

Factoring Polynomials Study Guide

Date _____ Period _____

Factor the common factor out of each expression.

$$1) 15p^7 - 6p^6 - 12p^5$$

$$3p^5(5p^2 - 2p - 4)$$

$$2) 48p^{12} + 40p^9 - 24p^8$$

$$8p^8(6p^4 + 5p - 3)$$

$$3) -16k^4 - 16k + 20$$

$$4(-4k^4 - 4k + 5)$$

$$4) -40m^4 - 12m^2 - 20m$$

$$-4m(10m^3 + 3m + 5)$$

$$5) 32b^2 + 4b^3 + 12b^4$$

$$4b^2(8 + b + 3b^2)$$

$$6) 35a^4 + 28a^2 + 49a$$

$$7a(5a^3 + 4a + 7)$$

$$7) 6x^3y^2 - 18x^3y^3 - 14x^5y^2$$

$$2x^3y^2(3 - 9y - 7x^2)$$

$$8) 18x^2y^2 + 9x^3 + 9x^2$$

$$9x^2(2y^2 + x + 1)$$

$$9) 30v^3 - 10v^2u - 10v^2$$

$$10v^2(3v - u - 1)$$

$$10) -28v^3u^3 + 49v^4 - 56v^2$$

$$7v^2(-4u^3v + 7v^2 - 8)$$

$$11) 63ab^3 - 35a^2 - 28a^3$$

$$7a(9b^3 - 5a - 4a^2)$$

$$12) -10x^2y + 8xy + 5x$$

$$x(-10xy + 8y + 5)$$

$$13) 8 + 4m^2 + 10pq + 5m^4p^6q^3$$

$$8 + 4m^2 + 10pq + 5m^4p^6q^3$$

$$14) -9m^3p^4n + 54m^4p^3 + 36m^3p^3 + 90m^3p^2$$

$$9m^3p^2(-np^2 + 6mp + 4p + 10)$$

$$15) -42yz^2x^9 + 49y^5z^3 + 7y^6zx - 21y^2z$$
$$7yz(-6x^9z + 7y^4z^2 + xy^5 - 3y)$$

$$16) 40ab^2c^2 - 50a^2b - 60b^2 - 30$$
$$10(4ab^2c^2 - 5a^2b - 6b^2 - 3)$$

$$17) 42z^2y^3 - 24z^2xy^2 - 48z^3 + 30z^2y$$
$$6z^2(7y^3 - 4xy^2 - 8z + 5y)$$

$$18) -15n^3m^2 - 20nmp - 35np + 35n^2$$
$$5n(-3m^2n^2 - 4mp - 7p + 7n)$$

Factor each completely.

$$19) x^2 + 9x + 20$$
$$(x + 5)(x + 4)$$

$$20) x^2 - 17x + 72$$
$$(x - 8)(x - 9)$$

$$21) b^2 + 2b - 8$$
$$(b - 2)(b + 4)$$

$$22) x^2 - 9x + 18$$
$$(x - 3)(x - 6)$$

$$23) n^2 + 7n - 30$$
$$(n - 3)(n + 10)$$

$$24) x^2 + 7x - 8$$
$$(x + 8)(x - 1)$$

$$25) 5k^2 + 40k + 35$$
$$5(k + 1)(k + 7)$$

$$26) x^2 + 2x - 80$$
$$(x - 8)(x + 10)$$

$$27) 2m^2 - 6m - 140$$
$$2(m + 7)(m - 10)$$

$$28) 2r^2 - 6r - 8$$
$$2(r - 4)(r + 1)$$

$$29) n^2 - 7n + 6$$
$$(n - 6)(n - 1)$$

$$30) 4n^2 - 48n + 80$$
$$4(n - 2)(n - 10)$$

$$31) 3v^2 - 31v + 10$$
$$(3v - 1)(v - 10)$$

$$32) 2v^2 - 25v + 63$$
$$(2v - 7)(v - 9)$$

$$33) 5x^2 - 43x + 24$$
$$(5x - 3)(x - 8)$$

$$34) 28n^2 - 96n + 80$$
$$4(7n - 10)(n - 2)$$

$$35) 42m^2 - 204m - 288$$
$$6(7m + 8)(m - 6)$$

$$36) 14k^2 - 48k - 32$$
$$2(7k + 4)(k - 4)$$

$$37) 9m^2 - 56m + 12$$
$$(m - 6)(9m - 2)$$

$$38) 9x^2 + 10x - 16$$
$$(x + 2)(9x - 8)$$

$$39) 36x^2 + 216x + 320$$
$$4(3x + 10)(3x + 8)$$

$$40) 8n^2 + 38n + 35$$
$$(2n + 7)(4n + 5)$$

$$41) 9n^2 + 24n - 20$$
$$(3n + 10)(3n - 2)$$

$$42) 54x^2 - 294x + 120$$
$$6(x - 5)(9x - 4)$$