

DAY 7: Multiplying Polynomials

Materials

Copies: 7.1 Multiplying Polynomials with Generic Rectangles
7.2 Factor Puzzle
Ticket Out the Door Day 7

Supplies: Mini-whiteboards, marker and eraser (1 per pair)
Scissors (1 per person)
Blank sheet of paper (1 per student or pair)
Glue Stick (optional)- 1 per person
Activity Sheet 6.2 (completed)

Objectives

Students will use different size generic rectangles to multiply all types of polynomials. Students will complete a puzzle to match factored and expanded form of polynomials.

Student Talk Strategy

Think-Pair-Share for preparation of 7.1

Academic Language Use

Height- For this unit, height will refer to the vertical distance of a rectangle. The teacher will define this when introducing activity sheet 1.1 and model throughout.

Base – For this unit, base will refer to the distance across or the horizontal distance of a rectangle. The teacher will define this when introducing activity sheet 1.1 and model throughout.

Area- The number of squares it takes to cover a rectangle. The teacher will introduce and model this by having the students count squares on graph paper.

Dimensions- In this unit, the two numbers being multiplied, the factors, will be used to represent the dimensions, or the base and height of a rectangle. This term will be introduced and modeled by the teacher throughout.

Factors- In this unit, the two numbers being multiplied, the length and width of the rectangle, will be called factors. This will be modeled by the teacher throughout.

Product- In this unit, the answer to the multiplication problem, also the same as the area of the rectangle, will be referred to as the product. This will be modeled by the teacher throughout.

Generic Rectangle- This word refers to a rectangle NOT drawn to scale which can be divided into smaller rectangles and used to assist in performing polynomial multiplication.

Activity Notes

25 minutes: Generic Rectangles with all types of polynomials

Pass out whiteboards, pens and erasers to each pair of student. Have them sit by an elbow partner with whom they can discuss ideas. Explain that today they will be multiplying expressions that are not always two-by-two (binomials). Therefore, they will need to decide how to modify the generic rectangles to work for each problem. Explain that you will show them 1 problem at a time on the overhead. Once the problem is up, they will have 30 seconds to think silently about what the generic

rectangle would look like. Then, they have 30 seconds to discuss with their partner and to draw the rectangle on their whiteboard (note: they do NOT need to write the numbers or solve. For example, #1 will be a 1 by 2, #2 will be a 2 by 2 and #3 will be a 3 by 2.) Once the minute is up (30 seconds alone and 30 seconds with a partner), have the pairs hold up their whiteboards and discuss which are correct and ask a student at random to explain why they drew it the way they did. Continue this process for all 9 problems. Then, pass out activity sheet 7.1 and allow the students to work together to draw their rectangles (they will be the same ones they drew on the whiteboards), label the parts and multiply. It may help to have out activity sheet 6.2 for their reference. Have students who finish early show their work on the whiteboard so other's can check.

30 minutes: Factor Puzzle

Pass out scissors, a glue stick (AFTER you have checked the completed puzzle) and a sheet of blank paper to each pair. Pass out activity sheet 7.2. Students may work in partners or alone (or even in a group of 3 if all students are sharing the work of expanding). Students will cut out the sixteen puzzle squares and reassemble them into a new square. Each side of a square that is in factored form will match with (be glued next to) its expanded form on another square. Encourage students to use generic rectangles to expand each problem to find it's match.

After the students have reassembled the puzzle, they will glue the pieces to a new sheet of paper. Make sure that the puzzle is correct BEFORE they begin to glue.

The numbers on the puzzle are your reference only. The puzzle will not re-assemble in numerical order, but will remain a square.

Answer Key

1	7	10	9
15	4	5	8
12	11	16	14
6	13	2	3

5 minutes: Ticket out the Door

Pass out the Ticket out the Door and collect it as soon as each student finishes (so that you can discuss mistakes with students as they turn it in).