Bowling Over Fractions

Pillar: Active Living
Division II
Grades: 4-5
Core Curriculum Connections: Mathematics

I. Rationale: Fractions are often a difficult mathematical concept for young students to master. This activity engages students' interest by offering an active alternative to learning fractions at their seats, allowing students to conceptualize them in a whole new way - by playing a game of bowling. This visual, physical, and hands on approach to reinforcing fractions transforms fraction frustration into fraction fun and the rows between your desks into bowling lanes.

II Curriculum Outcomes: Mathematics

Strand: Number (Number Concepts)
General Outcome Develop number sense.
Grade 4: 8. Demonstrate an understanding of fractions less than or equal to one by using concrete, pictorial and symbolic representations to: • name and record fractions for the parts of a whole or a set • compare and order fractions • model and explain that for different wholes, two identical fractions may not represent the same quantity • provide examples of where fractions are used. [C, CN, PS, R, V]
Grade 5: 7. Demonstrate an understanding of fractions by using concrete, pictorial and symbolic representations to: • create sets of equivalent fractions • compare fractions with like and unlike denominators. [C, CN, PS, R, V]

III. Materials:

- 8 bowling pins per lane
- 1 bowling ball (or any type of rolling ball) per lane
- 1 Bowling Over Fractions Worksheet (following this lesson)
- clipboard (optional)
- 1 pencil per student.

IV. Procedure:

1. Set up the pins. The aisles between desks can be used as bowling lanes.
2. Divide the students into groups of three.
3. Two students should stand behind the pins, while the other student stands at the beginning of the lane.
4. After a student rolls the ball one time, (s)he shades in the number of boxes on the "Bowling Over Fractions" worksheet based on the number of pins knocked down and completes the two fraction questions.
5. (S)he replaces someone standing behind the pins. Rotation continues until all students have completed the worksheet.

IV. Variations:

1. Teachers can vary the number of pins, but must change the number of boxes on the worksheet, which will change the denominator of the fractions. Using different denominators could be used to compare fractions with unlike denominators or to create equivalent fraction pairs.

2. In order to compare and order fractions, have students reduce them to their simplest form. To increase the difficulty, have students write a math sentence stating if the fraction of pins knocked down is >, <, or equal to the number of pins still standing.

3. Scores can be converted to decimals numbers (tenths and hundredths) or 2 more pins could be added to explore results in tenths and make equivalent fractions with a denominator of 100 to incorporate the Grade 4 outcome of representing and describing decimals (tenths and hundredths).

4. Using the results from the whole class, students could create equivalent fractions sets, compare and order fractions and decimals to hundredths, and generate word problems for each other to solve using the bowling scores.

V. Assessment Ideas:

- Teachers can check the students' worksheet/score sheet as well as the additional activities they to incorporate to meet the learner outcomes at their grade level to provide useful feedback on the student's progress work with fractions.

VI. Source:

- Lesson idea adapted from PE Central.

BOWLING OVER FRACTIONS

Directions: Shade in the boxes based on the number of bowling pins you knock down.

1.

What fraction of the pins are knocked down? _____

What fraction of the pins are standing up? _____

2.

What fraction of the pins are knocked down? _____

What fraction of the pins are standing up? _____

3.

What fraction of the pins are knocked down? _____

What fraction of the pins are standing up? _____
4.

What fraction of the pins are knocked down? _____

What fraction of the pins are standing up? _____

5.

What fraction of the pins are knocked down? _____

What fraction of the pins are standing up? _____

6.

What fraction of the pins are knocked down? _____

What fraction of the pins are standing up? _____