

Your Name

Mrs. T

2/12/21

Notes

Lesson 7.1

Adding and Subtracting Polynomials

Objective: To be able to simplify polynomials by combining like terms. To be able to distinguish like terms.

Virtue/Skill: Once we know how to add or subtract polynomials then we can start multiplying and dividing them, as well as graphing them and factoring them.

Like Terms-

are monomial terms that are
 identical in their variables and exponents
 and differ only in their coefficients

You can only add or subtract things with the same name these can be combined using addition and subtraction

Like Terms

a and $3a$
 $2a^2$ and $-7a^2$
 $4ab^2$ and ab^2

Can be combined + coefficient - name, stays the same

$$3a^2 + 4a - 2$$

Unlike Terms

(Cannot be combined)
 a and b
 a and a^2
 ab^2 and $4a^2b$
 $4a$ and $4b$
 $3ab^2$ and $4b^2$
 $3a'b$ and $4a'b^2$

Adding and Subtracting

You can only add or subtract like terms

If subtracting do not forget to distribute your subtraction *line up Like terms*

Vertically

$$\begin{array}{r} 3x^2 + 2x - 6 \\ - (x^2 + 2x + 3) \\ \hline 2x^2 + 0x - 9 \\ \boxed{2x^2 - 9} \end{array}$$

Ex. $(3x^2 + 2x - 6) - (4x + x^2 - 3)$

Horizontally

first distribute subtraction

$$\begin{array}{r} 3x^2 + 2x - 6 - 4x - x^2 + 3 \\ \hline 2x^2 - 2x - 3 \end{array}$$

$$(4a - 5) - (3a^2 - a + 6)$$

$$\begin{array}{r} 0a^2 + 4a + -5 \\ - (3a^2 + -a + 6) \\ \hline -3a^2 + 5a - 11 \end{array}$$

Vertically
* distribute subtraction
* fill in missing terms

BOARD WORK!

$$(5p + 2q) - (2p^2 + 8q + 1)$$

$$\begin{array}{r} 5p + 2q + 0p^2 + 0 \\ - (0p + 8q + 2p^2 + 1) \\ \hline 5p + 10q - 2p^2 - 1 \end{array}$$

use 0 as
a place holder

$$(x^2 + 2xy + y^2) + (x^2 - xy - 2y^2)$$

$$(3a - 5) - (5a + 1)$$

$$\begin{array}{r} 3a - 5 - 5a - 1 \\ \hline -2a - 6 \end{array}$$

Horizontally
* distribute first

BOARD WORK!

$$\begin{array}{r} (9xy + y - 2x) - (6xy - 2x) \\ \hline 3xy + y \end{array}$$

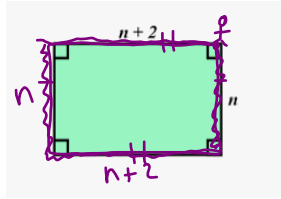
$$\begin{array}{r} (6z^2 + 4z + 2) - (-4z^2 + z - 5) \\ \hline 6z^2 + 4z^2 + 4z - z + 2 + 5 \end{array}$$

$$10z^2 + 3z + 7$$

$$\boxed{10z^2 + 3z + 7}$$

Perimeter

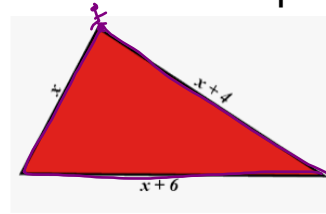
The sum of all the sides of a shape.



$$P = s + s + s + s$$

$$P = (n+2) + n + (n+2) + n$$

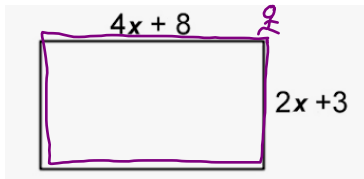
$$P = 4n + 4$$



$$P = s + s + s$$

$$P = x + (x+4) + (x+6)$$

$$P = 3x + 10$$



$$P = s + s + s + s$$

$$P = (4x+8) + (4x+8) + (2x+3) + (2x+3)$$

$$P = 12x + 22$$

How much bigger is the Perimeter of the white rectangle than the Green?

