3.5 Collecting Like Terms

Brain Teaser

At King's, the ratio of males to females writing the Pascal Contest is 3 : 7. If there are 21 males writing the Contest, what is the total number of students writing?

49

Part 1: DO IT NOW

1) What is the degree of the term: $3x^2yz^4$

4

2) What is the degree of this polynomial:

$$3a^2b^3c + 2ab^4c^2 - 7abc^2$$

7

3) Classify the polynomial from question **2)** by name:

Trinomial

Part 2: Like Terms

Like Terms are terms that have the EXACT same

VARIABLES with the EXACT same **EXPONENTS**

These are like terms:	These are NOT like terms:
$3x^2y$ and $15x^2y$	$3x^2y$ and $3x^2y^2$

Identify the like terms in this polynomial:

$$3x^3 - 5x + 2x^3 + 3 - 1 + 4x + 12x^3 - 120$$

$3x^3, 2x^3, 12x^3$ are like terms.

$-5x, 4x$ are like terms

$3, -1, -120$ are like terms.

Identify the like terms in this polynomial:

$$5x^2y - 9xy + 6x^2y + 17.3x - 2xy + 4x^2y + 92x - 133xy$$

$5x^2y, 6x^2y, 4x^2y$ are like terms

$-9xy, -2xy, -133xy$ are like terms

$17.3x, 92x$ are like terms.

Part 3: Collecting Like Terms

When ***adding/subtracting like terms, keep the variables the same, and add/subtract only the coefficients.***

Example:

$6x + 4 + 8x + 3$

$= 6x + 8x + 4 + 3$ **Step 1:** Rearrange like terms into groups

$= 14x + 7$ **Step 2:** Add/Subtract the like terms

Practice Collecting Like Terms

1) $3x + 4x$ $= 7x$

2) $3x^2 + 5x^2 + 3$ $= 8x^2 + 3$

Practice Collecting Like Terms

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

$= 2b - 1b + 3b + 7 - 8$

$= 4b - 1$

4) $3x^2 + 2 - 6x + 9x - 3x^2$

$= 3x^2 - 3x^2 - 6x + 9x + 2$

$= 0x^2 + 3x + 2$

$= 3x + 2$

5) $2x^2 - 3y^2 + xy + 2y^2 - 8x^3$

$= -8x^3 + 2x^2 + xy - 3y^2 + 2y^2$

$= -8x^3 + 2x^2 + xy - y^2$

Note: degree of terms should be in descending order (highest degree terms on the left).

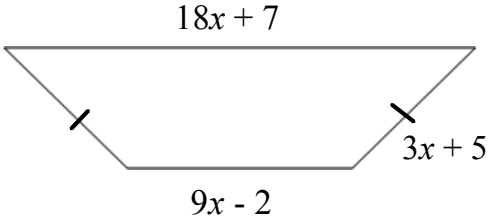
6) $a^2b + 2ab - ab^2 + 2ab^2 - 3ab + a^2b$

$= 1a^2b + 1a^2b - 1ab^2 + 2ab^2 + 2ab - 3ab$

$= 2a^2b + ab^2 - ab$

7) **Part 4: Apply Our Knowledge!**

a) Write an expression in simplest form for the perimeter of the given shape



Perimeter $= 18x + 7 + 9x - 2 + 3x + 5 + 3x + 5$

$= 18x + 9x + 3x + 3x + 7 - 2 + 5 + 5$

$= 33x + 15$

b) Evaluate the expression if x = 5. (What is the perimeter?)

Perimeter $= 33x + 15$

$= 33(5) + 15$

$= 165 + 15$

$= 180$ units.