

# **Indiana Academic Standard & Mathematics Pentathlon**

## **GRADE 3 Alignment of Mathematics Pentathlon with the Indiana Academic Standards**

### **Standard 1**

#### **Number Sense**

- 3.1.1 Count, read, and write whole numbers up to 1,000.  
Adventures in Problem Solving Book I – pp. 97-103
- 3.1.2 Identify and interpret place value in whole numbers up to 1,000.  
Adventures in Problem Solving Book I – pp. 97-103
- 3.1.3 Use words, models, and expanded form to represent numbers up to 1,000.  
Adventures in Problem Solving Book I – pp. 97-103
- 3.1.5 Compare whole numbers up to 1,000 and arrange them in numerical order.  
Adventures in Problem Solving Book I – pp. 97-103
- 3.1.7 Identify odd and even numbers up to 1,000 and describe their characteristics.  
Adventures in Problem Solving Book I – pp. 97-103
- 3.1.8 Show equivalent fractions using equal parts.  
Adventures in Problem Solving Book I – pp. 189-202;  
Adventures in Problem Solving Book II – pp. 164-171,  
Investigation Exercises Book II – pp. 3-9
- 3.1.9 Identify and use correct names for numerators and denominators.  
Adventures in Problem Solving Book I – pp. 189-199;  
Adventures in Problem Solving Book II – pp. 159-168
- 3.1.10 Given a pair of fractions, decide which is larger or smaller by using objects or pictures.  
Adventures in Problem Solving Book I – pp. 189-202;  
Adventures in Problem Solving Book II – pp. 159-171

## Standard 2

### Computation

3.2.1 Add and subtract whole numbers up to 1,000 with or without regrouping, using relevant properties of the number system.

Sum Dominoes and Dice game;  
Adventures in Problem Solving Book I – pp. 75-95;  
Investigation Exercises Book I – pp. 5-18,  
Ramrod game;  
Adventures in Problem Solving Book I – pp. 141-157;  
Investigation Exercises Book I – pp. 3-17;  
Kwatro-Sinko game;  
Adventures in Problem Solving Book I – pp. 213-222;  
Investigation Exercises Book I – pp. 3-12;  
Par 55 game;  
Investigation Exercises Book I – pp. 20-33

3.2.2 Represent the concept of multiplication as repeated addition.

Adventures in Problem Solving Book II – pp. 40-44 and pp. 115-118

3.2.3 Represent the concept of division as repeated subtraction, equal sharing, and forming equal groups.

Adventures in Problem Solving Book II – pp. 115-118

3.2.4 Know and use the inverse relationship between multiplication and division facts, such as  $6 \times 7 = 42$ ,  $42 \div 7 = 6$ ,  $7 \times 6 = 42$ ,  $42 \div 6 = 7$ .

Adventures in Problem Solving Book II – pp. 115-118

3.2.5 Show mastery of multiplication facts for 2, 5, and 10.

Adventures in Problem Solving Book II – pp. 40-44 and pp. 115-118

3.2.7 Use estimation to decide whether answers are reasonable in addition and subtraction problems.

Sum Dominoes and Dice game;  
Adventures in Problem Solving Book I – pp. 75-95;  
Investigation Exercises Book I – pp. 5-18,  
Ramrod game;  
Adventures in Problem Solving Book I – pp. 141-157;  
Investigation Exercises Book I – pp. 3-17;  
Kwatro-Sinko game;  
Adventures in Problem Solving Book I – pp. 213-222;  
Investigation Exercises Book I – pp. 3-12;  
Par 55 game;  
Investigation Exercises Book I – pp. 20-33

## Computation (continued)

3.2.8 Use mental arithmetic to add or subtract with numbers less than 100.

Sum Dominoes and Dice game;  
Adventures in Problem Solving Book I – pp. 75-95;  
Investigation Exercises Book I – pp. 5-18,  
Ramrod game;  
Adventures in Problem Solving Book I – pp. 141-157;  
Investigation Exercises Book I – pp. 3-17;  
Kwatro-Sinko game;  
Adventures in Problem Solving Book I – pp. 213-222;  
Investigation Exercises Book I – pp. 3-12;  
Par 55 game;  
Investigation Exercises Book I – pp. 20-33

### Standard 3

## Algebra and Functions

3.3.4 Understand and use the commutative and associative rules of multiplication.

Adventures in Problem Solving Book II – pp. 40-44 and pp. 115-118

3.3.5 Create, describe, and extend number patterns using multiplication.

Adventures in Problem Solving Book II – pp. 40-44 and pp. 115-118

3.3.6 Solve simple problems involving a functional relationship between two quantities.

Adventures in Problem Solving Book II – pp. 40-44 and pp. 115-118

### Standard 4

## Geometry

3.4.1 Identify quadrilaterals as four-sided shapes.

Par 55 game;  
Adventures in Problem Solving Book I – pp. 11-29  
**Note:** Stress the term quadrilateral while doing these activities.

