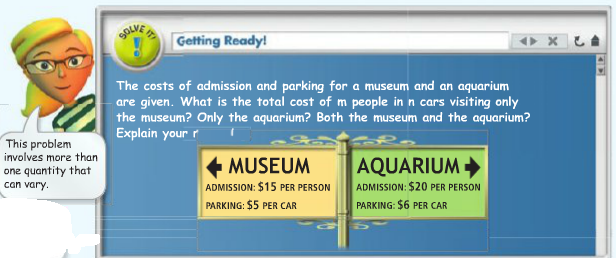
**College Algebra 1**

**8.1 Adding and Subtracting Polynomials**

***Objective: To classify, add, and subtract polynomials***

Starter:

1.  2. 3.

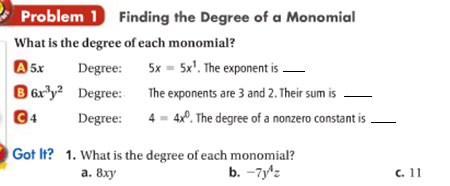


In some cases, you can model a situation with an expression composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a real number, a variable, or a product of a real number and one or more variables with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exponents. Here are some examples of monomials



**ESSENTIAL UNDERSTANDING**. You can use monomials to form larger expressions called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. These polynomials can be added and subtracted.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the sum of the exponents of its variables. The degree of a nonzero constant is 0. Zero has no degree.



You can add or subtract monomials by adding or subtracting like terms.





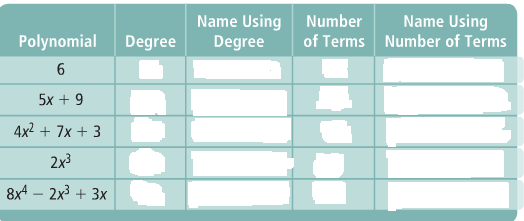
A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a monomial or a sum of monomials. The following polynomial is the sum of the monomials

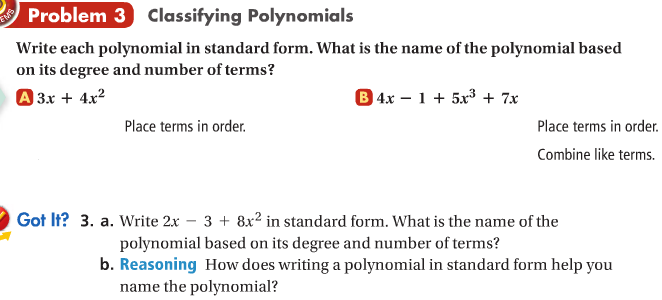
Determine the degree of each monomial

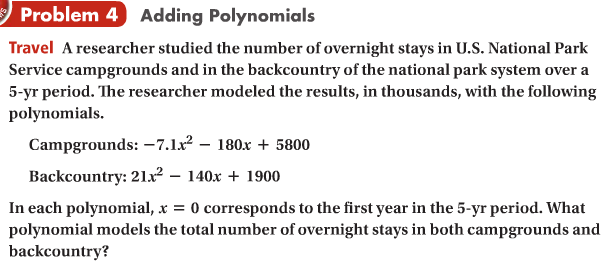
The polynomial above is is *standard form.* **Standard form of a polynomial** means that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

