

Worksheet

- Fill in the blanks.
 - The process of finding the factors of a given expression is called _____.
 - The factors of $7x + 49y$ are _____ and _____.
 - If a factor of the expression $25x^2 - 16$ is $5x - 4$, then the other factor is _____.
 - To factorise a polynomial, divide the polynomial by the _____ of the terms.
- Factorise:
 - $2p(a - b) + 3q(5a - 5b) + 4r(2b - 2a)$
 - $ab(a^2 + b^2 - c^2) + bc(a^2 + b^2 - c^2) - ca(a^2 + b^2 - c^2)$
 - $x(x^2 + y^2 - z^2) + y(-x^2 - y^2 + z^2) - z(x^2 + y^2 - z^2)$
- Factorise each of the following by grouping the terms.
 - $a^3x + a^2(x - y) - a(y + z) - z$
 - $(x^2 + 3x)^2 - 5(x^2 + 3x) - y(x^2 + 3x) + 5y$
- Factorise:
 - $\frac{9}{25}x^2 - \frac{25}{81}y^2$
 - $144x^4 - \frac{1}{49}$
 - $x^{12}y^{16} - 1.96x^{42}$
- Factorise each of the following algebraic expressions.
 - $x^8 - y^8$
 - $a^{12}x^4 - a^4x^{12}$
- Factorise the following by splitting the middle terms.
 - $8 - 9x + x^2$
 - $x^2 + 2x - 8$
 - $y^2 - 5y + 6$
 - $y^2 - 35 - 2y$
- Factorise:
 - $4a^2 - 9b^2 - 2a - 3b$
 - $x^2 + 2xy + y^2 - a^2 + 2ab - b^2$
 - $3 - 12(a - b)^2$
 - $x(x + z) - y(y + z)$
- Factorise:
 - $9(x - 2y)^2 - 4(x - 2y) - 13$
 - $8(a + 1)^2 + 2(a + 1)(b + 2) - 15(b + 2)^2$
- Give possible expressions for the length and breadth of the rectangle whose area is $25a^2 - 35a + 12$.
- If one of the factor of the algebraic expression $1 - a^2 - b^2 - 2ab$ is $(1 + a + b)$, find the other.
- Factorise each of the following:
 - $3x^2 - 6x$
 - $10x^2y - 15x^4y^2$
 - $3(2yz^2 + 4yz) - 5(3yz^2 + 6yz)$
- Factorise:
 - $\left(4\frac{3}{5}\right)^2 - \left(7\frac{1}{2}x\right)^2$
 - $\frac{p^4q^4}{121} - \frac{x^8y^8}{256}$

13. Factorise each of the following expressions.
 a. $64x^4y^4 + 26x^3y$ b. $25a^2b^2c^4 + 45abc^8$
14. What are the possible expressions for the dimensions of a cuboid whose volume is $2ky^2 + 6ky - 20k$.

Answers to Worksheet

1. a. factorisation b. $7, x + 7y$ c. $(5x + 4)$ d. HCF
2. a. $(a - b)(2p + 15q - 8r)$ b. $(a^2 + b^2 - c^2)(ab + bc - ca)$
 c. $(x^2 + y^2 - z^2)(x - y - z)$
3. a. $(a + 1)(a^2x - ay - z)$ b. $(x^2 + 3x - 5)(x^2 + 3x - y)$
4. a. $\left(\frac{3}{5}x - \frac{5}{9}y\right)\left(\frac{3}{5}x + \frac{5}{9}y\right)$ b. $\left(12x^2 - \frac{1}{7}\right)\left(12x^2 + \frac{1}{7}\right)$
 c. $x^{12}(y^8 - 1.4x^{15})(y^8 + 1.4x^{15})$
5. a. $(x - y)(x + y)(x^2 + y^2)(x^4 + y^4)$ b. $a^4x^4(a^4 + x^4)(a^2 + x^2)(a + x)(a - x)$
6. a. $(x - 1)(x - 8)$ b. $(x - 2)(x + 4)$ c. $(y - 2)(y - 3)$ d. $(y - 7)(y + 5)$
7. a. $(2a + 3b)(2a - 3b - 1)$ b. $(x + y + a - b)(x + y - a + b)$
 c. $3(1 + 2a - 2b)(1 - 2a + 2b)$ d. $(x - y)(x + y + z)$
8. a. $(x - 2y + 1)(9x - 18y - 13)$ b. $(2a + 3b + 8)(4a - 5b - 6)$
9. $(5a - 4)$ and $(5a - 3)$ 10. $(1 - a - b)$
11. a. $3x(x - 2)$ b. $5x^2y(2 - 3x^2y)$ c. $-9yz(z + 2)$
12. a. $\left(4\frac{3}{5} - 7\frac{1}{2}x\right)\left(4\frac{3}{5} + 7\frac{1}{2}x\right)$ b. $\left(\frac{p^2q^2}{11} - \frac{x^4y^4}{16}\right)\left(\frac{p^2q^2}{11} + \frac{x^4y^4}{16}\right)$
13. a. $2x^3y(32xy^3 + 13)$ b. $5abc^4(5ab + 9c^4)$ 14. $2k; (y + 5)$ and $(y - 2)$