3.4.5 Draw a shape that is congruent to another shape.

Par 55 game;  
Adventures in Problem Solving Book I – pp. 11-29  
**Note:** In Par 55 and Shape Up have students identify shapes that are congruent. Also have them draw the related congruent shapes.

3.4.6 Use the terms *point*, *line*, and *line segment* in describing two-dimensional shapes.

## Geometry (continued)

3.4.10 Recognize geometric shapes and their properties in the environment and specify their locations.

Par 55 game;

Adventures in Problem Solving Book I – pp. 11-29

### Standard 5

## Measurement

3.5.3 Find the perimeter of a polygon.

### Support from

Adventures in Problem Solving Book II – pp. 39-41, 53-54, and 56

3.5.4 Estimate or find the area of shapes by covering them with squares.

Adventures in Problem Solving Book II – pp. 39-46, and 55-56

### Standard 6

## Problem Solving

3.6.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.

All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko);

Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;

Investigation Exercises Book I – all pages that relate to each of the Division II games.

**Note:** All Mathematics Pentathlon games with the combined use of Adventures in Problem Solving and Investigation Exercises stress the use of a variety of strategies to solve problems as well as to explain their reasoning, justify procedures, and check the validity of results.

3.6.2 Decide when and how to break a problem into simpler parts.

All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko);

Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;

Investigation Exercises Book I – all pages that relate to each of the Division II games.

**Note:** Each of the Mathematics Pentathlon games break complex problems with a myriad of variables into simpler situations. For example, in the game of Par 55, Adventures in Problem Solving Book I and Investigation Exercises Book I provide a series of prerequisite activities that relate to pertinent skills for playing the nonroutine problem-solving game.

## Problem Solving (continued)

3.6.3 Apply strategies and results from simpler problems to solve more complex problems.

All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko;

Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;

Investigation Exercises Book I – all pages that relate to each of the Division II games.

**Note:** Each of the Mathematics Pentathlon games break complex problems with a myriad of variables into simpler situations. For example, in the game of Par 55, Adventures in Problem Solving Book I and Investigation Exercises Book I provide a series of prerequisite activities that relate to pertinent skills for playing the nonroutine problem-solving game.

3.6.4 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.

**All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko;**

**Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;**

**Investigation Exercises Book I – all pages that relate to each of the Division II games.**

**Note:** All Mathematics Pentathlon games with the combined use of Adventures in Problem Solving and Investigation Exercises stress the use of a variety of strategies to solve problems as well as to explain their reasoning, justify procedures, and check the validity of results.

3.6.5 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.

All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko;

Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;

Investigation Exercises Book I – all pages that relate to each of the Division II games.

**Note:** All Mathematics Pentathlon games with the combined use of Adventures in Problem Solving and Investigation Exercises stress the use of a variety of strategies to solve problems as well as to explain their reasoning, justify procedures, and check the validity of results.

## Problem Solving (continued)

3.6.6 Know and use strategies for estimating results of whole-number addition and subtraction.

All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko;

Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;

Investigation Exercises Book I – all pages that relate to each of the Division II games.

**Note:** All Mathematics Pentathlon games with the combined use of Adventures in Problem Solving and Investigation Exercises stress the use of a variety of strategies to solve problems as well as to explain their reasoning, justify procedures, and check the validity of results.

3.6.7 Make precise calculations and check the validity of the results in the context of the problem.

All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko;

Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;

Investigation Exercises Book I – all pages that relate to each of the Division II games.

**Note:** All Mathematics Pentathlon games with the combined use of Adventures in Problem Solving and Investigation Exercises stress the use of a variety of strategies to solve problems as well as to explain their reasoning, justify procedures, and check the validity of results.

3.6.8 Decide whether a solution is reasonable in the context of the original situation.

All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko;

Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;

Investigation Exercises Book I – all pages that relate to each of the Division II games.

**Note:** All Mathematics Pentathlon games with the combined use of Adventures in Problem Solving and Investigation Exercises stress the use of a variety of strategies to solve problems as well as to explain their reasoning, justify procedures, and check the validity of results.

3.6.9 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.

All Division II games (Par 55, Ramrod, Sum Dominoes & Dice, FIAR, and Kwatro-Sinko;

Adventures in Problem Solving Book I – all pages that relate to each of the Division II games;

## **Problem Solving (continued)**

Investigation Exercises Book I – all pages that relate to each of the Division II games.

**Note:** All Mathematics Pentathlon games with the combined use of Adventures in Problem Solving and Investigation Exercises stress the use of a variety of strategies to solve problems as well as to explain their reasoning, justify procedures, and check the validity of results.