Name: **Date:**

Station Activities: Operations with Polynomials

Station 1

At this station, you will find 20 blue algebra tiles, 20 red algebra tiles, 20 green algebra tiles, and 20 yellow algebra tiles. Work as a group to model each polynomial by placing the tiles next to the polynomials. Then find the sum. Write your answer in the space provided below each problem.

- Use the blue algebra tiles to model the x^2 term.
- Use the red algebra tiles to represent the xy term.
- Use the green algebra tiles to represent the y^2 term.
- Use the yellow algebra tiles to represent the constant.

1. Given: $\begin{array}{r} 3x^2 + 2xy + 2y^2 \\ +\ 5x^2 - xy + 3y^2 \\ \hline \end{array}$. Model the polynomial and find the sum.

2. How did you use the algebra tiles to model the problem?

3. How did you model the $-xy$ term?

4. What property did you use on the xy terms?

5. Model the following problem using the algebra tiles. Show your work, and write your answer in the space provided.

   $(4y^2 - 12xy + 5x^2) + (-10x^2 + 8y^2 - 4)$

continued

© Walch Education

6. How did you use the algebra tiles to model problem 5?

7. How did you deal with negative terms during addition?

Work together to add each polynomial. Show your work, and write your answer in the space below each problem.

8. Given:
$$\begin{array}{rr} & 2a^3 + a^2b^2 + 3b^3 \\ + & 3a^3 - 4a^2b^2 + 7b^3 \\ \hline \end{array}$$

9. $-10xy - 3 + 2x^2 - 5y^2 + 4y^2 + 8x^2 - 5xy + 7$

10. $8c^3 + 3ac^2 + 4a^3 + 8c^3 - 12a^3 - 7$

© Walch Education

Name: **Date:**

Station 2

At this station, you will find 20 blue algebra tiles, 20 red algebra tiles, 20 green algebra tiles, and 20 yellow algebra tiles. Work as a group to model each polynomial by placing the tiles next to the polynomials. Then find the difference. Write your answer in the space provided below each problem.

- Use the blue algebra tiles to model the x^2 term.
- Use the red algebra tiles to represent the xy term.
- Use the green algebra tiles to represent the y^2 term.
- Use the yellow algebra tiles to represent the constant.

1. Given: $\begin{array}{r} 8x^2 + 7xy + 6y^2 \\ -(3x^2 + 2xy + 2y^2) \\ \hline \end{array}$. Model the polynomial and find the difference.

2. How did you use the algebra tiles to model the problem?

3. To what terms in the bottom polynomial does the subtraction sign apply?

4. Find the difference: $\begin{array}{r} 3x^2 + 2xy + 2y^2 \\ -(8x^2 + 7xy + 6y^2) \\ \hline \end{array}$. Write your answer in the space provided.

continued

© Walch Education

Name: **Date:**

5. Is your answer from problem 1 the same as your answer from problem 4? Why or why not?

6. Model the following subtraction problem using the algebra tiles, then solve. Show your work, and write your answer in the space provided.

$$\begin{array}{r} 2x^2 + 5y^2 + 9xy \\ -\ (4xy - 5x^2 - 6y^2) \\ \hline \end{array}$$

7. How did you arrange the algebra tiles to model problem 6?

8. How did you deal with negative terms during subtraction?

For problems 9 and 10, work together to subtract each polynomial. Show your work, and write your answer in the space provided.

9. $$\begin{array}{r} a^4 - a^2b^2 + 4b^3 + 8 \\ -\ (3a^4 + 3a^2b^2 - 2b^3 + 2) \\ \hline \end{array}$$

10. Subtract $8c^2 + 2bc + 10$ from $-4bc + 14c^2 - 8$.

© Walch Education

Name: **Date:**

Station 3

At this station, you will find a number cube. As a group, roll the number cube. Write the result in the box.

Given: $\square x(3x + y - 2)$

1. Identify the two polynomials you've created.

2. What property can you use to multiply these polynomials?

3. Multiply the polynomials. Show your work.

As a group, roll the number cube. Write the result in the box.

Given: $-\square x^2(-4x + 7xy - 8)$

4. Identify the two polynomials you've created.

5. Multiply the polynomials. Show your work.

6. What happened to the signs of each term of the polynomial in the parentheses? Explain your answer.

continued

© Walch Education

Name: **Date:**

Use the given information to complete problems 7–10.

Given: $(x + 3)(x - 4)$

7. Identify the two polynomials given.

8. What method can you use to multiply these polynomials?

9. Multiply the polynomials. Show your work.

10. What extra steps did you take when multiplying $(x + 3)(x - 4)$ versus $-\square x^2(-4x + 7xy - 8)$?

© Walch Education

Name: **Date:**

Station 4

At this station, you will find six index cards with the following polynomials written on them:

$x - 1$; $6x^2 - 3x + 1$; $3x^2 - 2x + 5$; $3 + x$; $2x^2 + 3x - 1$; $-6x^2 + 5x - 8$

You will also find three operation cards, each with an addition, subtraction, or multiplication symbol written on them: +, –, •.

Work as a group to find the two polynomials and corresponding operation that yield the results that follow by using the cards to set up a problem.

1. $x^2 - 5x + 6$

   Problem:

   What strategies did you use to determine the problem?

2. $x^2 + 2x - 3$

   Problem:

   What strategies did you use to determine the problem?

continued

© Walch Education

3. $2x - 7$

   Problem:

   What strategies did you use to determine the problem?

4. $2x + 2$

   Problem:

   What strategies did you use to determine the problem?

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

   Problem:

   What strategies did you use to determine the problem?

continued

© Walch Education

Name: **Date:**

Place the polynomial cards in a pile and shuffle them.

6. Pick the top two cards from the polynomial pile and add the two expressions. Write the problem and the solution in the space provided.

7. Pick the top two cards from the polynomial pile and subtract one expression from the other. Write the problem and the solution in the space provided.

© Walch Education