Binomial Expansion

Monomial = 1 term
Binomial = 2 terms
Trinomial = 3 terms
Polynomial … all the rest (and the above 3 too)

So Binomial x binomial = 2 terms x 2 terms or 4 terms

Memory tools for this: FOIL (First, outside, inside, last)
Or Hills and Valleys (which is way better as you will soon see)

1) Expand the following

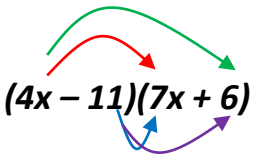
a) $(3x - 7)(5x + 2)$

$(3x - 7)(5x + 2)$

← the hills
← the valleys

$15x^2 + 6x$
$-35x - 14$
= $15x^2 - 29x - 14$

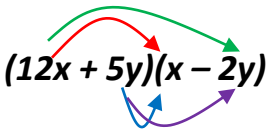
b) $(4x - 11)(7x + 6)$



$(4x - 11)(7x + 6)$

$28x^2 + 24x$
$-77x - 66$
$28x^2 - 53x - 66$

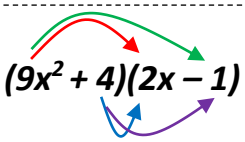
c) $(12x + 5y)(x - 2y)$



$(12x + 5y)(x - 2y)$

$12x^2 - 24xy$
$+ 5xy - 10y^2$
$12x^2 - 19xy - 10y^2$

d) $(9x^2 + 4)(2x - 1)$



$(9x^2 + 4)(2x - 1)$

$36x^3 - 9x^2 + 8x - 4$

No like terms here

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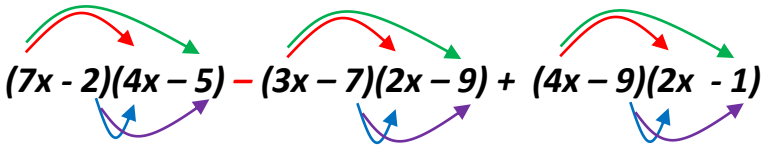
2) Expand and simplify

$(7x - 2)(4x - 5) - (3x - 7)(2x - 9) + (4x - 9)(2x - 1)$



$(7x - 2)(4x - 5) - (3x - 7)(2x - 9) + (4x - 9)(2x - 1)$

the negative in 2nd term must be applied to all terms in that expansion

$28x^2 - 35x$
$-8x + 10$
$-6x^2 + 27x$
$+14x - 63$
$8x^2 - 4x$
$-18x + 9$
$30x^2 - 24x - 44$

ASSIGNMENT = WORKSHEET

Expanding #1

What did they say about the man who died from drinking Shellac?

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

1) $(x + 4)(x + 2)$ ***2)*** $(x + 7)(x + 1)$ ***3)*** $(x - 6)(x - 3)$

4) $(x + 8)(x - 2)$ ***5)*** $(x - 7)(x + 4)$ ***6)*** $(x - 2)((x - 9)$

7) $(2u + 4)(u + 1)$ ***8)*** $(3u + 7)(u - 3)$ ***9)*** $(4u - 2)(5u - 1)$

10) $(2u + 1)(9u - 5)$ ***11)*** $(7u - 4)(3u + 6)$ ***12)*** $(5u - 8)(4u - 4)$

13) $(2x + y)(x + 3y)$ ***14)*** $(3x - y)(8x - y)$ ***15)*** $(2x + y)(4x - 3y)$

16) $(5x - 2y)(3x + 4y)$ ***17)*** $(7x + 3y)(x + 2y)$ ***18)*** $(6x + 6y)(2x - 4y)$

Answers

H	$x^2 - 9x + 18$	N	$x^2 + 4x + 7$	L	$21u^2 + 30u - 24$	L	$2u^2 + 6u + 4$	E	$8x^2 + xy - 3y^2$	T	$12x^2 - 9xy - 24y^2$
A	$x^2 - 11x + 18$	E	$x^2 + 8x + 7$	V	$20u^2 - 14u + 2$	S	$21u^2 + 23u - 24$	N	$8x^2 - 2xy - 3y^2$	H	$12x^2 - 12xy - 24y^2$
S	$x^2 - 5x - 28$	D	$x^2 - 3x - 28$	U	$3u^2 + u - 21$	Y	$20u^2 - 52u + 32$	F	$2x^2 + 7xy + 3y^2$	A	$15x^2 + 9xy - 8y^2$
H	$x^2 + 6x + 8$	R	$x^2 - 2x + 18$	O	$3u^2 - 2u - 21$	E	$18u^2 - u - 5$	R	$7x^2 + 8xy + 6y^2$	S	$7x^2 + 17xy + 6y^2$
A	$x^2 + 6x - 16$	L	$x^2 + 3x - 16$	T	$18u^2 + 2u - 5$	N	$20u^2 - 41u + 32$	I	$24x^2 - 11xy + y^2$	I	$15x^2 + 14xy - 8y^2$

Now complete Page 186 #15(a, b, c, d)