Name: KEY

Math 10C Factoring Worksheet

1. Factor each of the following.

a. $\frac{6x+3}{3}$ GCF: 3

$3(2x+1)$

b. $\frac{15x-20}{5}$ GCF: 5

$5(3x-4)$

2. Factor each trinomial.

a. $36x^2y-12xy^2+24xy$ GCF: $12xy$

$12xy(3x-y+2)$

b. $20r^2s^2+10rs^2-15r^2s$ GCF: $5rs$

$5rs(4rs+2s-5r)$

3. Factor each of the following.

a. x^2+4x+3

$(x+3)(x+1)$

b. x^2+5x+6

$(x+5)(x+1)$

c. x^2-2x-8 $\times 8$, -2, $4\ 2$

$x^2-4x\,|\,+2x-8$

$x(x-4)\,|\,+2(x-4)$

$(x-2)(x-4)$

d. $x^2+12x-28$ $\times 28$, -12, $14\ 2$

$x^2+14x\,|\,-2x-28$

$x(x+7)\,|\,-2(x+7)$

$(x+7)(x-2)$

4. Factor each of the following.

a. $\frac{2x^2-10x-48}{2}$ GCF: 2

$2(x^2-5x-24)$ $\times 24$, -5, $8\ 3$

$x^2-8x\,|\,+3x-24$

$x(x-8)\,|\,+3(x-8)$

$2(x+3)(x-8)$

b. $\frac{3x^2-21x+18}{3}$ GCF: 3

$3(x^2-7x+6)$ $\times 6$, $+7$, $6\ 1$

$x^2-6x\,|\,-1x+6$

$x(x-6)\,|\,-1(x-6)$

$3(x-6)(x-1)$

c. $\frac{5x^2+15x+10}{5}$ GCF: 5

$5(x^2+3x+2)$ $\times 2$, $+3$, $2\ 1$

$x^2+2x\,|\,+1x+2$

$x(x+2)\,|\,+1(x+2)$

$5(x+1)(x+2)$

d. x^3+8x^2+15x GCF: x

$x(x^2+8x+15)$ $\times 15$, $+8$, $5\ 3$

$x^2+5x\,|\,+3x+15$

$x(x+5)\,|\,+3(x+5)$

$x(x+5)(x+3)$

5. Factor each trinomial.

a. $2x^3 + 10x^2 + 12x$ GCF: $2x$

$\frac{2x}{2x}$

$2x(x^2 + 5x + 6)$ $\times 6$, $+5$, $3\ 2$

$x^2 + 3x + 2x + 6$

$x(x+3) + 2(x+3)$

$2x(x+2)(x+3)$

b. $4x^3 - 20x^2 - 56x$ GCF: $4x$

$\frac{4x}{4x}$

$4x(x^2 - 5x - 14)$ $\times 14$, -5, $7\ 2$

$x^2 - 7x + 2x - 14$

$x(x-7) + 2(x-7)$

$4x(x+2)(x-7)$

6. Factor each of the following.

a. $3x^2 + 4x + 1$ $\times 3$, $+4$, $3\ 1$

$3x^2 + 3x + 1x + 1$

$3x(x+1) + 1(x+1)$

$(3x+1)(x+1)$

b. $2x^2 + 13x + 6$ $\times 12$, $+13$, $12\ 1$

$2x^2 + 12x + 1x + 6$

$2x(x+6) + 1(x+6)$

$(2x+1)(x+6)$

d. $6x^2 + 5x + 1$ $\times 6$, $+5$, $6\ 1$

$6x^2 + 6x + 1x + 1$

$6x(x+1) + 1(x+1)$

$(6x+1)(x+1)$

d. $2x^2 + 11x + 12$ $\times 24$, $+11$, $8\ 3$

$2x^2 + 8x + 3x + 12$

$2x(x+4) + 3(x+4)$

$(2x+3)(x+4)$

7. Factor each of the following.

a. $2x^2 - 13x + 6$ $\times 12$, -13, $-12\ -1$

$2x^2 - 12x - 1x + 6$

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

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

b. $2x^2 + 11x - 6$ $\times 12$, -11, $+12\ -1$

$2x^2 + 12x - 1x - 6$

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

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

d. $4x^2 - 15x + 9$ $\times 36$, $-12\ -3$

$4x^2 - 12x - 3x + 9$

$4x(x-3) - 3(x-3)$

$(4x-3)(x-3)$

d. $10x^2 + 13x - 3$ $\times 30$, -13, $+15\ -2$

$10x^2 + 15x - 2x - 3$

$5x(2x+3) - 1(2x+3)$

$(5x-1)(2x+3)$

8. Factor each trinomial.

a. $6x^3 - 24x^2 + 24x$ GCF: $6x$

$6x(x^2 - 4x + 4)$ $\times 4$, $+4$, $-2 - 2$

$x^2 - 2x \mid -2x + 4$

$x(x-2) \mid -2(x-2)$

$6x(x-2)(x-2)$

b. $8x^2 - 20x + 12$ GCF: 4

$4(2x^2 - 5x + 3)$ $\times 6$, $+5$, $-3 - 2$

$2x^2 - 3x \mid -2x + 3$

$x(2x-3) \mid -2(2x-3)$

$4(x-2)(2x-3)$

9. Factor each of the following.

a. $4x^2 - 12x + 9$ $\times 36$, $+12$, $-6 - 6$

$4x^2 - 6x \mid -6x + 9$

$2x(2x-3) \mid -3(2x-3)$

$(2x-3)(2x-3)$

b. $9x^2 + 30x + 25$ $\times 225$, $+30$, $+15 + 15$

$9x^2 + 15x \mid +15x + 25$

$3x(3x+5) \mid +5(3x+5)$

$(3x+5)(3x+5)$

10. Factor each of the following.

a. $49x^2 - 81$

$(7x-9)(7x+9)$

b. $9x^2 - 100$

$(3x-25)(3x+25)$

c. $x^2 - 64$

$(x-8)(x+8)$

d. $5x^4 - 80$ GCF: 5

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

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

11. Factor each of the following.

a. $x^2 + 14xy + 33y^2$

b. $5x^2 - 13xy - 6y^2$

c. $u^2 - 6uv - 7v^2$

d. $3x^2 + 15xy + 12y^2$