

Aim: How do we factor the sum and difference of two cubes?**I. Do Now:** Factor completely.

1. Factor completely:
 $(2x + 3)^2 - 5x(2x + 3)$

2. Factor completely:
 $(x - 4)^2 - 25$

3. Divide using
long division:
$$\frac{x^3 - 8}{x - 2}$$

4. Factor:
 $(x + 2)(a + b) + (x + 2)(a - b)$

II. Motivation: Factor.

(a) $x^3 - 8$

(b) $x^3 + 8$

Rules:Sum & Difference of Two *Cubes*

$a^3 - b^3 =$

$a^3 + b^3 =$

Sum & Difference of Two *Squares*

$a^2 - b^2 =$

$a^2 + b^2 =$

III. Applications: Factor.

5. $m^3 + 27$

6. $y^3 - 64x^3$

7. $(x - 3)^3 + 1$

IV. Assorted Practice.

8. Simplify: $\frac{x^3 - y^3}{x - y}$

9. Divide: $x - 2 \overline{)x^2 + 3x - 8}$

10. Factor completely: $4x(3x - 1)(5x + 2)^3 - 3(3x - 1)^2(5x + 2)^2$