# Intro to Polynomials - Collect Like Terms

Simplify each expression, by collecting like terms.

1. $3x^2 + 5x + 7x^2 + 6$ _____
2. $11x - 2 + 4x^2 - 5x$ _____
3. $-8x^2 + x - 13 + 6x^2 - 3x - 2$ _____
4. $12 - 4x + 5x^2 - x^2 - x - 7$ _____
5. $6x^2 - 7 + 3x^2 + 10 - 4x^2$ _____
6. $-3x + 5x^3 - 6 + 9x - 14x^3$ _____
7. $5x^2 + 12x - 1 - 3x^3 + 4x - 15$ _____
8. $-9x^3 + 4x - x^2 + 4x^3 + 11x^2 + 5x^3 + x$ _____
9. $17x^2 - 11x - 5x^3 + 6 - 8x - 13 + 2x^2 - x^3$ _____
10. $-x^2 + 3x^3 - 4x^2 + 12x^2 - 7x^3 - 10x^2$ _____

Evaluate each expression by substitution.

1. $2x^2 - 6$ if $x = 3$ _____
2. $-4x^2 + 32$ if $x = 4$ _____
3. $3x^2 + 4x - 24$ if $x = 5$ _____
4. $6x^2 - 40$ if $x = -4$ _____
5. $5x^2 + 3x + 4$ if $x = -2$ _____
6. $x^2 - 5x + 6$ if $x = -3$ _____
7. $-2x^2 + 3x - 7$ if $x = 4$ _____
8. $4x^2 + 6x - 13$ if $x = -5$ _____
9. $x^3 - 2x^2 + 5x - 10$ if $x = -1$ _____
10. $2x^3 + 4x^2 - 6x + 15$ if $x = 2$ _____
11. $3x^3 + 6x^2 + x - 20$ if $x = -3$

# Intro to Polynomials - Collect Like Terms

Key

Simplify each expression, by collecting like terms.

1. $3x^2 + 5x + 7x^2 + 6$ $10x^2+5x+6$
2. $11x - 2 + 4x^2 - 5x$ $4x^2+6x-2$
3. $-8x^2 + x - 13 + 6x^2 - 3x - 2$ $-2x^2-2x-15$
4. $12 - 4x + 5x^2 - x^2 - x - 7$ $4x^2-5x+5$
5. $6x^2 - 7 + 3x^2 + 10 - 4x^2$ $5x^2+3$
6. $-3x + 5x^3 - 6 + 9x - 14x^3$ $-9x^3+6x-6$
7. $5x^2 + 12x - 1 - 3x^3 + 4x - 15$ $-3x^3+5x^2+16x-16$
8. $-9x^3 + 4x - x^2 + 4x^3 + 11x^2 + 5x^3 + x$ $10x^2+5x$
9. $17x^2 - 11x - 5x^3 + 6 - 8x - 13 + 2x^2 - x^3$ $-6x^3+19x^2-19x-7$
10. $-x^2 + 3x^3 - 4x^2 + 12x^2 - 7x^3 - 10x^2$ $-4x^3-3x^2$

Evaluate each expression by substitution.

1. $2x^2 - 6$ if $x = 3$ 12
2. $-4x^2 + 32$ if $x = 4$ -32
3. $3x^2 + 4x - 24$ if $x = 5$ 71
4. $6x^2 - 40$ if $x = -4$ 56
5. $5x^2 + 3x + 4$ if $x = -2$ 18
6. $x^2 - 5x + 6$ if $x = -3$ 30
7. $-2x^2 + 3x - 7$ if $x = 4$ -27
8. $4x^2 + 6x - 13$ if $x = -5$ 57
9. $x^3 - 2x^2 + 5x - 10$ if $x = -1$ -18
10. $2x^3 + 4x^2 - 6x + 15$ if $x = 2$ 35
11. $3x^3 + 6x^2 + x - 20$ if $x = -3$ -50

