

## LESSON 17: POLYNOMIALS (SEC 5.2)

### OBJECTIVES:

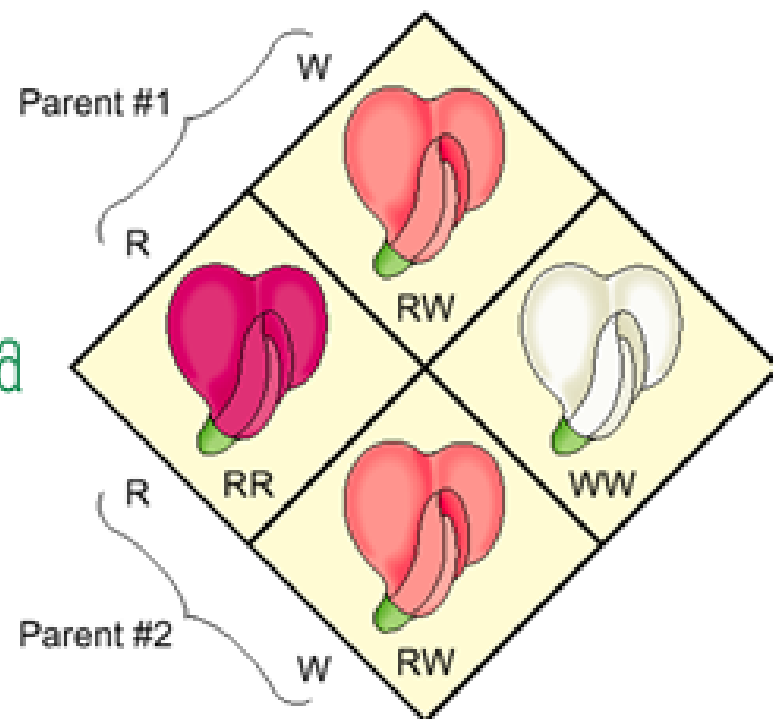
~ADD SUBTRACT, MULTIPLY POLYNOMIALS

# SECTION 5-2: POLYNOMIALS

SCIENTISTS CAN USE ALGEBRAIC EXPRESSIONS TO SUMMARIZE THE POSSIBLE OUTCOMES IN GENETIC BREEDING. CERTAIN TRAITS RESULT FROM THE PAIRING OF TWO GENES, ONE FROM THE FEMALE PARENT AND ONE FROM THE MALE PARENT.

FOR EXAMPLE, SUPPOSE A RED-FLOWERING, SWEET PEA PLANT HAS GENOTYPE  $RR$ , A WHITE-FLOWERING, SWEET PEA PLANT HAS GENOTYPE  $WW$ , AND A PINK-FLOWERING, SWEET PEA PLANT HAS GENOTYPE  $RW$ . EACH LETTER REPRESENTS ONE OF THE TWO GENES THAT MAKE UP THE CHARACTERISTICS.

SUPPOSE TWO PINK-FLOWERING PLANTS ARE BRED. THE OFFSPRING CAN BE EXPRESSED USING ALGEBRA AND A MODEL CALLED A PUNNETT SQUARE.

