R-A-T-I-O

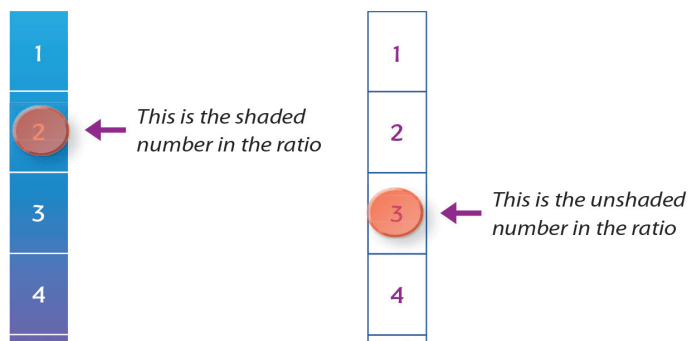**INSTRUCTIONS**

Playing the Game

STEP 1 To begin, place one of the sliders in the "1" position on the shaded slide row and the other in the "1" position on the unshaded slide row.

STEP 2 Move one slider to a new position so that the slide rows form a ratio that is illustrated by an open space on the gameboard, and place a game piece on the space. You may not reduce a ratio to create an equivalent ratio.

For example, assume that the previous turn ended with the slider on 2 for the shaded number and 4 for the unshaded number to form the ratio 2:4. On this turn, a player moves the unshaded slider to 3 to form the ratio 2:3.

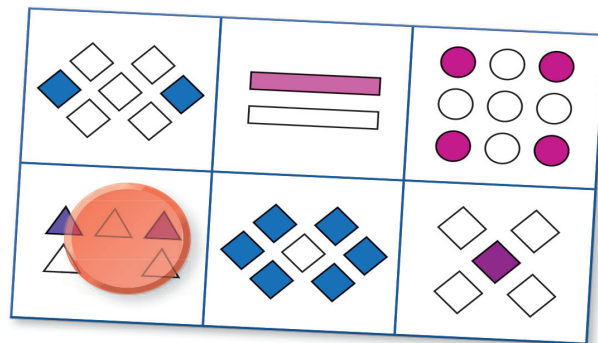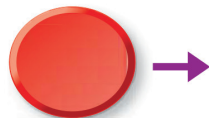| 1		1
2 ← *This is the shaded number in the ratio*		2
3		3 ← *This is the unshaded number in the ratio*
4		4

STEP 3 Record the ratio in your table. You can write the comparison as unshaded to shaded, shaded to unshaded, unshaded:shaded, shaded:unshaded, $\frac{unshaded}{shaded}$, or $\frac{shaded}{unshaded}$.

Round	Comparison	Ratio
1	shaded:unshaded	2:3

Alternate turns with your opponent.

Game piece

STEP 5

You must move exactly one slider on each turn, and you must try to form a ratio whose illustration is not yet covered with a game piece, even if doing so may give your opponent an advantage. Even if you cannot form a new ratio by moving only one slider, you must move one slider before your opponent's turn.

Winning the Game

Winner!

The first player to claim four spaces in a row, either horizontally, vertically, or diagonally, wins.

Round	Comparison	Ratio
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

R-A-T-I-O

Objective
Students will create and recognize different ratios.

Number of Players
2 players

Materials
- 1 gameboard
- 2 sliders (any small, easily moved items such as paper clips) per group
- 15 game pieces per player (different color for each player)

Teacher Preparation
Print and cut out materials for each student or group of students. Printing the cards on cardstock is recommended.

Game Resources
Go online to access all your game resources.
- Gameboards

my.hrw.com

Key Concepts
Students will:
- identify ratios
- create ratios
- write ratios using multiple representations

Remind students that the order of the numbers in a ratio is important. For example, 3:5 is not the same as 5:3. Encourage students to write ratios in various ways: 1 to 2, 1:2, or $\frac{1}{2}$.
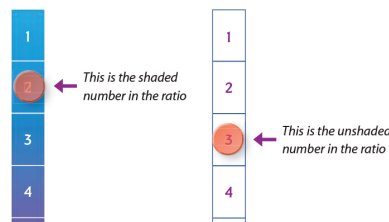

Game

R-A-T-I-O

INSTRUCTIONS

Playing the Game

STEP 1 To begin, place one of the sliders in the "1" position on the shaded slide row and the other in the "1" position on the unshaded slide row.

STEP 2 Move one slider to a new position so that the slide rows form a ratio that is illustrated by an open space on the gameboard, and place a game piece on the space. You may not reduce a ratio to create an equivalent ratio.

For example, assume that the previous turn ended with the slider on 2 for the shaded number and 4 for the unshaded number to form the ratio 2:4. On this turn, a player moves the unshaded slider to 3 to form the ratio 2:3.

This is the shaded number in the ratio

This is the unshaded number in the ratio

STEP 3 Record the ratio in your table. You can write the comparison as unshaded to shaded, shaded to unshaded, unshaded:shaded, shaded:unshaded, $\frac{unshaded}{shaded}$, or $\frac{shaded}{unshaded}$.

Round	Comparison	Ratio
1	shaded:unshaded	2:3

Game
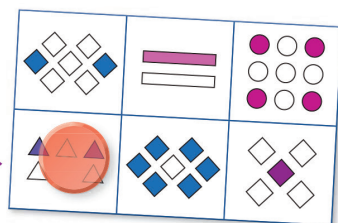

WARM-UP EXERCISES

Ali has 3 blue marbles and 2 red marbles.

1. What is the ratio of blue marbles to red marbles? 3:2, 3 to 2, or $\frac{3}{2}$

2. What is the ratio of red marbles to blue marbles? 2:3, 2 to 3, or $\frac{2}{3}$

A class has 13 boys and 12 girls.

3. What is the ratio of girls to boys? 12:13, 12 to 13, or $\frac{12}{13}$

4. What is the ratio of boys to girls? 13:12, 13 to 12, or $\frac{13}{12}$

STEP 4 Alternate turns with your opponent.

Game piece

STEP 5 You must move exactly one slider on each turn, and you must try to form a ratio whose illustration is not yet covered with a game piece, even if doing so may give your opponent an advantage. Even if you cannot form a new ratio by moving only one slider, you must move one slider before your opponent's turn.

Winner! ## Winning the Game

The first player to claim four spaces in a row, either horizontally, vertically, or diagonally, wins.

Answers will vary.

Round	Comparison	Ratio
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Playing the Game

STEP 1 Play begins with sliders in the "1" position on both slide rows.

STEP 2 Player 1 moves a slider on either the shaded or unshaded slide row to a new position, and places a game piece on the space on the gameboard that corresponds to the ratio formed. Ratios cannot be reduced to create an equivalent ratio.

STEP 3 Player 1 records the ratio on his or her table. The player may write the comparison as unshaded to shaded, shaded to unshaded, unshaded: shaded, shaded:unshaded, $\frac{unshaded}{shaded}$, or $\frac{shaded}{unshaded}$.

STEP 4 Players alternate turns.

STEP 5 Players must move exactly one slider every turn, and must try to form a ratio whose illustration is not yet covered with a game piece, even if doing so may give the other player an advantage. Even if a player cannot form a new ratio by moving only one slider, the player must move one slider before the other player's turn.

Winning the Game

The first player to claim four spaces in a row, either horizontally, vertically, or diagonally wins.

VARIATIONS

- **Shorter Variation** Players must claim only three squares in a row to win.
- **Critical Thinking Variation** Players can also play on a 5 by 5 board of their own design.

R-A-T-I-O

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1	2	3	4	5	6

Shaded Figure Slide Row

1	2	3	4	5	6

GO MATH!

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