Advanced Algebra

Name_____

Factoring with GCF & Grouping

Date_____

Factor the common factor out of each expression.

1) $7x^4 + 7x + 7$

2) $21pq^2r^2 + 12pq^2r + 12pq^2$

3) $24x^3 - 9x^3y + 15x^3y^4$

4) $28b + 14b^2 + 21b^3$

5) $56p^2q + 35p^2q^2m + 35p^2q^3m^2$

Factor each completely by grouping

6) $8n^3 - 7n^2 + 8n - 7$

7) $8k^3 + 3k^2 - 24k - 9$

8) $15n^3 - 35n^2 - 3n + 7$

9) $12au + 3av + 4yu + yv$

10) $32mn - 40m^2 - 4n + 5m$

Name_____

Factoring A Sum/Difference of Cubes

Date_____ Period____

Factor each completely.

1) $x^3 + 125$

3) $x^3 - 64$

5) $x^3 - 27$

7) $1 - a^3$

9) $x^3 + 27$

11) $8x^3 + 27$

13) $-a^3 - 8$

15) $648a + 1029a^4$

17) $64x^3 + 1$

19) $343m^3 + 64n^3$

Answers to Factoring with GCF & Grouping

1) $7(x^4 + x + 1)$ 2) $3pq^2(7r^2 + 4r + 4)$ 3) $3x^3(8 - 3y + 5y^4)$ 4) $7b(4 + 2b + 3b^2)$
5) $7p^2q(8 + 5mq + 5m^2q^2)$ 6) $(n^2 + 1)(8n - 7)$ 7) $(k^2 - 3)(8k + 3)$
8) $(5n^2 - 1)(3n - 7)$ 9) $(3a + y)(4u + v)$ 10) $(8m - 1)(4n - 5m)$

1) $x^3 + 125$

$(x + 5)(x^2 - 5x + 25)$

3) $x^3 - 64$

$(x - 4)(x^2 + 4x + 16)$

5) $x^3 - 27$

$(x - 3)(x^2 + 3x + 9)$

7) $1 - a^3$

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

9) $x^3 + 27$

$(x + 3)(x^2 - 3x + 9)$

11) $8x^3 + 27$

$(2x + 3)(4x^2 - 6x + 9)$

13) $-a^3 - 8$

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

15) $648a + 1029a^4$

$3a(6 + 7a)(36 - 42a + 49a^2)$

17) $64x^3 + 1$

$(4x + 1)(16x^2 - 4x + 1)$

19) $343m^3 + 64n^3$

$(7m + 4n)(49m^2 - 28mn + 16n^2)$