First name: _____ Last name: _____   Student ID: _____

Polynomials (1) Homework

1. **Evaluate without calculator.**

   a) $\left(\dfrac{3}{4}\right)^{-2} - \left(\dfrac{4}{3}\right)^{-3}$

   b) $\left(\dfrac{5}{3}\right)^{2} - \left(\dfrac{-5}{3}\right)^{-3}$

   c) $\left(\dfrac{1}{4}\right)^{-2} - \left(\dfrac{-3}{2}\right)^{3} - \left(\dfrac{-2}{3}\right)^{-3}$

   d) $-\left(\dfrac{-2}{5}\right)^{-3} - \left(\dfrac{-5}{2}\right)^{-2} \div (4)^{-3}$

   e) $(-1)^{101} - (12)^{-2}$

   f) $(-7)^{-2} - (2)^{-3}$

2. **Simplify. Express your final answer in positive exponents.**

   a) $-\dfrac{2x}{a^{-4}}$

   b) $\dfrac{4ab^{-2}}{-3a^{-4}c^{-3}}$

   c) $\dfrac{w(3xy)^{-2}}{4y(2xw)^{-4}}$

   d) $\left(\dfrac{5x}{3y^2z}\right)^{-3} \times \left(\dfrac{x^2y}{2yz^3}\right)^{4}$

   e) $\left(5x^7y^3z^{-1}\right)^{2} \times \left(2xy^{-5}\right)^{3} \times \left(2y^{-3}z^2\right)^{3}$

   f) $\sqrt{2\cdot6\cdot8\cdot3\cdot2\cdot a^{12}b^6}$

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3. Simplify.

1. $-7n + 3 + 12n$

2. $12r + 5 + 3r - 5$

3. $(14x^2 + 13x + 12) - (7x^2 - 20x + 4)$

4. $(7xy - 2y) - 2(3x + 5yx + y)$

5. $43x^2 - 2(13x + 21x^2)$

6. $-9(6m - 3) + 6(1 + 4m)$

7. $7xy - 4x^2y^2 + 2xy^2 + 6xy + 3x^2y^2 - 7x^2y^2$

8. $3a^3b + 4a^2b^2 - 7a^3b + 2ab - 5a^2b^2 + 10a^3b$

9. $(20x^2 + 15x + 13) + (-19x^2 + 17x + 5)$
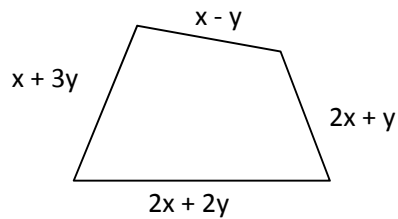
10. $[(6x + 3) - (17x + 10)] + 10(4x + 2)$

4. Answer the following questions.

a) What terms when combined with 7h - 8g will equal zero? _____

b) The numerical coefficient in the term xy is _____

c) List one factor of $5xy^2$ _____

5. Find the perimeter of the following:

6. Joan and Fred both work for Acme Condominium Maintenance. Joan is a plumber who charges $35 to visit the job site. Her hourly rate is $43.50. Fred repairs furnaces. He charges $41 to visit the job site, plus $38.75/hr. Let x represent the number of hours they work.

(a) Write Joan's bill as a polynomial

(b) Write Fred's bill as a polynomial.

(c) Write a new polynomial that represents Joan and Fred's combined charge, assuming they both work x hours at a site.

(d) Calculate their combined charge if they both work 8 hours at the same complex.

7. Joya has change in her pocket consisting of nickels, dimes, and quarters. The number of quarters is twice the number of dimes and the number of dimes is twice the number of nickels.

(a) Write an algebraic expression that represents the number of coins she has, using only one variable.

(b) Write an algebraic expression that represents the value of these coins.

(c) How much money does she have in her pocket if she has four nickels?