5.2 Review Worksheet

St Thomas Aquinas High School   Mr. N. Cune (revised by Mrs. Wong)

5.2 Intro to Polynomials: Equivalent Expressions

Warm Up:

1. Determine
   i) the value of the coefficient
   ii) the degree of each term

   a) $-t$ i) -1 ii) 1 b) $4d^2$ i) 4 ii) 2
   c) 12 i) Constant ii) 0 d) $-8de$ i) -8 ii) 2
   e) b i) 1 ii) 1 f) $-c^2$ i) -1 ii) 2

2. Match the expression with its description by placing the correct letter in the blank.

   A) $-4x$ B) 17 C a monomial with a degree of 2 A -4 is the coefficient

   C) $2ab$ D) $3y^2 - 2y$ F a binomial with two variables E -1 is the coefficient

   E) $-m$ F) $5x - 3y$ D a binomial with a degree of 2 B a constant

3. Write a polynomial for each of the expressions modeled by the algebra tiles then simplify by removing the zero pairs.

   a) $= 2 + 2x - x^2 - 2x + 2 + 2x - x^2 = -2x^2 + 2x + 4$

   b) $= 2x^2 - 2x + 2 - 2x^2 - 2 = -2x$

   c) $= -2x - 2x^2 - 4 - x - x^2 - x = -3x^2 - 4x - 4$

   d) $= x^2 - 2 - x^2 - 1 - 2x + 3 + 3x - x = 0$

"**Like terms**" = terms that differ only by their numerical coefficients. Examples of like terms are:

   a) $2y$ and $5y$: both have a variable of y with an exponent of 1
   b) $3x^2$ and $-2x^2$: each of them has a variable x with an exponent of 2
   c) $2xy$ and $5yx$: both have variables x and y, each with an exponent of 1

3. Circle the like terms in each group.

   a) $4x$, $4y$, x^2, $-x$, y^2 b) 6, $2x$, -2.5, $3y$, -0.1

   c) a, $4b$, $-3ab$, $7a$, $1.5a$ d) $-f$, $3ef$, f^2, $-6f^2$, $5e$

   e) $6st$, $-10s$, $\frac{3}{4}st$, $-st$, t f) pq, $-0.6p^2$, $5q$, $-p^2$, $10p^2$

   g) $0.5jk$, $-jk$, j^2, $6jk$, $-k$ h) $\frac{2}{5}$, $\frac{1}{2}r$, 0.12, r^2, 9

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4. Collect like terms.

a) $3m - m^2 - 6 + 3m^2$

$2m^2 + 3m - 6$

b) $-4k - k^2 + 5k - 7k^2 + 8$

$-8k^2 + k + 8$

c) $-c - c^2 + 3c + c^2$

$2c$

d) $7 - 10 + 5mn - nm + 9 + 8nm$

$12mn + 6$

e) $-2b^2 - 7b + 3b^2 - 8b + b$

$b^2 - 14b$

f) $w^2 - 3w - 8w^2 + 7w^2 + 10w$

$7w$

g) $-2ab - 1 - ab - 7 - 5ba$

$-8ab - 8$

h) $3s + 6 - 6s^2 - 8 + 7s - 2s^2$

$-5s^2 + 7s - 2$

5. Write a polynomial with the given degree and number of terms.
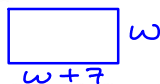
a) degree 1, with two terms $\underline{x + 3}$

b) degree 0, with 1 term $\underline{5}$

c) degree 2, with 3 terms including a constant term 5 $\underline{x^2 + 2x + 5}$

d) degree 2, with 1 term $\underline{x^2}$

6. A rectangle's length is 7 cm greater than its width, w.

a) Draw the rectangle and label its dimensions.

b) Write the expression to find its perimeter.

$P = w + 7 + w + w + 7 + w$

c) Collect like terms.

$P = 4w + 14$

6. The cost of publishing the school yearbook was \$440. The yearbook committee priced the yearbook at \$8.

a) Write an expression that represents the profit, p, for the number of yearbooks sold, n.

$P = 8n - 440$

b) How many yearbooks need to be sold for the yearbook committee to break even?

$8n = 440$

$n = \dfrac{440}{8}$

$n = 55 \text{ yearbooks}$