

## Ch-14 Factorisation

1. Factorise the following:

(a)  $5x + 20$

(b)  $12a^2b - 9ab^2 + 6ab$

(c)  $-4a^2 + 4ab + 4ca$

2. Factorise by regrouping the terms:

(a)  $ab + cd + ac + bd$

(b)  $x^4 - 6y^3 + 2x^2 - 3y^3x^2$

(c)  $5y^2 - 20y - 8z + 2yz$

(d)  $a^3 - a^2 + a^5 - a^4$

(e)  $m^2x - mnp - mnx + n^2p$

3. Factorise using suitable identities:

(a)  $18x^2 + 48x + 32$

(b)  $12x + 75x^5 - 60x^3$

(c)  $49a^2b^4 - 4a^2b^6$

(d)  $36p^2 - 25q^2$

(e)  $18a^2 - 32b^2$

(f)  $(a-b)^2 + 4ab$

(g)  $(x+y)^2 - (x-y)^2$

(h)  $9m^2 - 24m + 16$

(i)  $x^2 - 2 + \frac{1}{x^2}$

(j)  $a^4 - b^4$

(k)  $m^2 - n^2 + 2np - p^2$

(l)  $(a+2b)^2 - (2a-b)^2$

(m)  $(p^2 - q^2) - 2pq - r^2$

(n)  $a^2 - 1 + 2b - b^2$

$5(x+4)$

$3ab(4a - 3b + 2)$

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

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

$(x^2+2)(x^2-3y^3)$

$(y-4)(5y+2z)$

$a^2(a-1)(1+a^2)$

$(m-n)(mx-np)$

$2(3x+4)^2$

$3x(5x^2-2)^2$

$a^2b^4(7+2b)(7-2b)$

$(6p+5q)(6p-5q)$

$2(3a+4b)(3a-4b)$

$(a+b)^2$

$4xy$

$(3m-4)^2$

$\left(x - \frac{1}{x}\right)^2$

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

$(m+n-p)(m-n+p)$

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

$(p-q-r)(p+q+r)$

$(a-1+b)(a+1-b)$

$$(10) x^8 - 1$$

$$(x-1)(x+1)(x^2+1)(x^4+1)$$

Q4. Factorise by splitting the middle term:

$$(a) x^2 + x - 12$$

$$(x+4)(x-3)$$

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

$$(x-7)(x+1)$$

$$(c) x^2 + 2x - 48$$

$$(x+8)(x-6)$$

$$(d) p^2 - p - 72$$

$$(p-9)(p+8)$$

$$(e) a^2 - 57a + 56$$

$$(a-1)(a-56)$$

$$(f) m^2 - 15m + 44$$

$$(m-11)(m-4)$$

$$(g) 2m^2 - 10m - 12$$

$$2(m-6)(m+1)$$

$$(h) 4y^2 + 28y - 120$$

$$4(y+10)(y-3)$$

$$(i) 3x^2 + 10x + 8$$

$$(x+2)(3x+4)$$

$$(j) 6p^2 + 11p - 10$$

$$(2p+5)(3p-2)$$

$$(k) 2x^2 - 17x - 30$$

$$(x-10)(2x+3)$$

$$(l) 3m^2 + 24m + 36$$

$$3(m+6)(m+2)$$

$$(m) 4n^2 - 8n + 3$$

$$(2n-3)(2n-1)$$

$$(n) 6x^2 - 17x - 3$$

$$(x-3)(6x+1)$$

$$(o) 2x^2 - 3x - 2$$

$$(2x+1)(x-2)$$

$$(p) 3x^2 + 10x + 3$$

$$(3x+1)(x+3)$$

$$(q) 3x^2 + 22x + 35$$

$$(x+5)(3x+7)$$

$$(r) 6x^2 - 5xy - 6y^2$$

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

Q5. Divide as directed:

$$(a) (24m^3n + 20m^2n^2 - 16mn) \text{ by } 4mn$$

$$(6m^2 + 5mn - 4)$$

$$(b) (2x^2 + 6x) \text{ by } (x+3)$$

$$2x$$

$$(c) (a+1)(a^2 - 6a + 5) \text{ by } (a^2 - 1)$$

$$(a-5)$$

$$(d) 2(y+2)(y^2 + 2y + 1) \div (y+1)$$

$$2(y+1)(y+2)$$

$$(e) 8yz(z^2 - z - 42) \div 2y(z-7)$$

$$4z(z+6)$$

$$(f) (81x^2 - 81) \div (x+1)$$

$$81(x-1)$$

$$(g) (k^2 - 13k - 30) \div (k+2)$$

$$(k-15)$$

$$(h) (8p^3 - 32p) \div 8(p+2)$$

$$p(p-2)$$

$$(i) (x^4 - y^4) \div (x^2 + y^2)$$

$$(x-y)(x+y)$$

(j)

$$[3x^2(x+3)(x^2-16)] \div (x^2-x-12)$$

$$3x^2(x+4)$$

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