

**Correlations
between
Specifications of
Pennsylvania State Academic Standards for Mathematics
and
Topics and Activities of
Goldenrod's YouthTouch Technology Integration System**

**Provided as a Sample
Mathematics, Grade 5
Prepared July 1998**

The following document correlates the 5th grade Academic Standards for Mathematics which Pennsylvania intends to adopt with Goldenrod Research's YouthTouch learning system. Each Academic Standard is listed followed by the corresponding YouthTouch topics and activities that teach to it.

Academic Standard 2.1.5 : Numbers, Number Systems, and Number Relationships

- A. Use expanded notation to represent whole numbers or decimals
YouthTouch Topic: ***Exponents, Activities # 1 and 2.***
- B. Apply number theory concepts to rename a number quantity.
Not applicable.
- C. Demonstrate that mathematical operations can represent a variety of problem situations.
Youth Touch Topics: ***Absolute Value, Activity # 5.***
Addition, Activities # 2 and 5.
Adding Algebraically, Activities # 1,2,3,4 and 5.
Friction, Activity # 3.
Problem Solving Strategies, Activity # 4.
Vectors-Displacement Vectors, Activity # 1.
Writing Equations, Activities # 1,2,3, and 4.
Work, Activities # 2 and 5.
- D. Use models to represent fractions and decimals.
Youth Touch Topic: ***Modeling, Activity # 1.***
- E. Explain the concepts of prime and composite numbers.
Not applicable.
- F. Use simple concepts of negative numbers such as on a number line, in counting,
and temperature.
Youth Touch Topics: ***Coordinates, Activity # 4***
Adding and Subtracting Integers on a Numberline,
Activities # 2, 3, and 4.
Adding Algebraically, Activities # 1,2,and 3.
- G. Develop and apply number theory concepts (e.g. primes, factors, multiples,
and composites) to represent numbers in various ways.
Youth Touch Topic: ***Pattern Recognition, Activities # 2 and 4.***

Academic Standard 2.2.5 : Computation and Estimation

- A. Create and solve word problems involving addition, subtraction, multiplication,
and division of whole numbers.
Youth Touch Topic: ***Problem Solving Strategies, Activity # 4.***
- B. Develop and apply algorithms to solve word problems that involve addition,
subtraction, and/or multiplication with decimals with and without regrouping, fractions
and mixed numbers, that include like and unlike denominators.
Not applicable.
- C. Demonstrate the ability to round numbers.

Youth Touch Topic: *Estimating Angles, Activities #1 and 2.*
Solving Equations, Activity # 2.

D. Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication, and division of whole numbers.

Youth Touch Topics: *Estimating Angles, Activity # 3.*
Problem Solving Strategies, Activity # 5.

E. Demonstrate skills for using fraction calculators to verify conjectures, confirm computations, and explore complex problem solving situations.

Not applicable.

F. Apply estimation strategies to a variety of problems including time and money.

Youth Touch Topics: *Ratios, Activity #1.*

Robots, Activity #2.

G. Explain Multiplication and division algorithms.

Youth Touch Topic: *Multiplying, Activity #2.*

H. Select a method for computation and explain why it is appropriate.

Youth Touch Topic: *Critical Thinking, Activity #2.*

Academic Standard 2.3.5 : Measurement and Estimation

A. Select and use appropriate instruments and units for measuring quantities such as perimeter, volume, area, weight, time, and temperature.

Youth Touch Topics: *Area of a Circle, Activity # 2.*

Ratios, Activity # 1.

Measuring, Activity # 2.

Work, Activity # 3.

Circumference, Activity # 2.

Timing , Activity # 2.

Relative Ratios, Activity # 1.

B. Select and use standard tools to measure the size of figures with specified accuracy, including length, width, perimeter, and area.

Youth Touch Topic: *Measuring, Activity # 1.*

C. Estimate, refine and verify specified measurements of objects.

Youth Touch Topic: *Ratios, Activity # 1.*

D. Convert linear measurements within the same system.

Youth Touch Topics: *Work, Activities #6 and "Extra for Experts."*

Ratios, "Extra for Experts."

E. Add and subtract measurements.

Not applicable.

Academic Standard 2.4.5 : Mathematical Reasoning and Connections

A. Compare quantities and magnitudes of numbers.

Youth Touch Topics: *Exponents, Activity #2*

B. Use models, number facts, properties, and relationships to check and verify predictions and explain reasoning.

Youth Touch Topics: ***Mechanical Advantage, Activity #2***

C. Draw inductive and deductive conclusions within mathematical contexts.

Youth Touch Topics: ***Adding Algebraically, Activity # 5***

Friction, Activity # 3

Graphing Results, Activity # 2 and "Extra for

Experts."

