

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

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

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

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

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

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

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

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

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

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

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

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

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

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

f.  $10a + 15 \quad$

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.  $18j - 27k$