

Instructions: Complete the following problems. You may work alone or in a group. Do not just copy answers from a group member, but be sure that you understand the problem. Similar questions will appear on exams. You may be asked to explain or present the answers to the class. This assignment is due at the end of the class period.

1. Give an example of: *answers will vary*
- a. A monomial $3x^2$
 - b. A binomial $2x+1$
 - c. A trinomial $x^2+2x-11$
 - d. A polynomial $x^3+2x^2-7x+15$
 - e. Explain what the degree of a polynomial is. *the highest power of variables in expression*
 - f. Give an example of an expression which is not a polynomial. $\sqrt{x}, \frac{1}{x}, 2^x$
 - g. Explain why a constant like 2 can be considered a polynomial.

we can write 2 as $2x^0$ & 0 is a whole #

2. State the degree of the polynomial or state that it is not a polynomial.

- a. $4r^4 + 3r - 1$ 4
- b. $\frac{1}{2}p^2 - \frac{2}{3}p + 2$ 2
- c. $3 - x$ 1
- d. $\frac{7}{x} + 1$ *not a poly*
- e. $\frac{q}{2} - p^2$ 2
- f. 31 0
- g. $x^2y^3 - 4x^2y$ 5
- h. $mn^2 - m^2n + mn$ 3

3. Perform the indicated operations and combine like terms.

- a. $(3 - 12w^2) + (2w^2 - 5 + 6w) = -10w^2 + 6w - 2$
- b. $(-4m^2 + 2m - 1) + (2m^2 - 2m + 6) = -2m^2 + 5$
- c. $(12x^2 - 2x - 4) - (-2x^2 + x + 1) = 14x^2 - 3x - 5$
- d. $(y^3 - 2y + 11) - (3y^3 + y^2 - 5) = -2y^3 - y^2 - 2y + 16$
- e. $(\frac{7}{4}q^2 - \frac{5}{8}q - 1) - (\frac{7}{6}q^2 + \frac{5}{12}q + 5) = \frac{7}{12}q^2 - \frac{25}{24}q - 6$
- f. $3x - (5x + 1) - 4 = -2x - 5$
- g. $(p^2 + 4p - 5) - (3p^2 - p + 4) - (-2p^2 - 9p + 21) = 14p - 30$
- h. $(x^2 - 2xy - y^2) - (3x^2 + xy - y^2) + (xy + y^2) = -2x^2 - 2xy + y^2$
- i. $(-x)^2(5x^2) - (2x^2)^2 = 5x^4 - 4x^4 = x^4$
- j. $(-4a)^2 - (5a)^3 = 16a^2 - 125a^3$

4. Simplify each expression.

a. $(3x^2)^3 = 27x^6$

b. $(-6x^3)^2 = 36x^6$

c. $-(6x^2)^2 = -36x^4$

d. $\left(\frac{1}{2}a\right)^2 = \frac{1}{4}a^2$

e. $(-5xy^2z^3)^2 = 25x^2y^4z^6$

f. $(10a^3)(-4a^7) = -40a^{10}$

g. $\left(\frac{4}{5}x^4\right)\left(\frac{15}{2}x^3\right) = 6x^7$

h. $\left(\frac{2}{3}s^2t^3\right)(-21st) = -14s^3t^4$

i. $(-4a)^3(bc^2)(-b) = 64a^3b^2c^2$

j. $(-3x)^2(2x^4)^3(3x^{12})^2 = 648x^{38}$

k. $-3(-5mn^3)^2\left(\frac{2}{5}m^5n\right)^3 = \frac{-24}{5}m^{17}n^9$

l. $\left(\frac{2}{3}m\right)^2(-3m)^3\left(\frac{3}{4}m^3\right) = -9m^8$