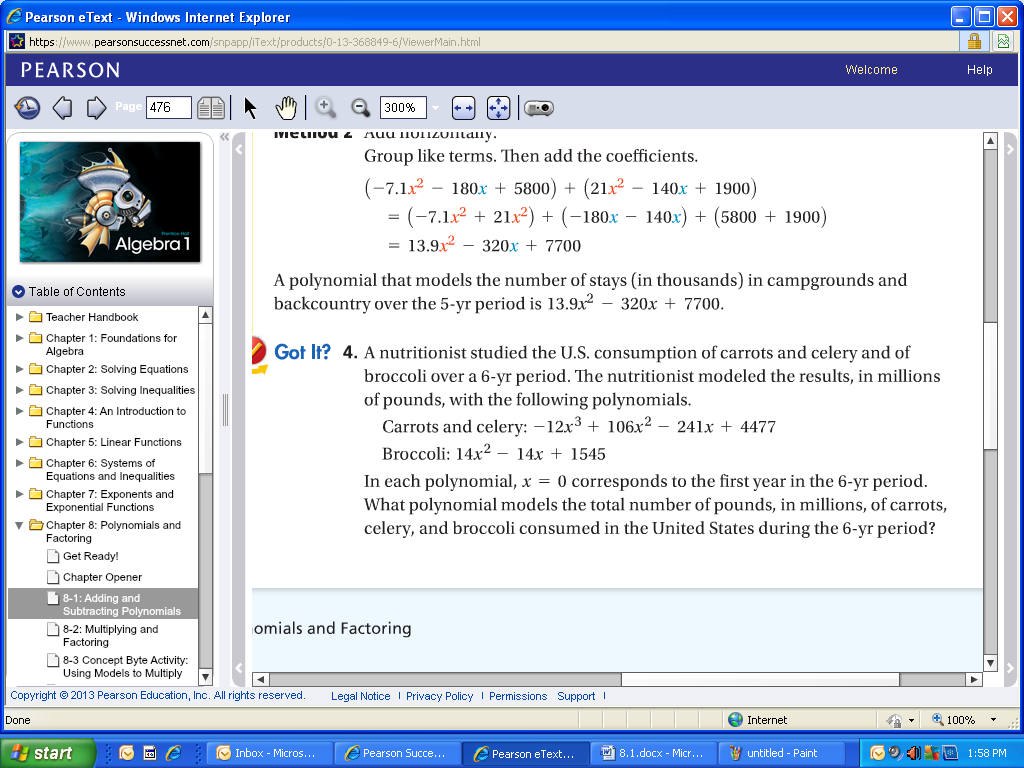
**Degree of a polynomial** in one variable**:**

