Name: Key
Algebra 1

Date: _____ Period: _____
Day 14 – Adding and Subtracting Polynomials

A polynomial is a monomial or the sum of monomials, each called a term of the polynomial. Some polynomials have special names:

- A binomial is the sum of two monomials.
- A trinomial is the sum of three monomials.

4 one term

The degree of a monomial is the sum of the exponents of all its variables. A nonzero constant term has degree 0, and zero has no degree.

The degree of a polynomial is the **highest degree** of any of the terms in the polynomial.

Example $5x - 2x^2 + 1$ has a degree of 2 and is called quadratic

Degree	Name
0	constant
1	linear
2	quadratic
3	cubic
4	quartic
5	quintic
6 or more	6th degree, 7th degree, etc.

When the terms of a polynomial are arranged so that the terms are in order from least to greatest degree, the polynomial is in standard form.

Determine whether the following expression is a polynomial. If so, identify the polynomial as a monomial, binomial, or trinomial. Then find the degree of the polynomial.

* NO: neg/fractional/variable exponent
NO: variable in denominator

Expression	Polynomial?	Monomial, Binomial, or Trinomial?	Degree of the Polynomial?
$3x - 7xyz$	Yes	Binomial	3
-25	Yes	Monomial	0
$7n^3 + 3n^{-4}$	NO (negative exponent)	—	—
$9x^3 + 4x + x + 4 + 2x$ $9x^3 + 7x + 4$	Yes	Trinomial	3

Determine whether each expression is a polynomial. If it is a polynomial, find the degree and determine whether it is a monomial, binomial, or trinomial.

1. $7ab + 6b^2 - 2a^3$ Yes, Degree 3, Trinomial

2. $2y - 5 + 3y^2$ Yes, degree 2, trinomial

3. $3x^2$ Yes, degree 2, Monomial

4. $\frac{4m}{3p}$ NO - variable in denominator

5. $5m^2p^3 + 6$ Yes, Degree 5; Binomial

6. $5q^{-4} + 6q$ NO - negative exponent

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Write each polynomial in standard form. Identify the leading coefficient. → Number being multiplied by the term w/ highest degree (first coefficient when in standard form)

7. $2x^5 - 12 + 3x$ $2x^5+3x-12$

LC: 2

8. $-4d^4 + 1 - d^2$ $-4d^4-d^2+1$

LC: -4

9. $4z - 2z^2 - 5z^4$ $-5z^4-2z^2+4z$

LC: -5

10. $2a + 4a^3 - 5a^2 - 1$

$4a^3-5a^2+2a-1$

LC: 4

Find each sum or difference. Combine Like terms - Same variable & exponent

11. $(6x^3 - 4) + (-2x^3 + 9)$

$4x^3+5$

12. $(g^3 - 2g^2 + 5g + 6) - (g^2 + 2g)$

Distribute -1

$g^3-2g^2+5g+6-g^2-2g$

g^3-3g^2+3g+6

13. $(4 + 2a^2 - 2a) - (3a^2 - 8a + 7)$

$4+2a^2-2a-3a^2+8a-7$

$-a^2+6a-3$

14. $(8y - 4y^2) + (3y - 9y^2)$

$-13y^2+11y$

15. $(-4z^3 - 2z + 8) - (4z^3 + 3z^2 - 5)$

$-4z^3-2z+8-4z^3-3z^2+5$

$-8z^3-3z^2-2z+5$

16. $(-3d^2 - 8 + 2d) + (4d - 12 + d^2)$

$-2d^2+6d-20$

17. $(y + 5) + (2y + 4y^2 - 2)$

$4y^2+3y+3$

18. $(3n^2 - 5n + n^2) - (-8n^2 + 3n^3)$

$3n^2-5n+n^2+8n^2-3n^3$

$-3n^3+12n^2-5n$

19. The total number of students T who traveled for spring break consists of two groups: students who flew to their destinations F and students who drove to their destination D. The number (in thousands) of students who flew and the total number of students who flew or dove can be modeled by the following equations, where n is the number of years since 1995.

$$T = 14n + 21 \qquad F = 8n + 7$$

a. Write the equation that models the number of students who drove their destination for this time period.

$D = 14n+21-(8n+7)$

$= 14n+21-8n-7$ → $D = 6n+14$

b. Predict the number of students who will drive to their destination in 2012.

2012 − 1995 = 17 = n

$D = 6(17)+14$

$= 102+14 =$ 116 students

c. How many students will drive or fly to their destination in 2015?

2015 − 1995 = 20 = n

$T = 14(20)+21$

$= 280+21$

$=$ 301 students