Lesson 4-4 – Adding and Subtracting Polynomials with Algeblocks

Objectives:

- Students will divide positive integers from the multiplication table without remainders, as evidenced by them passing one-minute quizzes.
- Students will write the opposite of polynomials, as evidenced by them completing a warm-up worksheet where they do so.
- Students will add and subtract polynomials using Algeblocks, as evidenced by them completing an in-class lab and a homework assignment where they do so.

Materials:

- "Minute Quiz 4-4" for each student
- "Handouts 4-4" for each student (which includes a warm-up, lab, and homework).
- "Lab 4-4" transparency
- Algeblocks class sets

Do Now:

- Park stuff
- Work on warm-up
- Get ready for minute quiz

Homework:

- Homework #4-4
- 4 hours of ALEKS due Friday

Time	Activity
Before Bell	**AGENDA, DO NOW, AND WARM-UPS** Write the **agenda** and the **do now** on the board. As students enter the classroom, shake their hands, give them a copy of the **warm-up**, and direct them to follow the directions listed for the "do now."
10 min	**MINUTE QUIZ, WARM-UPS, ATTENDANCE, AND HOMEWORK COLLECTION** **Minute Quiz and Warm-up** When the bell rings, quickly go around and put the **minute quiz** on each student's desk, face down. Then, start everyone on the quiz at the same time and give everyone one minute. Students should work on the warm-up when they're done with the minute quiz. After the minute is over, have a student collect the minute quizzes and give them to the teacher's aide (TA) to grade. **Attendance and Collect Homework** While students work on the warm-up, take **attendance** and have the TA collect **homework** & stamp homework checkers.
5 min	**ANNOUNCEMENTS** Explain to students that you have a couple announcements to make. **4 Hours of ALEKS due Friday** Ask students, *The first announcement has to do with ALEKS. This week, how many hours of ALEKS do you need to have by Friday?* Point to the homework assignment that indicates the answer. *[Four.]* **Unit Calendar** Say: *The second announcement is to remind you what we're doing this unit.* Put the **unit 4 calendar** transparency on the overhead so that students can see it. Point to the title and say, *We're continuing with our unit on polynomials. So far, we've introduced polynomials, represented them with Algeblocks, simplified them with Algeblocks, and looked at perimeter problems with Algeblocks. Today, we're going to start adding, subtracting, multiplying, and dividing them.*
30 min	**ALGEBLOCKS LAB: ADDING AND SUBTRACTING POLYNOMIALS** **Establishing Norms** Remind students of the established norms for using the Algeblocks. Make sure students understand that Algeblocks are tools and not toys. Students who are misusing the Algeblocks in any way, especially throwing them, will have to sit alone away from the rest of the class and complete the work without the blocks. If misuse occurs a second time, the student will have to work without blocks for the

	rest of the unit. **Free Time with the Algeblocks** Explain that you'll give students two minutes to fiddle with the blocks, and that you will count down at the end of the two minutes. When you count down, all the blocks will need to be back in their containers. Pass out the containers of Algeblocks so that two students share a set. Give students two minutes to play with the Algeblocks. **Lab Worksheet: Review and Adding/Subtracting Polynomials** Go through Lab 4-4 to review the name of each Algeblock. Then, teach how to add and subtract (by adding the opposite) using Algeblocks. You have a transparency of this lab worksheet.
30 min	**ALEKS** After all Algeblocks have been put away, dismiss students by column to get laptops for ALEKS. While students work on ALEKS, have the TA go around and stamp homework & notes checkers. For today's notes points, students must've completed the Algeblocks lab.
5 min	**CLEAN UP** Students must check the laptops with the teacher or the TA before putting them away. After putting the laptops away, students should pack up, sit in their seats, and wait to be dismissed by the teacher (not by the bell).

Numeracy
Minute Quiz 4-4 A

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

110 ÷ 11 =	36 ÷ 12 =	99 ÷ 11 =
4 ÷ 4 =	110 ÷ 11 =	18 ÷ 9 =
99 ÷ 11 =	24 ÷ 12 =	36 ÷ 12 =
77 ÷ 7 =	64 ÷ 8 =	8 ÷ 8 =

Numeracy
Minute Quiz 4-4 A

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

110 ÷ 11 =	36 ÷ 12 =	99 ÷ 11 =
4 ÷ 4 =	110 ÷ 11 =	18 ÷ 9 =
99 ÷ 11 =	24 ÷ 12 =	36 ÷ 12 =
77 ÷ 7 =	64 ÷ 8 =	8 ÷ 8 =

Numeracy
Minute Quiz 4-4 A

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Date: Period:

Solve the following division problems. You have exactly one minute!

