Name _____

Extend Your Thinking
12-6

Critical Thinking

The class asked Joleen to set up a corner in the classroom filled with math games. Help her determine which of the following games are fair and which are unfair. If a game is unfair, tell what can be done to make it fair.

Game 1

Players take turns rolling two cubes numbered 1–6. Player A scores a point if the sum of the two numbers is even. Player B scores a point if the sum of the two numbers is odd. The first player to reach 10 points is the winner.

Game 2

Players take turns rolling two number cubes. Player A scores a point if the product of the two numbers is even. Player B scores a point if the product of the two numbers is odd. The first player to reach 10 points is the winner.

Game 3

Players take turns rolling two number cubes. Player A scores a point if the difference between the numbers is even. Player B scores a point if the difference is odd. No one scores a point if the difference is 0. The first player to reach 10 points is the winner.

Help Joleen design another game to put in the math game corner. You can use number cubes, spinners, cards, and so on.

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Extend Your Thinking 12-6

Critical Thinking

The class asked Joleen to set up a corner in the classroom filled with math games. Help her determine which of the following games are fair and which are unfair. If a game is unfair, tell what can be done to make it fair. **Possible answers: Items 1-3**

Game 1
Players take turns rolling two cubes numbered 1–6. Player A scores a point if the sum of the two numbers is even. Player B scores a point if the sum of the two numbers is odd. The first player to reach 10 points is the winner.

Fair; P(even sum) = $\frac{1}{2}$, P(odd sum) = $\frac{1}{2}$.

Game 2
Players take turns rolling two number cubes. Player A scores a point if the product of the two numbers is even. Player B scores a point if the product of the two numbers is odd. The first player to reach 10 points is the winner.

Unfair; P(even product) = $\frac{3}{4}$, P(odd product) = $\frac{1}{4}$; To make it fair, let one player score if product is less than 10 and other score if product is greater than 10.

Game 3
Players take turns rolling two number cubes. Player A scores a point if the difference between the numbers is even. Player B scores a point if the difference is odd. No one scores a point if the difference is 0. The first player to reach 10 points is the winner.

Unfair; P(even difference) = $\frac{1}{3}$; P(odd difference) = $\frac{1}{2}$; P(zero) = $\frac{1}{6}$; To make it fair, let Player A score if the difference is even or zero.

Help Joleen design another game to put in the math game corner. You can use number cubes, spinners, cards, and so on.

Check students' answers.