Algebra 1

chapter **1**

Section 1.3 Factorising algebraic expressions

PROJECT MATHS
Text & Tests 6

11

Factorising

① HCF

② Grouping

③ Quadratic

$a^2 - b^2 = (a-b)(a+b)$ ④ D.o.T.S.

⑤ Difference of 2 cubes (D.o.T.C.)

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

*learn

⑥ Sum of 2 cubes (S.o.T.C)

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

Example 4

Factorise   (i) $a^3 + 8b^3$ (ii) $64c^3 - 125d^3$

(i)   Sum of 2 cubes

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

$x^3 = a^3$

$x = a$

$y^3 = 8b^3$

$y = 2b$

$a^3 + 8b^3 = (a + 2b)(a^2 - (a)(2b) + (2b)^2)$

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

(ii)   Difference 2 cubes

$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$

$a^3 = 64c^3$

$a = 4c$

$b^3 = 125d^3$

$b = 5d$

$64c^3 - 125d^3 = (4c - 5d)((4c)^2 + (4c)(5d) + (5d)^2)$

$= (4c - 5d)(16c^2 + 20cd + 25d^2)$

2