Name: KEY

Date: _____

F.1 Worksheet

Simplify

1) $(x+4)(x+7)$

$x^2+7x+4x+28$

$x^2+11x+28$

2) $(y-6)(y+2)$

$y^2+2y-6y-12$

$y^2-4y-12$

3) $(w-3)(w-4)$

$w^2-4w-3w+12$

$w^2-7w+12$

4) $(7-m)(7+m)$

$49+7m-7m-m^2$

$49-m^2$

5) $(2x+3)(4x-1)$

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

$8x^2+10x-3$

6) $(3x-5)^2$

$(3x-5)(3x-5)$

$9x^2-15x-15x+25$

$9x^2-30x+25$

7) $-2(p-8)(p+1)$

$-2[p^2+p-8p-8]$

$-2[p^2-7p-8]$

$-2p^2+14p+16$

8) $-(x+1)(x+4)$

$-[x^2+4x+x+4]$

$-1[x^2+5x+4]$

$-x^2-5x-4$

9) $4(w-2)(-w+9)$

$4[-w^2+9w+2w-18]$

$4[-w^2+11w-18]$

$-4w^2+44w-72$

10) $(3x-1)(x+2)+(x+5)(2x-2)$

$3x^2+6x-x-2+[x^2-2x+10x-10$

$3x^2+5x-2+x^2+8x-10$

$4x^2+13x-12$

11) $(a-4)(a-3)-(a+2)(a-5)$

$a^2-3a-4a+12-[a^2-5a+2a-10]$

$a^2-7a+12-1[a^2-3a-10]$

$a^2-7a+12-a^2+3a+10$

$-4a+22$

12) $(t+2)(t^2-3t+2)$

$t^3-3t^2+2t+2t^2-6t+4$

t^3-t^2-4t+4

13) $(y^2+y-6)(y+6)$

$y^3+6y^2+y^2+6y-6y-36$

y^3+7y^2-36

14) $2(x+3)^2$

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

$2[x^2+3x+3x+9]$

$2[x^2+6x+9]$

$2x^2+12x+18$

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F.2 Worksheet

Factor

1) $3p + 6$

$3(p+2)$

2) $12x - 8$

$4(3x-2)$

3) $-6 - y$

$-1(6+y)$

4) $7x^2 - 21x$

$7x(x-3)$

5) $-4w - 20$

$-4(w+5)$

6) $16a + 12b$

$4(4a+3b)$

7) $28m^2 - 21mn$

$7m(4m-3n)$

8) $9y^2 - 6y + 12$

$3(3y^2-2y+4)$

9) $8x^2y + 10xy$

$2xy(4x+5)$

10) $6pqr - 18q^2r$

$6qr(p-3q)$

11) $-16m^7 - 24m^5$

$-8m^5(2m^2+3)$

12) $-3x^3 - x^4$

$-x^3(3+x)$

13) $20c^3d^4 - 15c^2d^5 + 25c^3d^3$

$5c^2d^3(4cd-3d^2+5c)$

14) $a^6b^4c^9 + a^5b^7c^5 - b^{10}c^4$

$b^4c^4(a^6c^5+a^5b^2c-b^6)$

15) $4x^4 - 8x^3 + 10x^2 - 2x$

$2x(2x^3-4x^2+5x-1)$

16) $24mn^2 + 48m^2n - 36mn$

$12mn(2n+4m-3)$

17) $-70w^3 - 80w - 30w^2$

$-10w(7w^2+8+3w)$

18) $27pq^4r + 30pq^3r^2 - 21pq^4r^2$

$3pq^3r(9q+10r-7qr)$

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F.3 Worksheet

Factor

1) $x^2 + 10x + 16$

× 16
+ 10
8, 2

$(x+8)(x+2)$

2) $y^2 + 4y - 21$

× -21
+ 4
7, -3

$(y+7)(y-3)$

3) $p^2 - 6p - 7$

× -7
+ -6
-7, 1

$(p-7)(p+1)$

4) $n^2 - 2n + 1$

× 1
+ -2
-1, -1

$(n-1)(n-1)$

$(n-1)^2$

5) $t^2 + t - 42$

× -42
+ 1
7, -6

$(t+7)(t-6)$

6) $k^2 + 10k + 25$

× 25
+ 10
5, 5

$(k+5)(k+5)$

$(k+5)^2$

