Problem-Solving In Action

Understanding the Scope & Sequence Chart

The scope and sequence chart for the twenty **Mathematics Pentathlon**® games shows how each game addresses several mathematical content objectives. These objectives have been clustered into spatial/geometric reasoning, computational reasoning, and logical/scientific reasoning. **Mathematics Pentathlon**® games such as **Star Track**™, **Kwatro-Sinko**™, **Contig 60**™, and **Fraction Pinball**™, have obviously been designed to address computational reasoning. The key word here is reasoning. In each of the games mentioned, it is not sufficient to have computational skills alone, but to use those skills while deciding which of several options might maximize the player's ability to reach the game's goal(s). What is not so obvious is that each of these games has a spatial reasoning component based on either the design of the gameboard as in **Kwatro-Sinko**™ or the game's goal as in **Contig 60**™. Another less obvious characteristic of a **Mathematics Pentathlon**® game may be its use of logical reasoning. Doing the first thing that occurs to a player may on occasion allow a player to win a game of **Star Track**™ but this will rarely lead to a win in the other games. A player of each of these games is better served by making careful observations and use of inductive and deductive reasoning. Games such as **Kings & Quadraphages**™, **Fiar**™, **Queens & Guards**™, and **Pent 'em In**™ stress spatial/geometric reasoning. And, games such as **Shape Up**™, **Par 55**™, and **Stars and Bars**™ emphasize logical reasoning. However, each of the twenty games integrate the three categories of mathematical thinking.

STRATEGIC THINKING IN ACTION

SCOPE AND SEQUENCE CHART - MATHEMATICS PENTATHLON® GAMES

NOTE: This chart does not include Adventures in Problem Solving or Investigation Exercises

			COMPUTATIONAL REASONING																LOGICAL/SCIENTIFIC REASONING								SPATIAL/GEOMETRIC REASONING										
			PROBLEM SOLVING	Counting	Number Sense	Number/Numeral Recognition	One-to-One Correspondence	Equality	Inequality	Addition	Subtraction	Multiplication	Division	Fractions	Decimals	Measurement	Prime & Composite or Odd & Even Numbers	Exponentiation	Factorials	Probability	Observation	Classification	Communication	Hypothesizing & Experimentation	Deductive Reasoning	Inductive Reasoning	Number Theory	Combinatorics	Geometric Figures & Regions	Directionality	Topology	Networks	Structural Analysis of Space	Symmetry & Reflection	Congruence	Similarity	Area	Transformational Geometry	
DIVISION I	1	Kings & Quadraphages™	X	X			X		X												X		X	X	X	X		X	X	X	X		X	X			X		1
	2	Calla™	X	X	X		X	X	X												X		X	X	X	X		X		X									2
	3	Hex-A-Gone!™	X	X						X				X		X					X	X	X	X	X	X	X	X	X				X		X		X		3
	4	Shape-Up™	X	X	X					X										X	X	X	X	X	X	X		X	X	X					X	X			X	4
	5	Star Track™	X	X	X	X	X	X	X	X						X					X		X	X	X					X									5
DIVISION II	6	FIAR™	X																		X		X	X	X	X				X	X	X	X						6
	7	Sum Dominoes & Dice™	X	X	X				X	X	X									X	X		X	X	X	X		X		X	X		X						7
	8	Ramrod™	X		X			X	X	X	X					X					X		X	X	X	X		X		X	X	X	X				X		8
	9	PAR 55™	X	X					X	X											X	X	X	X	X	X		X	X	X		X	X			X			9
	10	Kwatro-Sinko™	X							X	X						X				X		X	X	X	X		X		X	X	X	X						10
DIVISION III	11	Contig 60™	X							X	X	X	X							X	X		X	X	X	X	X	X		X			X						11
	12	Juggle™	X							X	X	X	X			X				X	X	X	X	X	X	X		X	X		X		X	X	X	X	X	X	12
	13	Stars & Bars™	X						X	X		X									X	X	X	X	X	X		X	X	X			X						13
	14	Queens & Guards™	X																		X		X	X	X	X			X	X			X	X						14
	15	Fab-A-Diffy™	X					X	X	X	X			X							X	X	X	X	X	X		X					X				X		15
DIVISION IV	16	Remainder Islands™	X						X			X	X							X	X		X	X	X	X			X	X	X		X						16
	17	Prime Gold™	X					X	X	X	X	X	X				X	X	X	X	X		X	X	X	X	X	X		X				X						17
	18	Pent 'Em In™	X																		X		X	X	X	X			X	X	X			X	X		X	X	18
	19	Frac Fact™	X					X	X	X	X	X	X	X						X	X	X	X	X	X	X		X					X				X		19
	20	Fraction Pinball™	X					X	X	X	X			X	X						X		X	X	X	X		X		X	X								20