Factorizing Equations

Step-by-step method

Step 1 — Find the common factor

Look for the largest number or variable that divides into every term.

Example:

$$8x + 12$$

Both terms can be divided by 4.

Step 2 — Divide each term by the common factor

$$8x \div 4 = 2x$$

$$12 \div 4 = 3$$

Step 3 — Write the factor outside brackets

$$8x + 12 = 4(2x + 3)$$

Example with variable factors

Factorise:

$$12x^2 + 6x$$

Both terms share:

- 6
- x

So the HCF is $6x$.

Divide each term:

$$12x^2 \div 6x = 2x$$

$$6x \div 6x = 1$$

Answer:

$$12x^2 + 6x = 6x(2x + 1)$$

a. $2x + 4 = 2(x + \quad)$

b. $8 + 12z = 4(2 + 3\ )$

c. $3y + 6 = \quad(y + 2)$

d. $5a + 25 = \quad(\quad + 5)$

e. $6z + 12 = \quad(\quad\ \ 2)$

f. $4b - 16 = 4(b - \quad)$

g. $5 - 20a = 5(1 - 4\ )$

h. $14c - 21 = \quad(2c - \quad)$

i. $10d - 15 = \quad(2 \quad\ 3)$

j. $6 - 18e = \quad(\quad\ 3\ )$

k. $2ab + b = b(2 \quad + 1)$

l. $de + 2e = \quad(d + 2)$

m. $2fg + 3g = \quad(\quad\ \ 3)$

n. $3cd - 6 = 3(cd - \quad)$

o. $8e - 24ef = \quad(\quad - \quad f)$

f. $10a + 15$

g. $14a + 21b$

h. $7p - 21pq$

i. $9xy + 12x$

j. $15ab - 25b$

k. $7ab + 14b$

l. $12cd + 20d$

m. $15ef + 10fg$

n. $24gh - 16g$

o. $18j - 27k$