Multiplying Simple Polynomials

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11:24 AM

PRE-CALCULUS 11
MATHEMATICS 10 REVIEW
MULTIPLYING SIMPLE POLYNOMIALS

1) Simplify the following.

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

$= -20m^{2+3}n^{1+1}$

$= -20m^5n^2$

b) $(4ab^2)^3$ $(4ab^2)(4ab^2)(4ab^2)$

$= 64a^{1+1+1}b^{2+2+2}$

$= 64a^3b^6$

c) $4y(2x^2 - 5y)$

$= 8x^2y - 20y^2$

d) $-3m^2(m^2 - 4m + 3)$

$= -3m^4 + 12m^3 - 9m^2$

e) $(x-3)(2x+1)$ FOIL

$= 2x^2 + x - 6x - 3$

$= 2x^2 - 5x - 3$

f) $(3m-2n)^2$ $(3m-2n)(3m-2n)$

$= 9m^2 - 6mn - 6mn + 4n^2$

$= 9m^2 - 12mn + 4n^2$

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

$=(4x-20)(2x+3)$

$=8x^2+12x-40x-60$

$=\boxed{8x^2-28x-60}$

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

$=10x^2-15x+x^2-4x-2x^2-2x$

$=\boxed{9x^2-21x}$

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

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

$6x^2-4x-15x+10-x^2+3x-4x+12$

$=\boxed{5x^2-20x+22}$

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

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

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

$16x^2+12xy+12xy+9y^2-4x^2-6xy-6xy-9y^2$

$=\boxed{12x^2+12xy}$

Assignment: Multiplying Polynomials Assignment #1, 2, 3

Assignment

1. Expand and simplify where possible.

a) $6(7x-3)$ b) $-4(4x+9)$ c) $4x(2y+8z)$ d) $-x(x-5y)$

e) $5(8x-3y)+2(4y+x)$ f) $3a(2a^2b-ab+b^2)-6b(a^3+3ab-5b^2)$

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

i) $a(b-c)+b(c-a)+c(a-b)$ j) $20x^3y^3-4x^3y^2(3x+5y-xy)$

2. Expand and simplify where possible.

a) $(7x-2)(3x+5)$ b) $(2h-3)(2h-1)$ c) $(3z+4)(3z+5)$

d) $2(4x-3)(3x-4)$ e) $5(8x-3y)(2x+y)$ f) $-4(a+3b)(2a-5b)$

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

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

3. Expand and simplify where possible.

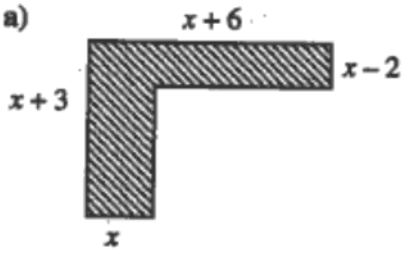
a) $(x-8)^2$ **b)** $(2p+7)^2$ **c)** $(3x-y)^2$ **d)** $4(5x+2y)^2$

e) $(x+4)^2+(x+2)^2$ **f)** $(3a-b)^2-(2a+5b)^2$ **g)** $3(y-1)^2-2(2y-1)^2$

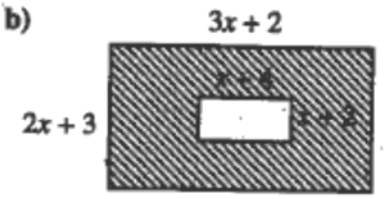
h) $(x-9)(x+9)$ **i)** $(3x-2)(3x+2)$ **j)** $(4m+3n)(4m-3n)$

4. In each of the following **i)** write an expression for the shaded area
ii) expand and write the expression in simplest form.

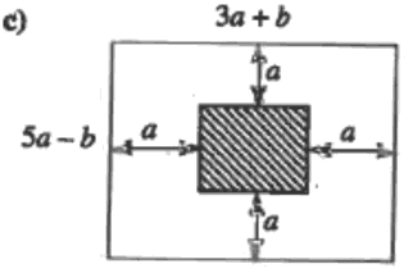
a)



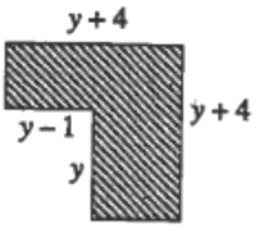
b)



c)



d)



Answer Key

1. a) $42x - 18$ b) $-16x - 36$ c) $8xy + 32xz$ d) $-x^2 + 5xy$ e) $42x - 7y$
   f) $-3a^2b - 15ab^2 + 30b^3$ g) $3x^2 - 9x$ h) $14p^3 - 6p^2$ i) 0 j) $-12x^4y^2 + 4x^4y^3$

2. a) $21x^2 + 29x - 10$ b) $4h^2 - 8h + 3$ c) $9z^2 + 27z + 20$ d) $24x^2 - 50x + 24$
   e) $80x^2 + 10xy - 15y^2$ f) $-8a^2 - 4ab + 60b^2$ g) $x^2 - 8x + 3$ h) $2x^2 + 43x - 32$
   i) $-23x + 38$ j) $-18y^2 + 54y + 2$

3. a) $x^2 - 16x + 64$ b) $4p^2 + 28p + 49$ c) $9x^2 - 6xy + y^2$ d) $100x^2 + 80xy + 16y^2$
   e) $2x^2 + 12x + 20$ f) $5a^2 - 26ab - 24b^2$ g) $-5y^2 + 2y + 1$ h) $x^2 - 81$
   i) $9x^2 - 4$ j) $16m^2 - 9n^2$

4. answers to part i) may vary
   a) i) $(x + 6)(x - 2) + 5x$ ii) $x^2 + 9x - 12$
   b) i) $(3x + 2)(2x + 3) - (x + 4)(x + 2)$ ii) $5x^2 + 7x - 2$
   c) i) $(3a - b)(a + b)$ ii) $3a^2 + 2ab - b^2$
   d) i) $(y + 4)^2 - y(y - 1)$ ii) $9y + 16$