Algebra

Name_____

Date_____ Period____

**Simplify each expression.**

1) $-5(-1+4x)-8(4-8x)$

2) $4(8x+1)-6(1-8x)$

3) $2(2a+3)+6(7-6a)$

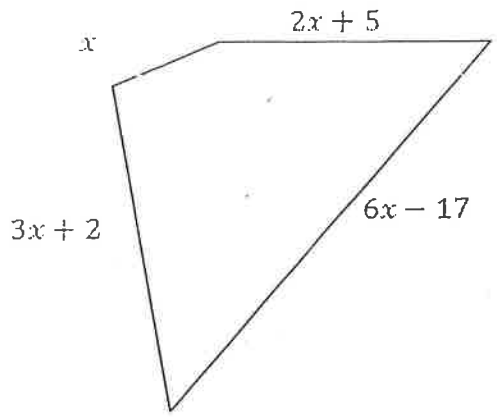
4) $-3(n+5)-8(7-6n)$

5) $-6n(n-1)+5(1-n)$

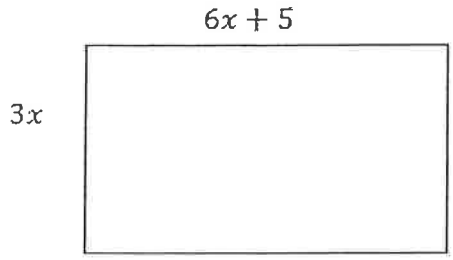
6) $-2(-8+6x)-x(x+3)$

1. $3a+4a$
2. $-12b+6b-4b$
3. $5a^2-6a+7a^2+3a-2+8a+7$
4. $9x^3-7x^2+4x^2-x+4x^3-3x^2$
5. $2h^2-7h+2h^2-h+6+4h-9h$
6. $4ab-6ab+3a^2b+4ab^2+5a^2b$
7. $7xy-4x^2y^2+2xy^2+6xy+3x^2y^2-7x^2y^2$
8. $4h^4j-14h^3j^2+16h^2j^2+13h^4j+15h^3j^2-17h^4j$
9. $8x^3y^2-7x^2y+8x+4-6x^3y^2+2x^2y+4x^2y-3x+5$
10. $3r^3t+5rt^2-6rt+5+4rt-3+6rt^2$
11. $8x^4-7x^3+4x^4+2y^3-7xy+3y^3+12xy$
12. $3a^3b+4a^2b^2-7a^3b+2ab-5a^2b^2+10a^3b$
13. $5y^5+4y^4+3y^3-6y^2+8-7y^3+11-6y^3$
14. $10c^2d^2+6cd^3-3c^2d+5c^2d^2-4cd^3+3c^2d^2$
15. $4x^3+3x^2y+2xy^2-6y^3+5x^3-25y^3+3xy^2$
16. $(3x^2+2xy+4y^2)+(6x^2-5xy+3y^2)+(9x^2-25y^2)$
17. $(4a^3+7a^2b+6b^3)+(a^3+2a^2b+4b^3)$
18. $(2x^2-3x+6)+(5x^2-9x+4)+(8x^2+12x)$
19. $(3x^2-4x+7)+(3x-3x^2)+(x-7)$
20. $(12ab^2-7a^2b)+(3ab+4a^2b+6ab^2)$

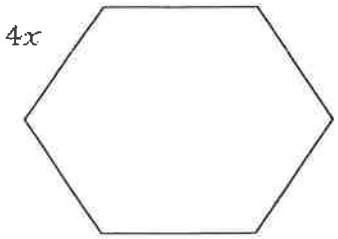
21. Write an expression for the perimeter of the figure below.




22. Write an expression for the perimeter of the rectangle below.




23. Write an expression for the perimeter of the regular hexagon below.




24. Write the expression for the perimeter of a rectangle with a length that is 5 inches longer than its width.

25. Write the expression for the perimeter of a rectangle with a length that is 4 centimeters longer than three times its width.

