

NAME _____

DATE _____

FACTORING PART 2: Worksheet 2

Factor the following.

1) $2x(x - 6) - 5(x - 6)$

2) $10y(y + 1) + 7(y + 1)$

3) $3w(w + 5) + 4(w + 5)$

4) $2r(7r - 2) - 3(7r - 2)$

Factor by grouping.

5) $14t^3 + 21t^2 + 16t + 24$

6) $13y^3 - 8y^2 + 13y - 8$

7) $6x^3 + 3x^2 + 2x + 1$

8) $6w^4 + 4w^3 - 6w^2 - 4w$

Factor the following trinomials by grouping.

9) $2y^2 + y - 21$

10) $5x^2 + 51x + 10$

11) $12t^2 + 17t + 6$

12) $8x^2 - 38x - 10$

13) $12q^2 + 25q + 12$

14) $6a^2 + 11a + 5$

Solve each equation by factoring.

15) $9w^2 - 27w + 20 = 0$

16) $24m^2 + 8m - 2 = 0$

17) $9x^2 + 2 = -9x$

18) $3t^2 - 28t - 20 = 0$

19) $8q^2 - 8q = 6$

20) $10y^2 + 39y + 14 = 0$

KEY

FACTORING PART 2: Worksheet 2

Factor the following.

$$1) \quad 2x(x-6) - 5(x-6) \\ (x-6)(2x-5)$$

$$2) \quad 10y(y+1) + 7(y+1) \\ (y+1)(10y+7)$$

$$3) \quad 3w(w+5) + 4(w+5) \\ (w+5)(3w+4)$$

$$4) \quad 2r(7r-2) - 3(7r-2) \\ (7r-2)(2r-3)$$

Factor by grouping.

$$5) \quad 14t^3 + 21t^2 + 16t + 24 \\ 7t^2(2t+3) + 8(2t+3) \\ (2t+3)(7t^2+8)$$

$$6) \quad 13y^3 - 8y^2 + 13y - 8 \\ y^2(13y-8) + 1(13y-8) \\ (13y-8)(y^2+1)$$

$$7) \quad 6x^3 + 3x^2 + 2x + 1 \\ 3x^2(2x+1) + 1(2x+1) \\ (2x+1)(3x^2+1)$$

$$8) \quad 6w^4 + 4w^3 - 6w^2 - 4w \\ 2w(3w^3 + 2w^2 - 3w - 2) \\ 2w[w^2(3w+2) - 1(3w+2)] \\ 2w(3w+2)(w^2-1) \\ 2w(3w+2)(w+1)(w-1)$$

Factor the following trinomials by grouping.

$$9) \quad 2y^2 + y - 21 \\ 2y^2 + 7y - 6y - 21 \\ y(2y+7) - 3(2y+7) \\ (2y+7)(y-3)$$

$$10) \quad 5x^2 + 51x + 10 \\ 5x^2 + 50x + x + 10 \\ 5x(x+10) + 1(x+10) \\ (x+10)(5x+1)$$

$$11) \quad 12t^2 + 17t + 6 \\ 12t^2 + 8t + 9t + 6 \\ 4t(3t+2) + 3(3t+2) \\ (3t+2)(4t+3)$$

$$12) \quad 8x^2 - 38x - 10 \\ 8x^2 - 40x + 2x - 10 \\ 8x(x-5) + 2(x-5) \\ (x-5)(8x+2)$$

$$13) \quad 12q^2 + 25q + 12 \\ 12q^2 + 16q + 9q + 12 \\ 4q(3q+4) + 3(3q+4) \\ (3q+4)(4q+3)$$

$$14) \quad 6a^2 + 11a + 5 \\ 6a^2 + 5a + 6a + 5 \\ a(6a+5) + 1(6a+5) \\ (6a+5)(a+1)$$

Solve each equation by factoring.

$$15) \quad 9w^2 - 27w + 20 = 0 \\ 9w^2 - 15w - 12w + 20 = 0 \\ 3w(3w-5) - 4(3w-5) = 0 \\ (3w-5)(3w-4) = 0 \\ \left\{ \frac{4}{3}, \frac{5}{3} \right\}$$

$$16) \quad 24m^2 + 8m - 2 = 0 \\ 2(12m^2 + 4m - 1) = 0 \\ 2[12m^2 + 6m - 2m - 1] = 0 \\ 2[6m(2m+1) - 1(2m+1)] = 0 \\ 2(2m+1)(6m-1) = 0 \\ \left\{ -\frac{1}{2}, \frac{1}{6} \right\}$$

$$17) \quad 9x^2 + 2 = -9x \\ 9x^2 + 9x + 2 = 0 \\ 9x^2 + 6x + 3x + 2 = 0 \\ 3x(3x+2) + 1(3x+2) = 0 \\ (3x+2)(3x+1) = 0 \\ \left\{ -\frac{2}{3}, -\frac{1}{3} \right\}$$

18) $3t^2 - 28t - 20 = 0$
 $3t^2 - 30t + 2t - 20 = 0$
 $3t(t - 10) + 2(t - 10) = 0$
 $(t - 10)(3t + 2) = 0$
 $\left\{-\frac{2}{3}, 10\right\}$

19) $8q^2 - 8q = 6$
 $8q^2 - 8q - 6 = 0$
 $2(4q^2 - 4q - 3) = 0$
 $2[4q^2 - 6q + 2q - 3] = 0$
 $2[2q(2q - 3) + 1(2q - 3)] = 0$
 $2(2q - 3)(2q + 1) = 0$
 $\left\{-\frac{1}{2}, \frac{3}{2}\right\}$

20) $10y^2 + 39y + 14 = 0$
 $10y^2 + 35y + 4y + 14 = 0$
 $5y(2y + 7) + 2(2y + 7) = 0$
 $(2y + 7)(5y + 2) = 0$
 $\left\{-\frac{7}{2}, -\frac{2}{5}\right\}$