

8 Algebra CC

Unit 2 Review (Polynomial Expressions)

Important Terminology:

Variable	Term	Polynomial	Degree	Monomial	Trinomial
Coefficient	Constant Term	Standard Form	Leading Coefficient	Binomial	

What should I be able to do?

1. Determine if two or more expressions are equivalent
2. Interpret the terms of an expression
3. Write expressions to represent situations and relationships
4. Evaluate expressions
5. Add, subtract and multiply polynomial expressions
6. Simplify polynomial expressions with multiple operations

Practice Problem Set

Evaluate each expression when $a = -2$, $b = 4$ and $c = \frac{1}{4}$.

1. $a^2 + 3a - 4$
2. $(b - a)^3$
3. c^3
4. $-a^2$
5. $3ab^2$

Write an expression to model the situation.

6. A pair of Nike sneakers cost x dollars. In terms of x , express the cost of a pair of sneakers after a 15% discount is applied.
7. Jane's age is represented by a . If Greg is six years younger than Jane, represent his age in terms of a .
8. Jared earns 0.25 vacation days for every week that he works in a calendar year. He also gets 10 paid company holidays per year. Write an expression in terms of w to represent the amount of time he gets off from work in a year after working w weeks. Identify the units associated with the expression.
9. Terry has two jobs. He babysits for his neighbor b hours per week and tutors at an afterschool program for t hours per week. If Terry earns \$10.50 an hour babysitting and \$15 an hour tutoring, represent his total earnings in one week in terms of b and t .

10. A cell phone plan has a fixed base fee that includes a certain amount of data and an overage charge for data use beyond the plan. The plan charges a base fee of \$55 which includes the use of data up to 2 gigabytes. The plan charges an overage fee of \$25 per gigabyte, g , of data that exceeds 2 gigabytes. Choose the expression below that represents the cost of the plan when more than 2 gigabytes of data is used.

(1) $55 + 25g$

(2) $55 + 25(2 - g)$

(3) $55 + 25(g - 2)$

(4) $25 + 55(g - 2)$

11. Complete parts A – G.

You are making n loaves of bread for a bake sale and the recipe calls for 3.25 cups of flour per loaf. You are also making $n + 1$ pies for the bake sale, and the pie recipe calls for 2 cups of flour per pie. The expression $3.25n + 2(n + 1)$ can be used to represent the total amount of flour needed for making the bread and pies.

A. What does the term $3.25n$ represent?

B. What does the term $2(n + 1)$ represent?

C. How many more pies than loaves of bread are being made?

D. What are the units associated with the expression?

E. How would the original expression change if the same amount of pies were made as loaves of bread? Rewrite the expression to reflect this change.

F. How would the original expression change if one less pie was made as compared to the number of loaves of bread made? Rewrite the expression to reflect this change.

G. How would the original expression change if $2\frac{1}{2}$ cups of flour were needed to make each pie? Rewrite the expression to reflect this change.

Simplify the polynomial expressions below. All answers should be written in standard form when possible.

12. $(10x^2 + 3x) + (15x^2 - 2) - (-7x^2 + 5x + 1)$

13. Subtract $6x^2 + 2$ from $x^2 - 1$

14. $(6a^3b^2)(-5a^4b^2)(2ab)$

15. $-\frac{3}{4}x^2(9x - 7)$

16. $6x(x + 5) - 3(x^2 + x + 9)$

17. $(x + 5)(x + 2) - (3x + 1)(x + 7)$

18. Sydney claims that $(x + 4)^2$ is equivalent to $x^2 + 16$. Do you agree or disagree with Sydney? Justify your response (*provide an explanation as to why or why not you agree and show an example*).

19. The RMS Mathletes have been selected to compete internationally. The club members are holding a car wash in order to raise money for travel expenditures. They have made a list of expenses and revenue. Using the list, write a *simplified* polynomial expression in standard form that represents their profit from the car wash if they wash c cars.

Revenue	Expenses
<i>Car Wash Fee - \$10.00 per car</i>	<i>Gas Station Rental - \$300</i>
<i>PFA Donation - \$500</i>	<i>Car Wash Supplies - \$150</i>
	<i>Water Usage - \$1.50 per car</i>

Using your expression, calculate the club's profit if members wash 78 cars.

20. Write a polynomial expression with a degree of 7 and a leading coefficient of 4.
21. Is it possible that the sum of two binomials results in a monomial? Justify your response with an example.