# CBSE Worksheet-1
# Class 08 - Mathematics
# (Factorisation)

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**General Instructions:** All questions are compulsory. Q.1 to Q.2 carries one mark each. Q.3 to Q.7 carries two marks each. Q.8 and Q.9 carries three marks each. Q.10 to Q.12 carries four marks each.

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1. Factorise the following expression :$-16z + 20z^3$
2. Factorise the following expression :$5x^2y - 15xy^2$
3. **State whether the following statements are True or False:**
    a. Factorized form of $2x + 4$ is $2(x + 2)$.
    b. $pq^2 + qr^2 + rs^2$ is a binomial.

c. The product of one negative and one positive term is a negative term.

d. The product of two negative terms is a positive term.

4. **Fill In The Blanks.**

a. $a^2 - b^2$ = ____.

b. Common factor of $ax^2 + bx$ is ___.

c. $(9)^2 - (3)^2$ = _____.

d. Factorised form of $x^2 + 8x + 15$ is _____.

5. **Match the following:**

| Column A | Column B |
|---|---|
| a. $2x + 16$ | p. $4x^2 + 9y^2 + 12xy$ |
| b. $(2x + 3y)^2$ | q. $2(x + 8)$ |
| c. $P^4 - 81$ | r. $p(p + 6) + 8$ |
| d. $P^2 + 6p + 8$ | s. $(p^2 + 9)(p^2 - 9)$ |

6. Factorise :$14pq + 35pqr$

7. Factorise :$49x^2 - 36$
8. Find and correct the errors in the following mathematical statement. Substituting x = – 3 in the given equation
$\frac{3x^2+1}{3x^2} = 1 + 1 = 2$
9. Divide as directed: $20(y + 4)\ (y^2 + 5y + 3) \div 5(y + 4)$
10. Factorize $x^4 - y^4$
11. Factorise the expression and divide them as directed: $(m^2 - 14m - 32) \div (m + 2)$
12. Factorize $x^8 - y^8$.

**CBSE Worksheet-1**

**Class 08 - Mathematics**

**(Factorisation)**

**Solution**

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1. $-16z + 20z^3 = 4z\ (-4 + 5z^2)$
2. $5x^2y - 15xy^2 = 5xy\ (x - 3y)$

3.

a. True

b. False

c. True

d. True

4.

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

b. x

c. $(9 + 3)(9 - 3)$

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

5.

a. $\rightarrow q$

b. $\rightarrow p$

c. $\rightarrow s$

d. $\rightarrow r$

6. $14pq + 35pqr$

$14pq = 2 \times 7 \times p \times q$

$35pqr = 5 \times 7 \times p \times q \times r$

The two terms have 7, p and q as common factors.

Therefore,

Therefore,

14pq + 35pqr

= 7 × p × q × 2 + 7 × p × q × 5 × r

= 7 × p × q × [2 + (5 × r)] . . . .

[Combining the terms]

= 7pq × (2 + 5r)

= 7pq(2 + 5r). . . . [Required factor form]

7. $49x^2 - 36$

$= (7x)^2 - (6)^2$

= (7x − 6) (7x + 6). . . . [Using Identity III

8. $\frac{3x^2+1}{3x^2} = \frac{3x^2}{3x^2} + \frac{1}{3x^2}$

$= 1 + \frac{1}{3x^2}$

$= 1 + \frac{1}{3(-3)^2}$

$= \frac{28}{27}$

9. $20(y + 4)(y^2 + 5y + 3) \div 5(y + 4)$

$= \frac{20(y+4)(y^2+5y+3)}{5(y+4)}$

$= 4(y^2 + 5y + 3)$

10. $x^4 - y^4 = (x^2)^2 - (y^2)^2$

$= (x^2 - y^2)(x^2 + y^2)$ Using $a^2 - b^2 = (a + b)(a - b)$

$= (x - y)(x + y)(x^2 + y^2)$ Using $a^2 - b^2 = (a + b)(a - b)$

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

$= \frac{m^2-14m-32}{m+2}$

$= \frac{m^2-16m+2m-32}{m+2}$ . . . . [Using Identity IV

$= \frac{m(m-16)+2(m-16)}{m+2}$

$= \frac{m(m-16)(m+2)}{m+2}$

$= m - 16$

12. $x^8 - y^8 = \{(x^4)^2 - (y^4)^2\}$

$= (x^4 - y^4)(x^4 + y^4)$

$= \{(x^2)^2 - (y^2)^2\}(x^4 + y^4)$

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

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

$= (x - y)(x + y)(x^2 + y^2)\{(x^2)^2 + (y^2)^2 + 2x^2y^2 - 2x^2y^2\}$

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

$= \frac{m^2-14m-32}{m+2}$

$= \frac{m^2-16m+2m-32}{m+2}$ . . . . [Using Identity IV

$= \frac{m(m-16)+2(m-16)}{m+2}$

$= \frac{m(m-16)(m+2)}{m+2}$

$= m - 16$

12. $x^8 - y^8 = \{(x^4)^2 - (y^4)^2\}$

$= (x^4 - y^4)(x^4 + y^4)$

$= \{(x^2)^2 - (y^2)^2\}(x^4 + y^4)$

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

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

$= (x - y)(x + y)(x^2 + y^2)\{(x^2)^2 + (y^2)^2 + 2x^2y^2 - 2x^2y^2\}$

$= (x - y)(x+y)(x^2 + y^2)\{(x^2 + y^2)^2 - (2xy)^2\}$

$= (x - y)(x+y)(x^2 + y^2)(x^2 + y^2 - 2xy)(x^2 + y^2 + 2xy)$