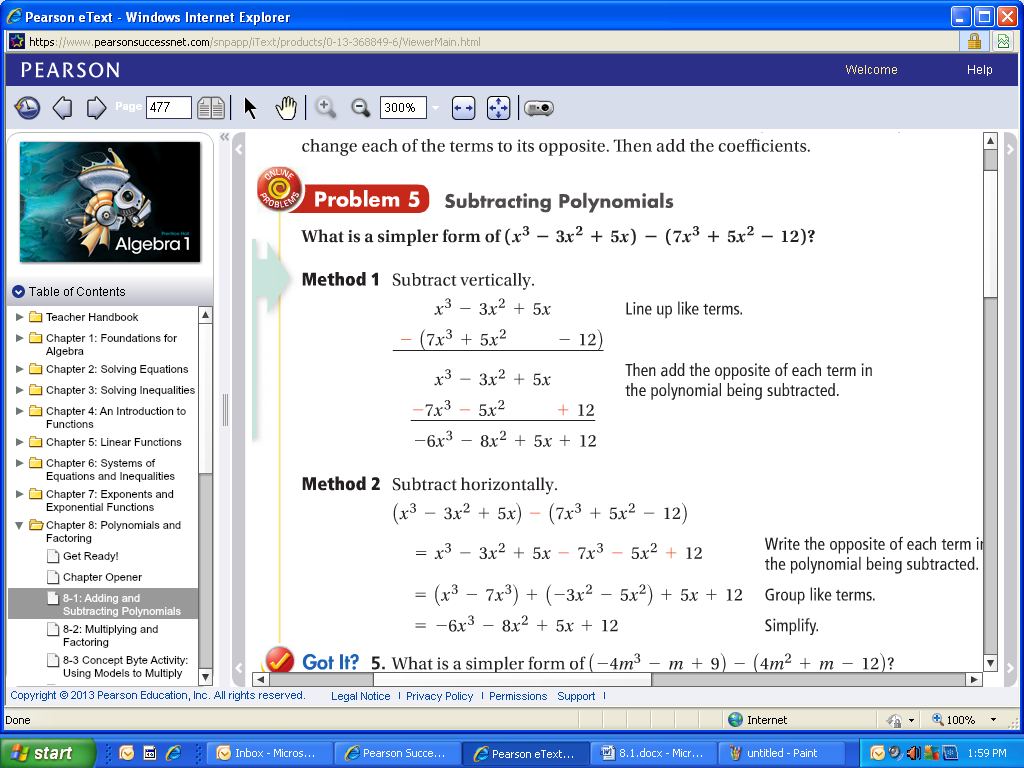
**The Degree of** is \_\_\_\_\_

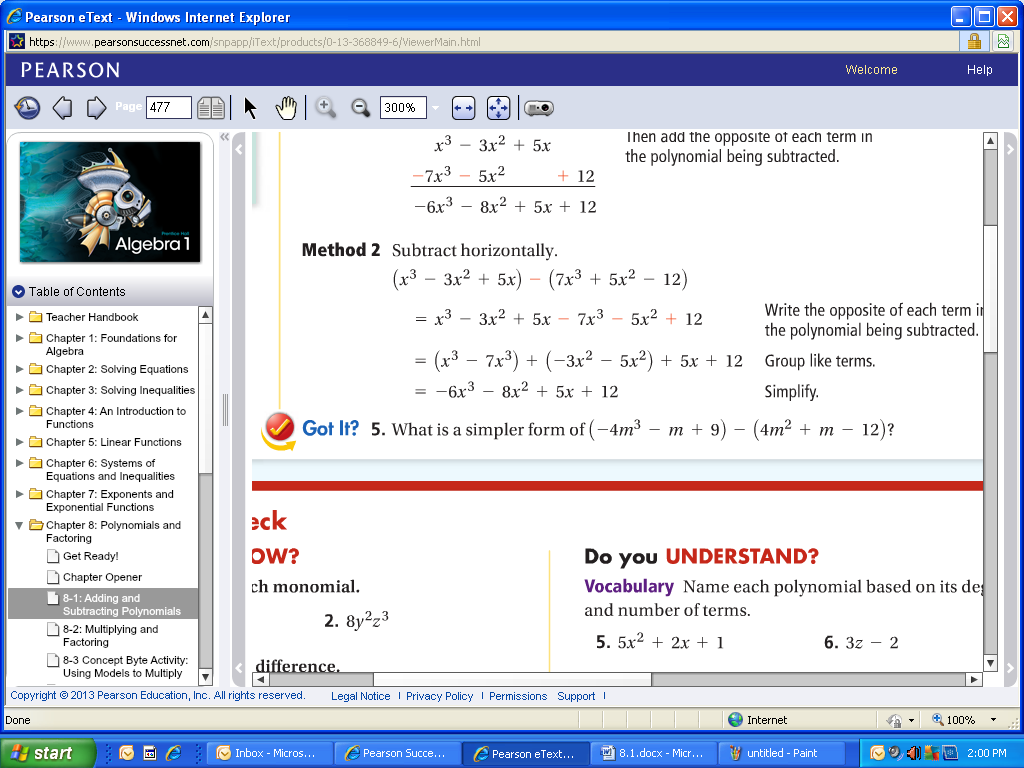




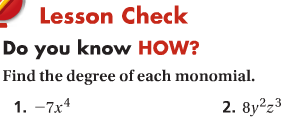


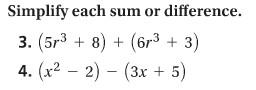


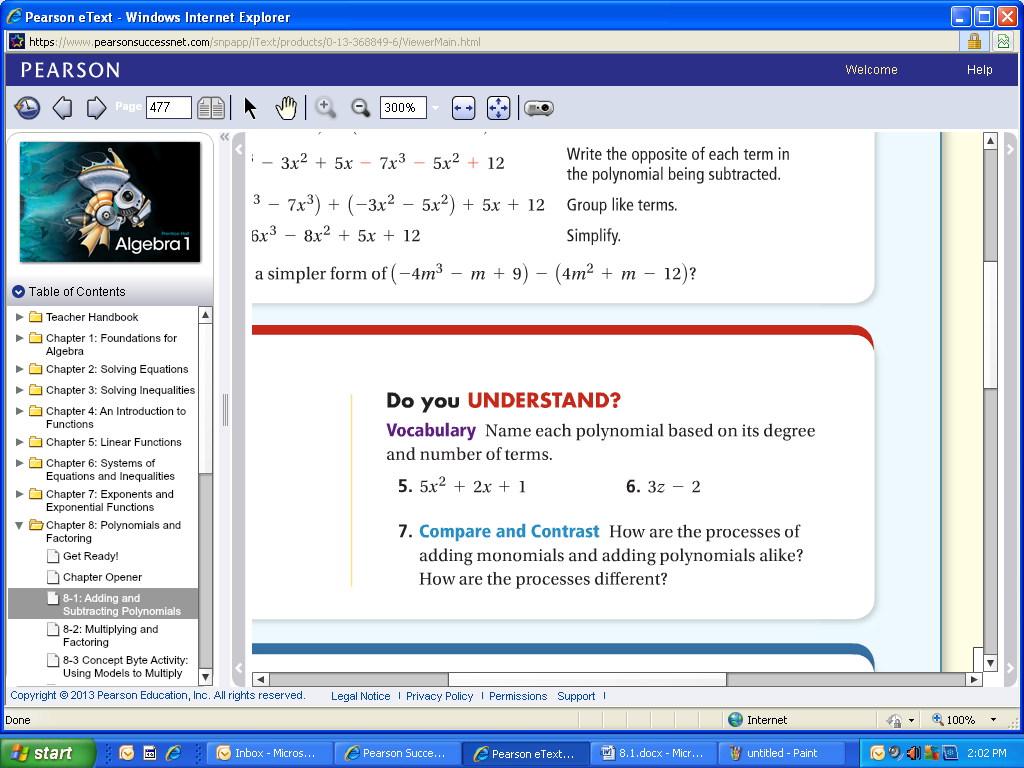




Hw: Section 8.1 p.489 #9-53 odd







**Find the degree of each monomial.**

|  |  |  |  |
| --- | --- | --- | --- |
| **1.** 2*b*2*c*2 | **2.** 5*x* | **3.** 7*y*5 | **4.** 19*ab* |
| **5.** 12 | **6.** | **7.** *t* | **8.** 4*d*4*e* |

**Simplify.**

|  |  |  |
| --- | --- | --- |
| **9.** 2*a*3*b +* 4*a*3*b* | **10.** 5*x*3 – 4*x*3 | **11.** 3*m*6*n*3 – 5*m*6*n*3 |
| **12.** –6*ab* + 3*ab* | **13.** 4*c*2*d*6 – 7*c*2*d*6 | **14.** 315*x*2 – 30*x*2 |

**Write each polynomial in standard form. Then name each polynomial based on its degree and number of terms.**

|  |  |  |
| --- | --- | --- |
| **15.** 15*x* – *x*3 + 3 | **16.** 5*x +* 2*x*2 – *x +* 3*x*4 | **17.** 9*x*3 |
| **18.** 7*b*2 + 4*b* | **19.** –3*x*2 + 11 + 10*x* | **20.** 12*t*2 + 1 – 3*x +* 8 – 2*x* |

**Simplify.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **21.** | 8*z* – 12 | **22.** | 9*x*3 + 3 | **23.** | 6*j*2 – 2*j* + 5 |
| + 6*z +* 90 | + 4*x*3 + 7 | + 3*j*2 + 4*j* – 6 |

|  |  |
| --- | --- |
| **24.** (3*k*2 + 5) + (16*x*2 + 7) | **25.** (*g*4 – 4*g*2 + 11) + (–*g*3 + 8*g*) |

**26.** A local deli kept track of the sandwiches it sold for three months. The polynomials below model the number of sandwiches sold, where *s* represents days.

Ham and Cheese: 4*s*3 – 28*s*2 + 33*s +* 250 Pastrami: –7.4*s*2 + 32*s* + 180

