Multiplying Binomials

January-10-17
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Mathematics 9
Polynomials
Multiplying Binomials

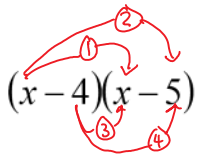
A. Definitions

1. **binomial:** the expression that contains two terms.

$x + 3$, $5m - 7$, $4a^2 + 2b^2$

B. Multiplying Binomials Using FOIL Method

The FOIL Method is a mathematical method for multiplying two binomials together.



$(x-4)(x-5)$

First
Outside
Inside
Last

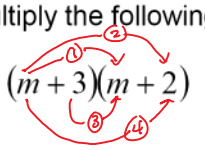
$x^2 - 5x - 4x + 20$

$x^2 - 9x + 20$

- Do all multiplications and then combine any like terms.

1. Multiply the following binomials.

a) $(m+3)(m+2)$



$m^2 + 2m + 3m + 6$

$m^2 + 5m + 6$

b) $(a-6)(a-4)$

$a^2 - 4a - 6a + 24$

$a^2 - 10a + 24$

c) $(m+8)(m-2)$

$m^2 - 2m + 8m - 16$

$m^2 + 6m - 16$

d) $(x+5)(x-5)$

$x^2 - 5x + 5x - 25$

$x^2 - 25$

e) $(3y+2)(2y+5)$

$6y^2 + 15y + 4y + 10$

$6y^2 + 19y + 10$

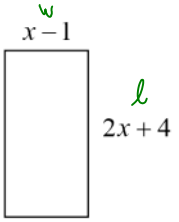
f) $(4n-3)(2n-7)$

$8n^2 - 28n - 6n + 21$

$8n^2 - 34n + 21$

2. Write an expression to represent the area of the following shapes.

a)



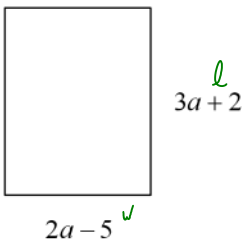
$A = lw$

$A = (2x+4)(x-1)$

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

$2x^2 + 2x - 4$

b)



$A = lw$

$A = (3a+2)(2a-5)$

$= 6a^2 - 15a + 4a - 10$

$6a^2 - 11a - 10$

Assignment: Multiplying Binomials Assignment

Name:_____

Multiplying Binomials Assignment

A. Multiply the following polynomials.

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

2) $(-7a^2)(-3a^3)$

3) $\left(\frac{2}{3}x^4y\right)\left(\frac{9}{2}xy^2z\right)$

4) $(6m^2np)(-4m^4np^3)$

5) $5(2a-4)$

6) $-3(3a-2b+4c)$

7) $3ab(2a^2-4ab+5)$

8) $(5mn-4n+3)(2m^2n)$

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

10) $(x-5)(x-1)$

11) $(a+7)(a-7)$

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

13) $(m-6)(m-2)$

14) $(y+4)(y-6)$

15) $(m-9)(m+9)$

16) $(a-7)(a-4)$

17) $(x-5)(2x+5)$

18) $(2a+3)(3a-4)$

19) $(3x-1)(x+8)$

20) $(3m+2)(3m-2)$

Answers

1) $-20x^4$

2) $21a^5$

3) $3x^5y^3z$

4) $-24m^6n^2p^4$

5) $10a-20$

6) $-9a+6b-12c$

7) $6a^3b-12a^2b^2+15ab$

8) $10m^3n^2-8m^2n^2+6m^2n$

9) x^2+5x+6

10) x^2-6x+5

11) a^2-49

12) $x^2+5x-24$

13) $m^2-8m+12$

14) $y^2-2y-24$

15) m^2-81

16) $a^2-11a+28$

17) $2x^2-5x-25$

18) $6a^2+a-12$

19) $3x^2+23x-8$

20) $9m^2-4$