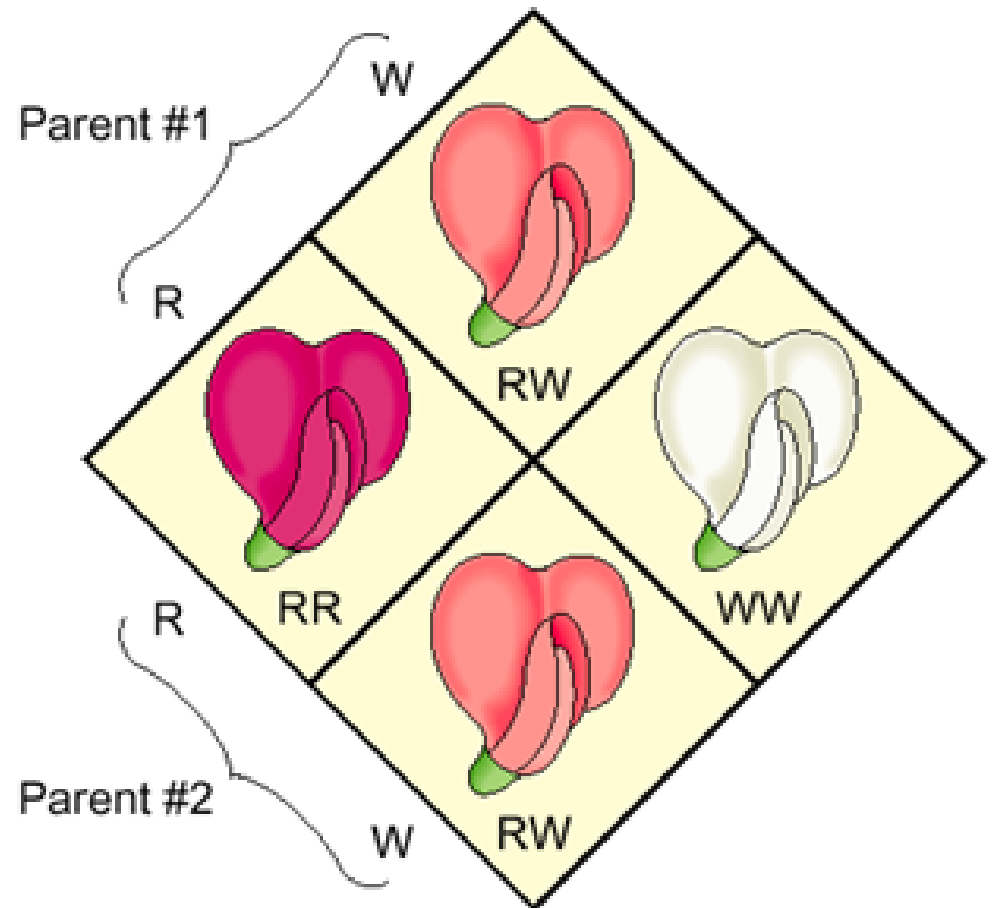


## SECTION 5-2: POLYNOMIALS

THE SUM OF THE POSSIBLE RESULTS FOR FOUR OFFSPRING CAN BE WRITTEN AS  $R^2 + RW + RW + W^2$ .  
THE RESULT WOULD BE A SUM OF FOUR MONOMIALS, WHICH CAN BE WRITTEN AS

THE REASON  $RW + RW$  CAN BE COMBINED AS  $2RW$  IS BECAUSE THEY  
ARE LIKE TERMS.

THE EXPRESSION  $R^2 + 2RW + W^2$  IS KNOWN AS A  
POLYNOMIAL.



## SECTION 5-2: POLYNOMIALS

### SOME IMPORTANT DEFINITIONS

~ a POLYNOMIAL IS a MONOMIAL OR a SUM OF MONOMIALS.

$$\text{ex: } 2X + 3Y - 4XY$$

~ THE MONOMIALS OF a POLYNOMIAL are called THE TERMS OF THE POLYNOMIAL.

$$\text{ex: } 2X + 3Y + 4XY \text{ HAS 3 TERMS: } 2X, 3Y, \text{ AND } 4XY$$

~ a POLYNOMIAL WITH 3 TERMS (UNLIKE TERMS-CANNOT BE COMBINED) IS KNOWN AS a TRINOMIAL.

$$\text{ex: } 6Z + 7W + 3ZWY \text{ IS a TRINOMIAL}$$

~ a POLYNOMIAL WITH 2 TERMS (UNLIKE) IS a BINOMIAL.

$$\text{ex: } X - 6TY \text{ IS a BINOMIAL}$$

## SECTION 5-2: POLYNOMIALS

### SOME IMPORTANT DEFINITIONS

DEGREE OF a MONOMIAL: THE SUM OF ALL THE EXPONENTS OF  
ALL THE VARIABLES.

DEGREE OF a POLYNOMIAL: EQUALS THE DEGREE OF THE  
TERM WITH THE GREATEST DEGREE.

## SECTION 5-2: POLYNOMIALS

# POLYNOMIALS

EXAMPLES:

STATE WHAT TYPE OF POLYNOMIAL AND THE DEGREE

A.  $\frac{2}{7}x^4y^3 - 21x^3$

B.  $\sqrt{x} - 3$

C.  $x^2$

D.  $x^2 - 3x^3 + 2x$

## SECTION 5-2: POLYNOMIALS

### SIMPLIFYING POLYNOMIALS

WHEN SIMPLIFYING POLYNOMIALS, COMBINE ALL LIKE TERMS.

EXAMPLES: SIMPLIFY.

