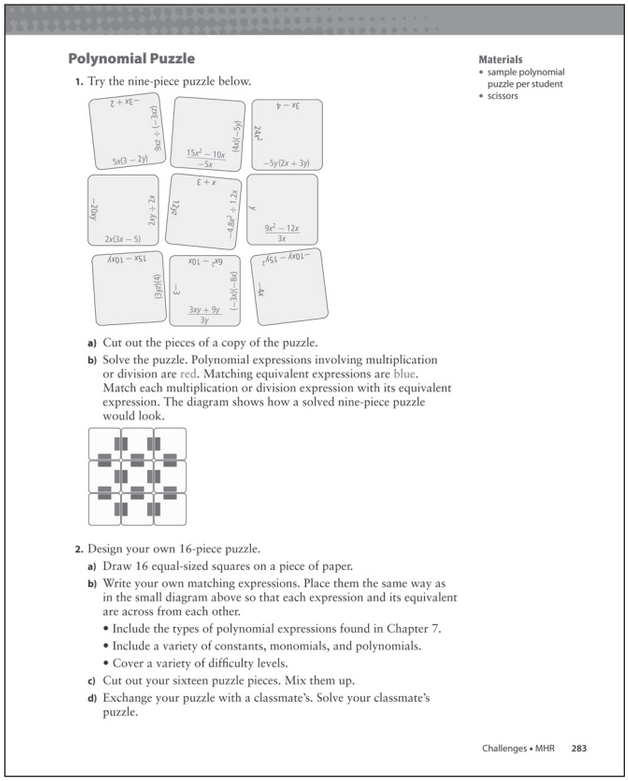

Polynomial Puzzle

Materials
- sample polynomial puzzle per student
- scissors

1. Try the nine-piece puzzle below.

a) Cut out the pieces of a copy of the puzzle.

b) Solve the puzzle. Polynomial expressions involving multiplication or division are red. Matching equivalent expressions are blue. Match each multiplication or division expression with its equivalent expression. The diagram shows how a solved nine-piece puzzle would look.

2. Design your own 16-piece puzzle.

a) Draw 16 equal-sized squares on a piece of paper.

b) Write your own matching expressions. Place them the same way as in the small diagram above so that each expression and its equivalent are across from each other.
- Include the types of polynomial expressions found in Chapter 7.
- Include a variety of constants, monomials, and polynomials.
- Cover a variety of difficulty levels.

c) Cut out your sixteen puzzle pieces. Mix them up.

d) Exchange your puzzle with a classmate's. Solve your classmate's puzzle.

Challenges • MHR 283

Planning Notes: Polynomial Puzzle

With the class, read through the instructions for the game. Discuss with students how this type of puzzle is solved. Direct their attention to the colours used on the puzzle pieces to assist in identifying the multiplication or division expressions (red) and the equivalent expressions (blue). Then, point out the small diagram of how a solved puzzle looks. Make sure students see that each side of the solved puzzle will have a multiplication or division expressions (red) matching up with an equivalent expression (blue). Students may create their own copy of the nine-piece puzzle. Encourage them to start by drawing a 3×3 grid. Next, they can fill in the expressions. Then, they can cut out the pieces and solve the puzzle. Alternatively, provide students with **BLM7–13 Sample Polynomial Puzzle**. Have them cut out the pieces and solve the puzzle.

When they design their own 16-piece puzzle, encourage them to start by drawing a 4×4 grid. Then, they can fill in the expressions so that they match up. Finally, they can cut out the pieces. They should mix up the pieces before giving them to a classmate to put back together.

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Suggested Timing
50–60 minutes

Materials
- scissors

Blackline Masters
BLM 7–13 Sample Polynomial Puzzle

Specific Outcomes
PR7 Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically.

Meeting Student Needs

- Encourage students to use the red and blue colours for the expressions on their puzzles to help them organize their thinking.
- Have students exchange puzzles with a classmate of similar ability.

ELL

- Demonstrate for students how to match the puzzle pieces so that the red multiplication or division expressions match with the blue equivalent expressions.

Gifted and Enrichment

- Encourage students to include more complex multiplication expressions and division expressions in their puzzle.
- Have students create a puzzle with more than 16 pieces.

Common Errors

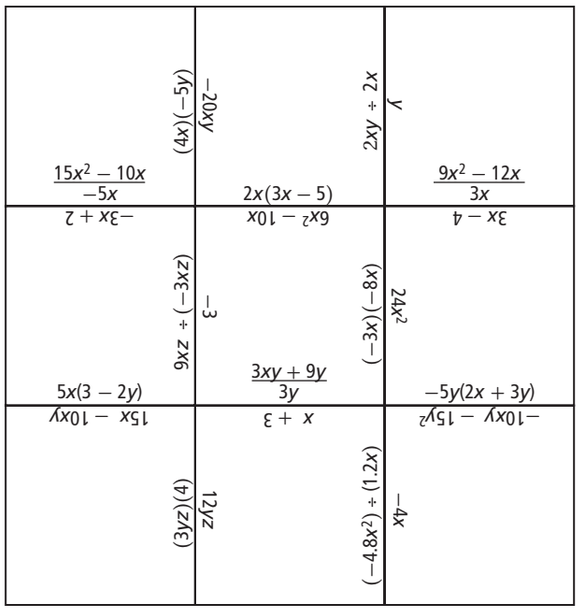
- Some students may match the colours of nine-piece puzzle without properly matching the expressions and their equivalents.

R_x Make sure students are not trying to solve the puzzle by relying too much on the colours. Tell them to focus on matching the expressions while using the colours only as a guide.

Answers

Polynomial Puzzle

1.



Assessment	Supporting Learning
Assessment *for* Learning	
Polynomial Puzzle Have students complete the steps individually or with a partner.	• Suggest to students that they first make a list of the multiplication expressions and division expressions, along with the equivalent expressions. This step may help them to organize their thinking before they create the puzzle. • Encourage students to have a classmate check their expressions and equivalents before they finalize their puzzle