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4 ÷ 4 =	110 ÷ 11 =	18 ÷ 9 =
99 ÷ 11 =	24 ÷ 12 =	36 ÷ 12 =
77 ÷ 7 =	64 ÷ 8 =	8 ÷ 8 =

Numeracy
Minute Quiz 4-4 B

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

70 ÷ 10 =	84 ÷ 12 =	63 ÷ 7 =
8 ÷ 2 =	10 ÷ 2 =	6 ÷ 3 =
8 ÷ 2 =	18 ÷ 3 =	6 ÷ 1 =
24 ÷ 6 =	121 ÷ 11 =	8 ÷ 2 =

Numeracy
Minute Quiz 4-4 B

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

70 ÷ 10 =	84 ÷ 12 =	63 ÷ 7 =
8 ÷ 2 =	10 ÷ 2 =	6 ÷ 3 =
8 ÷ 2 =	18 ÷ 3 =	6 ÷ 1 =
24 ÷ 6 =	121 ÷ 11 =	8 ÷ 2 =

Numeracy
Minute Quiz 4-4 B

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

70 ÷ 10 =	84 ÷ 12 =	63 ÷ 7 =
8 ÷ 2 =	10 ÷ 2 =	6 ÷ 3 =
8 ÷ 2 =	18 ÷ 3 =	6 ÷ 1 =
24 ÷ 6 =	121 ÷ 11 =	8 ÷ 2 =

Numeracy
Minute Quiz 4-4 C

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

30 ÷ 5 =	120 ÷ 10 =	35 ÷ 5 =
144 ÷ 12 =	35 ÷ 7 =	48 ÷ 8 =
8 ÷ 1 =	28 ÷ 7 =	28 ÷ 7 =
64 ÷ 8 =	80 ÷ 8 =	24 ÷ 12 =

Numeracy
Minute Quiz 4-4 C

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

30 ÷ 5 =	120 ÷ 10 =	35 ÷ 5 =
144 ÷ 12 =	35 ÷ 7 =	48 ÷ 8 =
8 ÷ 1 =	28 ÷ 7 =	28 ÷ 7 =
64 ÷ 8 =	80 ÷ 8 =	24 ÷ 12 =

Numeracy
Minute Quiz 4-4 C

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

30 ÷ 5 =	120 ÷ 10 =	35 ÷ 5 =
144 ÷ 12 =	35 ÷ 7 =	48 ÷ 8 =
8 ÷ 1 =	28 ÷ 7 =	28 ÷ 7 =
64 ÷ 8 =	80 ÷ 8 =	24 ÷ 12 =

Numeracy
Warm-up 4-4

Name:
Date: Period:

Write the opposite of each polynomial.

Polynomial	Opposite
Ex. $3x^2 + 4$	$-3x^2 - 4$
1. $x - 3xy$	
3. $3y + 2$	
5. $-5x - 4$	
7. $-2x + 1$	
9. $-x - 2$	
11. $y^2 - 4x$	
13. $-2x^2 + 3x - 4$	
15. $x^2 - 6x + 5$	

Polynomial	Opposite
Ex. $x^2 - 4x$	$-x^2 + 4x$
2. $2y - 4x$	
4. $3y + 2x^2$	
6. $xy - 2x$	
8. $2xy + 3x$	
10. $4x + 2y$	
12. $-3x - 2$	
14. $-x - 2xy + 3$	
16. $3x^2 + 4x - 2$	

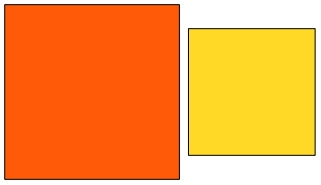
Numeracy
Homework 4-4 – Adding and Subtracting Polynomials

Name:
Date: Period:

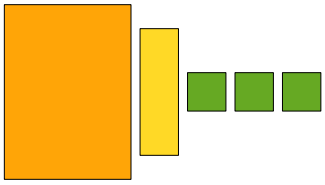
Match each polynomial with the set of Algeblocks that represent it.

1. $xy + 2x$ ____
2. $x^2 + y^2$ ____
3. $xy + x + 3$ ____
4. $x^2 + 3x + 1$ ____

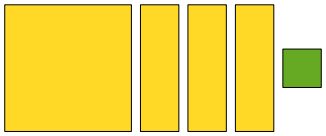
a.



b.



c.



d.

Solve each polynomial addition/subtraction problem using Algeblocks. Then, solve using Algeblocks. Sketch (draw) and write the simplified polynomial.

5. $(3 + 2x^2) + (2 - 3x^2)$

_____

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

_____ + _____

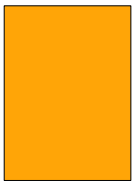
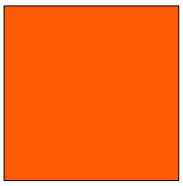
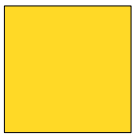
_____

Numeracy
Lab 4-4 – Adding and Subtracting Polynomials

Name:
Date: Period:

Review: Match each name with the correct Algeblock.

1. 1 ____
2. x ____
3. x^2 ____
4. y ____
5. y^2 ____
6. xy ____

a. 
b. 
c. 
d. 
e. 
f. 

Add by representing both polynomials using Algeblocks. Sketch (draw) and write the simplified polynomial.

7. $(2x^2 – 2x) + (2x + x^2)$

_____

8. $(x – y) + (2x + 2y)$

_____

Rewrite each subtracting problem as an addition problem. Then, solve using Algeblocks. Sketch (draw) and write the simplified polynomial.

9. $(2x^2 – y) – (4x^2 + 3y)$

_____ + _____

_____

10. $(3x^2 + x) – (-x^2 – 4x)$

_____ + _____

_____