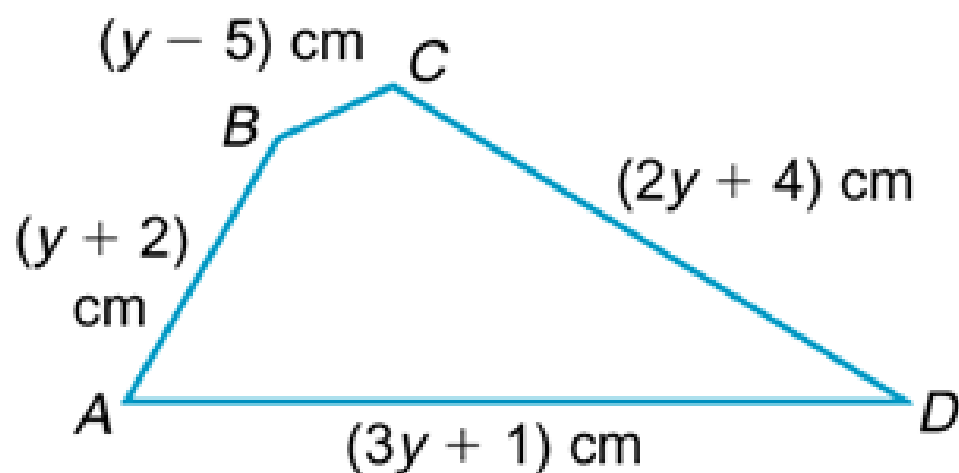
1.  $(4x^2 - 3x) - (x^2 + 2x - 1)$

2.  $(2x^2 - 3xy + 5y^2) - (4x^2 - 3xy - 2y^2)$

SECTION 5-2: POLYNOMIALS

SIMPLIFYING POLYNOMIALS

FIND THE PERIMETER OF THE QUADRILATERAL





## SECTION 5-2: POLYNOMIALS

### MULTIPLYING POLYNOMIALS

USE THE DISTRIBUTIVE PROPERTY TO MULTIPLY POLYNOMIALS.

EXAMPLE: SIMPLIFY

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

## SECTION 5-2: POLYNOMIALS

### MULTIPLYING POLYNOMIALS

USE THE DISTRIBUTIVE PROPERTY TO MULTIPLY POLYNOMIALS.

EXAMPLE: SIMPLIFY

$$9a^2 (3a - 7b^3)$$

## SECTION 5-2: POLYNOMIALS

# MULTIPLYING POLYNOMIALS

WHEN MULTIPLYING 2 BINOMIALS, THE FOIL METHOD CAN BE USED.

THE FOIL METHOD IS AN APPLICATION OF THE DISTRIBUTION PROPERTY THAT MAKES MULTIPLICATION EASIER.

**The product of two binomials is the sum of the products of**

- F**    the *first* terms,
- O**    the *outer* terms,
- I**    the *inner* terms, and
- L**    the *last* terms.

## SECTION 5-2: POLYNOMIALS

# MULTIPLYING POLYNOMIALS

The product of two binomials is the sum of the products of

- F** the *first* terms,
- O** the *outer* terms,
- I** the *inner* terms, and
- L** the *last* terms.

EXAMPLE: USE THE FOIL METHOD (FOR DISTRIBUTION) TO FIND THE PRODUCT.

$$(x + 8)(x + 12)$$

## SECTION 5-2: POLYNOMIALS

### MULTIPLYING POLYNOMIALS

EXAMPLE: USE THE FOIL METHOD TO FIND THE PRODUCT.

$$(4n + 3)(3n + 1)$$

## SECTION 5-2: POLYNOMIALS

### MULTIPLYING POLYNOMIALS

EXAMPLE: USE THE FOIL METHOD TO FIND THE PRODUCT.

$$(x + 3)^2$$

## SECTION 5-2: POLYNOMIALS

### MULTIPLYING POLYNOMIALS

EXAMPLE: USE THE FOIL METHOD TO FIND THE PRODUCT.

$$(4c - 5)(2c - 3)$$

## SECTION 5-2: POLYNOMIALS

### MULTIPLYING POLYNOMIALS

EXAMPLE: USE THE FOIL METHOD TO FIND THE PRODUCT.

$$(3y^2 - 2)(-2y + 1)$$



## SECTION 5-2: POLYNOMIALS

### MULTIPLYING POLYNOMIALS

EXAMPLE: USE THE FOIL METHOD TO FIND THE PRODUCT.

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

# JOURNAL 17

DUE AT BEGINNING OF CLASS

# ASSIGNMENT 17

DUE AT END OF CLASS