Algebra

Name Key

Date _____ Period ____

**Simplify each expression.**

1) $-5(-1+4x)-8(4-8x)$ $-27+44x$

2) $4(8x+1)-6(1-8x)$ $80x-2$

3) $2(2a+3)+6(7-6a)$ $-32a+48$

4) $-3(n+5)-8(7-6n)$ $45n-71$

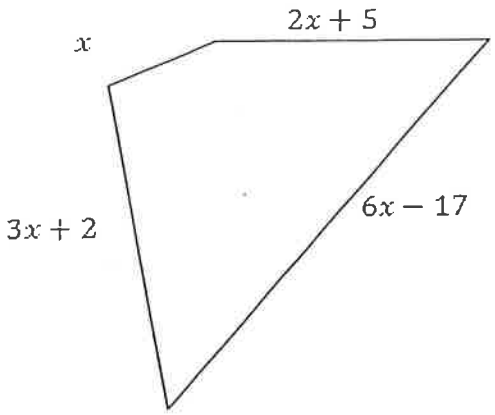
5) $-6n(n-1)+5(1-n)$ $-6n^2+n+5$

6) $-2(-8+6x)-x(x+3)$ $16-15x-x^2$

1. $3a+4a$ $7a$
2. $-12b+6b-4b$ $-10b$
3. $5a^2-6a+7a^2+3a-2+8a+7$ $12a^2+5a+5$
4. $9x^3-7x^2+4x^2-x+4x^3-3x^2$ $13x^3-6x^2-x$
5. $2h^2-7h+2h^2-h+6+4h-9h$ $4h^2-13h+6$
6. $4ab-6ab+3a^2b+4ab^2+5a^2b$ $8a^2b+4ab^2-2ab$
7. $7xy-4x^2y^2+2xy^2+6xy+3x^2y^2-7x^2y^2$ $-8x^2y^2+2xy^2+13xy$
8. $4h^4j-14h^3j^2+16h^2j^2+13h^4j+15h^3j^2-17h^4j$ $h^3j^2+16h^2j^2$
9. $8x^3y^2-7x^2y+8x+4-6x^3y^2+2x^2y+4x^2y-3x+5$ $2x^3y^2-x^2y+5x+9$
10. $3r^3t+5rt^2-6rt+5+4rt-3+6rt^2$ $3r^3t+11rt^2-2rt+2$
11. $8x^4-7x^3+4x^4+2y^3-7xy+3y^3+12xy$ $12x^4-7x^3+4xy+5y^3$
12. $3a^3b+4a^2b^2-7a^3b+2ab-5a^2b^2+10a^3b$ $6a^3b-a^2b^2+2ab$
13. $5y^5+4y^4+3y^3-6y^2+8-7y^3+11-6y^3$ $5y^5+4y^4-10y^3-6y^2+19$
14. $10c^2d^2+6cd^3-3c^2d+5c^2d^2-4cd^3+3c^2d^2$ $18c^2d^2+2cd^3-3c^2d$
15. $4x^3+3x^2y+2xy^2-6y^3+5x^3-25y^3+3xy^2$ $9x^3+3x^2y+5xy^2-31y^3$
16. $(3x^2+2xy+4y^2)+(6x^2-5xy+3y^2)+(9x^2-25y^2)$ $18x^2-3xy-18y^2$
17. $(4a^3+7a^2b+6b^3)+(a^3+2a^2b+4b^3)$ $5a^3+9a^2b+10b^3$
18. $(2x^2-3x+6)+(5x^2-9x+4)+(8x^2+12x)$ $15x^2+10$
19. $(3x^2-4x+7)+(3x-3x^2)+(x-7)$ $0$
20. $(12ab^2-7a^2b)+(3ab+4a^2b+6ab^2)$ $18ab^2-3a^2b+3ab$

21. Write an expression for the perimeter of the figure below.

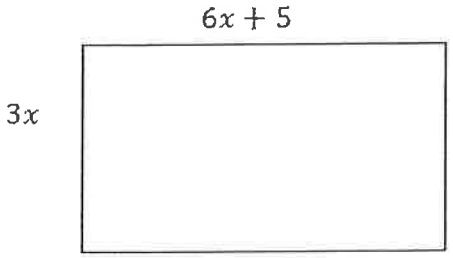
Don't forget labels




$(x) + (2x+5) + (3x+2) + (6x-17)$

$12x - 10$ units

22. Write an expression for the perimeter of the rectangle below.

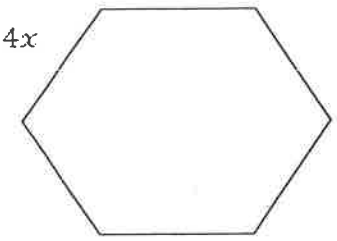



$2(3x) + 2(6x+5)$

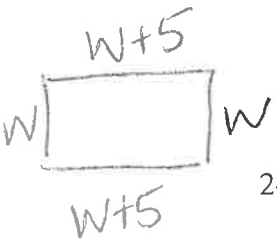
$6x + 12x + 10$

$18x + 10$ units

23. Write an expression for the perimeter of the regular hexagon below.




$6(4x) = 24x$ units




24. Write the expression for the perimeter of a rectangle with a length that is 5 inches longer than its width.

$4w + 10$ in

25. Write the expression for the perimeter of a rectangle with a length that is 4 centimeters longer than three times its width.


$2(w) + 2(3w+4)$

$2w + 6w + 8$

$8w + 8$ cm