4x)^2 + 2 \times 4x \times 5 + (5)^2 \\ &= (4x + 5)^2 \\ &= (4x + 5)(4x + 5) \text{ (a)} \end{aligned}$$

12. Factors of $x^2 - 4xy + 4y^2$ are

- (a) $(x - 2y)(x + 2y)$
- (b) $(x - 2y)(x - 2y)$
- (c) $(x + 2y)(x + 2y)$
- (d) none of these

Solution:

$$\begin{aligned} & x^2 - 4xy + 4y^2 \\ &= (x)^2 - 2 \times x \times 2y + (2y)^2 = (x - 2y)^2 \\ &= (x - 2y)(x - 2y) \text{ (b)} \end{aligned}$$

13. Factors of $x^2 + (a + 1/a)x + 1$ are

- (a) $(x + a)(x + 1/a)$
- (b) $(x - a)(x + a)$
- (c) $(x + a)(x - 1/a)$
- (d) $(x - a)(x - 1/a)$

Solution:

$$\begin{aligned} & x^2 + \left(a + \frac{1}{a}\right)x + 1 \\ &= x^2 + ax + \frac{x}{a} + 1 \\ &= x(x + a) + \frac{1}{a}(x + a) \\ &= (x + a)\left(x + \frac{1}{a}\right) \end{aligned}$$

14. $y(y^2 - 2y) + 2(2y - y^2) - 2 + y$

- (a) $(y - 1)^2(y - 2)$
- (b) $(y - 1)^2$
- (c) $(y - 1)(y - 2)$

(d) $(y-1)^2(y+2)$

Solution:

$$\begin{aligned} & y(y^2 - 2y) + 2(2y - y^2) - 2 + y \\ &= y^3 - 2y^2 + 4y - 2y^2 - 2 + y \\ &= y^3 - 4y^2 + 5y - 2 \\ &= y^3 - 2y^2 + y - 2y^2 + 4y - 2 \\ &= y(y^2 - 2y + 1) - 2(y^2 - 2y + 1) \\ &= (y^2 - 2y + 1)(y - 2) \\ &= [(y)^2 - 2 \times y \times 1 + (1)^2] (y - 2) \\ &= (y - 1)^2(y - 2) \end{aligned}$$

15. Factors of $4x^2 - 12x + 9$ are

(a) $(2x-3)(2x-3)$

(b) $(2x+3)(2x-3)$

(c) $(2x+3)(2x+3)$

(d) $(2x-3)(2x-3)$

Solution: a) $(2x)^2 - 2 \times 2x \times 3 + 3^2$

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