Write a polynomial that models the total number of these sandwiches that were sold.

**Simplify.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **27.** | 11*n* – 4 | **28.** | 7*x*4 + 9 | **29.** | 3*d*2 + 8*d* – 2 |
| – (5*n* + 2) | – (8*x*4 + 2) | – (2*d*2 – 7*d* + 6) |

|  |  |
| --- | --- |
| **30.** (28*e*3 + 3*e*2) + (19*e*3 + *e*2) | **31.** (–12*h*4 + *h*) – (–6*h*4 + 3*h*2 – 4*h*) |

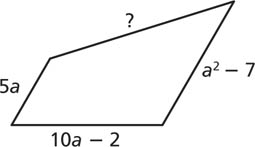
**32.** A small town wants to compare the number of students enrolled in public and private schools. The polynomials below show the enrollment for each:

Public School: –19*c*2 + 980*c +* 48,989 Private School: 40*c +* 4046

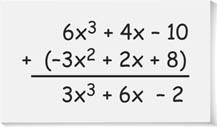
Write a polynomial for how many more students are enrolled in public school than private school.

**Simplify. Write each answer in standard form.**

|  |  |
| --- | --- |
| **33.** (3*a*2 + *a* + 5) – (2*a* – 5) | **34.** (6*d* – 10*d*3 + 3*d*2) – (5*d*3 + 3*d* – 4) |
| **35.** (–4*s*3 + 2*s –* 3) + (–2*s*2 + *s +* 7) | **36.** (8*p*3 – 6*p* + 2*p*2) + (9*p*2 – 5*p* – 11) |



**37.** The fence around a quadrilateral-shaped pasture is 3*a*2 + 15*a* + 9 long. Three sides of the fence have the following lengths: 5*a*, 10*a* – 2, *a*2 – 7. What is the length of the fourth side of the fence?

1. **Error Analysis** Describe and correct the error in simplifying the sum shown at the