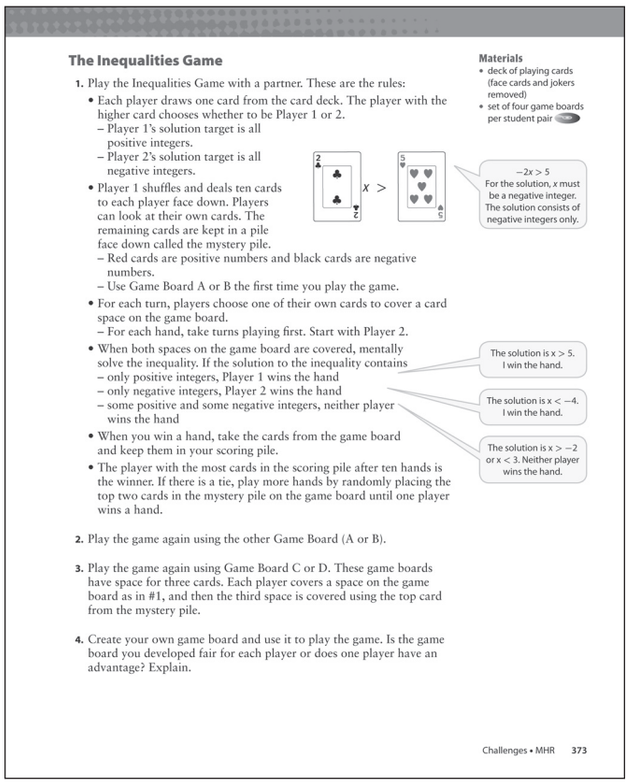

The Inequalities Game

Materials
- deck of playing cards (face cards and jokers removed)
- set of four game boards per student pair

1. Play the Inequalities Game with a partner. These are the rules:
   - Each player draws one card from the card deck. The player with the higher card chooses whether to be Player 1 or 2.
     – Player 1's solution target is all positive integers.
     – Player 2's solution target is all negative integers.
   - Player 1 shuffles and deals ten cards to each player face down. Players can look at their own cards. The remaining cards are kept in a pile face down called the mystery pile.
     – Red cards are positive numbers and black cards are negative numbers.
     – Use Game Board A or B the first time you play the game.
   - For each turn, players choose one of their own cards to cover a card space on the game board.
     – For each hand, take turns playing first. Start with Player 2.
   - When both spaces on the game board are covered, mentally solve the inequality. If the solution to the inequality contains
     – only positive integers, Player 1 wins the hand
     – only negative integers, Player 2 wins the hand
     – some positive and some negative integers, neither player wins the hand
   - When you win a hand, take the cards from the game board and keep them in your scoring pile.
   - The player with the most cards in the scoring pile after ten hands is the winner. If there is a tie, play more hands by randomly placing the top two cards in the mystery pile on the game board until one player wins a hand.

   $x >$ → $-2x > 5$
   For the solution, x must be a negative integer. The solution consists of negative integers only.

   The solution is $x > 5$. I win the hand.

   The solution is $x < -4$. I win the hand.

   The solution is $x > -2$ or $x < 3$. Neither player wins the hand.

2. Play the game again using the other Game Board (A or B).

3. Play the game again using Game Board C or D. These game boards have space for three cards. Each player covers a space on the game board as in #1, and then the third space is covered using the top card from the mystery pile.

4. Create your own game board and use it to play the game. Is the game board you developed fair for each player or does one player have an advantage? Explain.

Challenges • MHR 373

Planning Notes: The Inequalities Game

Before students begin, you may wish to read the directions with the class.

Have students play the game in pairs. Note that each student pair needs a deck of playing cards (without face cards or jokers) and the set of four game boards found on **BLM 9–14 Inequalities Game Boards**.

Have students play the game using Game Boards A and B before moving on to Game Boards C and D, which introduce more complexity.

***MathLinks 9*, page 373**

Suggested Timing
30–40 minutes

Materials
- deck of playing cards (face cards and jokers removed)

Blackline Masters
BLM 9–14 Inequalities Game Board

Specific Outcomes
PR4 Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context.

The game provides students with the opportunity to apply their learning about solving inequalities. Students mentally solve inequalities formed by placing two or three cards on a game board.

Have students create their own game board. After students have had an opportunity to use their board in a game, have student pairs discuss whether the game board is set up so that it is fair for both players. If not, ask how it could be modified to make it fair.

Meeting Student Needs

- Consider asking volunteers to play a demonstration round.

Common Errors

- Some students may miscalculate values.

R_x Tell students to check each other's calculations.

Assessment	Supporting Learning
Assessment *for* Learning	
The Inequalities Game Have students play the game in pairs. This game could be used as an assessment before the practice test or as part of the chapter review.	• Consider allowing students who may find it challenging to solve inequalities mentally to use paper and pencil to help them.