7) $-12 + q^2 - q$

$q^2 - q - 12$ × -12, + -1

-4, 3

$(q-4)(q+3)$

8) $3x + x^2 - 28$

$x^2 + 3x - 28$

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

9) $4 + 5y + y^2$

$y^2 + 5y + 4$

$(y+4)(y+1)$

10) $m^2 - 3mn + 2n^2$

$(m-2n)(m-n)$

11) $x^2 - 7xy - 30y^2$

$(x-10y)(x+3y)$

12) $2x^2 + 26x + 24$

$2(x^2+13x+12)$

$2(x+12)(x+1)$

13) $-3p^2 - 12p + 36$

$-3(p^2+4p-12)$

$-3(p+6)(p-2)$

14) $k + 56 - k^2$

$-k^2 + k + 56$

$-1(k^2-k-56)$

$-1(k-8)(k+7)$

15) $8x + 4x^2 - 60$

$4x^2 + 8x - 60$

$4(x^2+2x-15)$

$4(x+5)(x-3)$

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F.4 Worksheet

Factor

1) $x^2 + 6x + 9$

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

$(x+3)^2$

2) $y^2 - 9$

$(y+3)(y-3)$

3) $p^2 - 10p + 25$

$(p-5)(p-5)$

$(p-5)^2$

4) $m^2 - 49$

$(m+7)(m-7)$

5) $64 - w^2$

$(8+w)(8-w)$

6) $n^2 - 18n + 81$

$(n-9)(n-9)$

$(n-9)^2$

7) $4p^2 - 25q^2$

$(2p+5q)(2p-5q)$

8) $100a^2 - 49b^2$

$(10a+7b)(10a-7b)$

9) $2x^2 + 8$

$2(x^2+4)$

10) $36 + y^2 + 12y$

$y^2 + 12y + 36$

$(y+6)(y+6)$

$(y+6)^2$

11) $-2m^2 + 32$

$-2(m^2-16)$

$-2(m+4)(m-4)$

12) $20p^2 - 45r^2$

$5(4p^2-9r^2)$

$5(2p+3r)(2p-3r)$

13) $8 - 72p^2$

$8(1-9p^2)$

$8(1+3p)(1-3p)$

14) $16y - 2y^2 - 32$

$-2y^2+16y-32$

$-2(y^2-8y+16)$

$-2(y-4)(y-4)$

$-2(y-4)^2$

15) $-300x^2 + 147y^2$

$-3(100x^2-49y^2)$

$-3(10x+7y)(10x-7y)$

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F.5 Worksheet

Factor

1) $x^2 - 3x - 54$

$(x-9)(x+6)$

2) $2p^4 - 6p + 8p^2$

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

3) $m^2 - 25$

$(m+5)(m-5)$

4) $-7y^2 - 28$

$-7(y^2+4)$

5) $16t + 64 + t^2$

$t^2 + 16t + 64$

$(t+8)(t+8)$

$(t+8)^2$

6) $-3y^3 - 6y^2 + 24y$

$-3y(y^2 + 2y - 8)$

$-3y(y+4)(y-2)$

7) $24 - 40w$

$8(3-5w)$

8) $98x^2 - 50y^2$

$2(49x^2 - 25y^2)$

$2(7x+5y)(7x-5y)$

9) $3n^2 - 12n - 15$

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

$3(n-5)(n+1)$

10) $45 - 14x + x^2$

$x^2 - 14x + 45$

$(x-9)(x-5)$

11) $-4a^2b^3c^2 - 14abc^3$

$-2abc^2(2ab^2 + 7c)$

12) $16 - m^2$

$(4+m)(4-m)$

13) $162 + 2w^2 - 36w$

$2w^2 - 36w + 162$

$2(w^2 - 18w + 81)$

$2(w-9)(w-9)$

$2(w-9)^2$

14) $5x^2 - 80y^2$

$5(x^2 - 16y^2)$

$5(x+4y)(x-4y)$

15) $-64p - 48q$

$-16(4p+3q)$