Subtract

White - Green

$$(12x + 22) - (4x + 4)$$

$$\frac{12x + 22}{m} - \frac{4x + 4}{m}$$

White is $8x + 18$ units bigger than green

Adding and Subtracting Polynomials

Name:

Date:

Match the diagram to the expression for the perimeter. Then match the expression to the situation

Then calculate how much bigger the perimeter of shape A is than the shape B



If the Area of shape C is $15a + (10a + 40)$

And the Area of shape B is $-2a^2 - 4a - 6$

Then calculate how much bigger the Area of shape C is than the shape B

Diagram	Perimeter	Situation
	$2a + 25$	Rebecca has p pencils. Connor had 12 times as many. Alicia has 6 less. How many pencils does Alicia have?
	$2a + 2$	Ethan has p puppies. Lauren has 10 times as many as Ethan. Kya has 15 more than Lauren. How many puppies does Kya have?
	$10p + 15$	Anthony has p pens. Harry has 4 times as many. Demi has 7 more pens than Harry. How many pens does she have?
	$12p - 6$	Madison has a apples. Dylan has double her amount. Georgia has 2 more than Dylan. How many apples does Georgia have?
	$4p + 7$	Tallulah has a apples. Ella has twice the amount of apples. Dani has 25 more apples than Ella. How many apples does Dani have?

Adding and Subtracting Polynomials

Name:

Date:

Match the diagram to the expression for the perimeter. Then match the expression to the situation

Then calculate how much bigger the perimeter of shape A is than the shape B

If the Area of shape C is $15a + (10a + 40) = C_A$
 And the Area of shape B is $-2a^2 - 4a - 6 = B_A$
 Then calculate how much bigger the Area of shape C is than the shape B $C_A - B_A$

Diagram	Perimeter	Situation
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Handwritten notes and calculations:

- $P = 4-2p + 3p - 8 + 8p + 12 + 2p + 7$
- $P = 10p + 15$
- $A_P - B_P = 10p - 8$
- $C_A - B_A = 2a^2 + 29a + 46$

Summary

Objective: To be able to simplify polynomials by combining like terms. To be able to distinguish like terms.

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Assignment:

pg. 362 #23-26, #31-34 and #39 and #40

Workbook 7-4

Homework Key

pg. 362 #23-26, 31-34, 39 and 40

23. $3y + 10$

24. $x - 8$

25. $n^2 - 8n + 5$

26. $-4p^3 - 3p^2 - 17p$

31. $-2d - 8$

32. $-x + 8$

33. $-2y^2 + 2y + 18$

34. $7m^2 - 11m - 2$

39. When writing the subtraction as addition, the last term of the polynomial was not multiplied by -1 ;

$$= (x^2 + x) + (-2x^2 + 3x) = (x^2 - 2x^2) + (x + 3x)$$

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

40. $-4x^2$ and $8x$ are not like terms, so they cannot be added;

$$\begin{array}{r} x^3 - 4x^2 \quad + 3 \\ + -3x^3 + \quad 8x - 2 \\ \hline -2x^3 - 4x^2 + 8x + 1 \end{array}$$

Homework Answers 7-4:

1. $6x + 12y$ 2. $14s + 9t$ 3. $3a + 5b$

4. $9m - 13n$ 5. $2m^2 + m$ 6. $-x^2 - 8x$

7. $d^2 - 3d$ 8. $-e^2 + 2e$ 9. $3f + g + 1$

10. $10k^2 - 3k + 9$ 11. $x^3 - 4x + 2$

12. $-b^2 - ab - 2$ 13. $4z^2 - z + 9$

14. $-4m + 4n - 3$ 15. $4t^2 + 2t - 2$

16. $-5g^3 + 3g$ 17. $a^2 + 8a + 7$

18. $4x^2 - 11x + 5$ 19. $4z^2 + 5z + 4$

20. $3c^2 - 2c + 5$ 21. $-n^2 + 9n + 4$

22. $5a^2 - 2b^2$ 23. $3l^2 - 4l - 1$

24. $-2m^2 + 8m + 4$ 25. $6x^2 - 13x + 6$

26. $6b^2 - 7b - 11$ 27. $6x^2 - x + 3$

$$\begin{array}{r} x^3 \quad x^{-4} \\ \hline p^{-4} \quad x^2 \\ \hline x \cdot x \cdot x \quad x \cdot x \cdot x \cdot x \\ \hline p \cdot p \cdot p \quad \cdot x \cdot x \end{array}$$