

Ch 1 & 2

Day 6
Combining Like Terms
Distributive Property
Matrices

Like Terms

- Same variable to the same power
- You can combine them by adding or subtracting the lead coefficients
- Ex:
 - $4x + 5x = 9x$
 - $12y - 5y + 4y^2 = 4y^2 + 7y$
 - $5a + 6b - 3a + 12b + 7 = 2a + 18b + 7$

Try on your own, compare with partner

- $5a - 6b + 12a = 17a - 6b$
- $3x - 5y + 4x^2 + 2x = 4x^2 + 5x - 5y$
- $x + 5x + 12x = 18x$
- $-6p - 4p = -10p$

Distributive Property

- Multiply the number outside () to every term inside ()
- Ex:
 - $4(3x - 2) = 4(3x) - 4(2) = 12x - 8$
 - $-2(12y + 4) = -2(12y) + (-2)(4) = -24y - 8$
 - $-5(8 - 10x) = -5(8) - (-5)(10x) = -40 + 50x$
 - $(12x + 1)(-6) = -72x - 6$
 - $2x(4x - 10) = 8x^2 - 20x$

Class Examples

- $5(4x - 2) = 5(4x) - 5(2) = 20x - 10$
- $6(2x - 3) + 4x = 6(2x) - 6(3) + 4x = 12x - 18 + 4x = 16x - 18$
- $10z - 5(2z + 4) = 10z - 5(2z) + (-5)(4) = 10z - 10z - 20 = -20$
- $-6p - 4(3p - 5) = -6p - 4(3p) - (-4)(5) = -6p - 12p + 20 = -18p + 20$

Do on your own, compare with Partner

- $7(3x + 1) = 21x + 7$
- $-5(5x + 2) + 8x = -25x - 10 + 8x = -17x - 10$
- $8z - 5(z + 7) = 8z - 5z - 35 = 3z - 35$
- $-7p - 2(9p - 11) = -7p - 18p + 22 = -25p + 22$

Harder Examples...

9. $2(4x+1)+6(x-3) = 8x+2+6x-18 = 14x-16$

10. $7(x-2)-4(3x-5) = 7x-14-12x+20 = -5x+6$

11. $(10x+1)(3x)-4x = 30x^2+3x-4x = 30x^2-x$

12. $3x(2x-1)+7x = 6x^2-3x+7x = 6x^2+4x$

Matrices

- Think of them as a table to organize numbers

Ex: $\begin{bmatrix} 3 & 6 \\ 7 & -1 \end{bmatrix}$

Matrices: Scalar Multiplier

- Multiply each number in matrix by the scalar

Ex:

$$2 \begin{bmatrix} 1 & -2 \\ -4 & 5 \end{bmatrix} = \begin{bmatrix} 2 & -4 \\ -8 & 10 \end{bmatrix} - 3 \begin{bmatrix} -3 & 1 \\ 0 & 6 \end{bmatrix} = \begin{bmatrix} 9 & -3 \\ 0 & -18 \end{bmatrix}$$

Add and Subtract Matrices

- Add and subtract like entries

Ex: $\begin{bmatrix} 3 & 6 \\ 7 & -1 \end{bmatrix} + \begin{bmatrix} -2 & 5 \\ 8 & 0 \end{bmatrix} = \begin{bmatrix} 1 & 11 \\ 15 & -1 \end{bmatrix}$

$3 + -2 = 1$ $6 + 5 = 11$

Class ex: Add or subtract

1) $\begin{bmatrix} -2 & 5 \\ -3 & 4 \end{bmatrix} + \begin{bmatrix} 2 & -6 \\ 6 & -1 \end{bmatrix} = \begin{bmatrix} 0 & -1 \\ 3 & 3 \end{bmatrix}$

2) $\begin{bmatrix} 2 & 0 \\ -1 & 2 \end{bmatrix} - \begin{bmatrix} 5 & -3 \\ 4 & -1 \end{bmatrix} = \begin{bmatrix} -3 & 3 \\ -5 & 3 \end{bmatrix}$

3) $2 \begin{bmatrix} 8 & -3 \\ -1 & 5 \end{bmatrix} + \begin{bmatrix} 1 & 5 \\ -3 & 2 \end{bmatrix} = \begin{bmatrix} 16 & -6 \\ -2 & 10 \end{bmatrix} + \begin{bmatrix} 1 & 5 \\ -3 & 2 \end{bmatrix} = \begin{bmatrix} 17 & -1 \\ -5 & 12 \end{bmatrix}$

Exit Slip: Complete on feedback form

A) $4(3x-2)-6x = 12x-8-6x = 6x-8$

B) $-5(2x+7)+10x = -10x-35+10x = -35$

C) $\begin{bmatrix} 3 & -4 \\ 5 & 6 \end{bmatrix} + \begin{bmatrix} -2 & 8 \\ 0 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 4 \\ 5 & 3 \end{bmatrix}$