Properties of Gases, Activities # 2 and # 3

D. Distinguish between relevant and irrelevant information in a mathematical problem.

Youth Touch Topics: ***Problem Solving Strategies, Activities # 1 and # 2***

E. Interpret statements made with precise language of logic (i.e. all, every, none, some, or, many).

Youth Touch Topics: ***Problem Solving Strategies, Activity # 7***

F. Use statistics to quantify issues in social studies.

Not applicable.

Academic Standard 2.5.5 : Mathematical Problem Solving and Communication

A. Develop a plan to analyze a problem, identify the information needed to solve the problem, carry out the plan, check whether an answer makes sense and explain how the problem was solved.

Youth Touch Topics: ***Problem Solving Strategies, Activity # 5***

Debugging Techniques, Activities #4, #5, and "Extra for Experts"

B. Use appropriate mathematical terms, vocabulary, language symbols, and graphs to clearly and logically explain solutions to problems.

Youth Touch Topics: ***Creating Data Tables, Activity # 4***

Graphing Results, Activity # 2

Pattern Recognition, Activities # 2 and # 4

Writing Equations, Activity # 3

C. Show ideas in a variety of ways, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams, and models.

Youth Touch Topics: ***Schematic Diagrams, Activities # 2 and # 3***

Problem Solving Strategies, Activity # 1

D. Connect, extend, and generalize problem solutions to other concepts, problems, and circumstances in mathematics.

Not applicable.

E. Select, use, and justify the methods, materials, and strategies used to solve problems.

Not applicable.

F. Use appropriate problem solving strategies such as solving a simpler problem or drawing a picture or diagram.

Youth Touch Topics: ***Problem Solving Strategies, Activities # 1, # 2, # 3,***

and #4

Cooperative Learning/ Teamwork, Activity # 1

Academic Standard 2.6.5 : Statistics and Data Analysis

- circle
- A. Organize and display data using pictures, tallies, tables, charts, bar graphs, and graphs.
Youth Touch Topic: ***Graphing Results, Activities # 1 and #2.***
 - B. Describe data sets using mean, median, mode and range.
Not applicable.
 - C. Sort data using Venn diagrams.
Youth Touch Topic: ***Computer Language Elements, Activity #8.***
 - D. Predict the likely number of times a condition will occur based on the analyzed data.
Not Applicable
 - E. Construct and defend simple conclusions based on data.
Youth Touch Topics: ***Creating Data Tables, Activities #3, and #4.***
Graphing Results, Activities #2, and # 3

Academic Standard 2.7.5 : Probability and Predictions

- A. Perform simulations with concrete devices (dice, spinner, etc.) to predict the chance of an event occurring.
Not applicable
- B. Determine the fairness of the design of a spinner.
Not applicable
- C. Express probabilities as fractions and decimals.
Not applicable
- D. Compare predictions based on theoretical probability and experimental results.
Not applicable
- E. Calculate the probability of a simple event.
Not applicable
- F. Determine patterns generated as a result of an experiment.
Youth Touch Topics: ***Creating Data Tables, Activities #3, and #4.***
Graphing Results, Activity #2
- G. Determine the probability of an event involving "and", "or", or "not".
Not applicable
- H. Predict and determine why some outcomes are certain, more likely, less likely, equally likely, or impossible.
YouthTouch Topic: ***Problem Solving Activities, Activity # 5.***
- I. Find all possible combinations and arrangements involving a limited number of variables.
YouthTouch Topics: ***Computer Language Elements, Activity # 5***
and # 6
Debugging Techniques, Activity #4, and "Extra for Experts"
Cooperative Learning/Teamwork, Activity #2
- J. Make a tree diagram and list elements in the sample space.
Not applicable

Academic Standard 2.8.5 : Algebra and Functions

- A. Recognize, reproduce, extend, create, and describe patterns, sequences, and relationships verbally numerically, symbolically and graphically, using a variety of materials.
YouthTouch Topic: ***Graphing Results, Activity # 2***
- B. Connect patterns to geometric relations and basic number skills.
YouthTouch Topics: ***Coordinates, "Extra for Experts" Graphing Results, Activity # 2 Pattern Recognition, Activity # 2 Writing Equations, Activity # 2***
- C. Form rules based on patterns (e.g., an equation that relates pairs in a sequence).
YouthTouch Topics: ***Adding Algebraically, "Extra for Experts #1" Pattern Recognition, Activity # 2***
- D. Use concrete objects and combinations of symbols and numbers to create expressions model mathematical situations.
Not applicable.
- E. Explain the use of combinations of symbols and numbers in expressions, equations, and inequalities.
Not applicable.
- F. Describe a realistic situation using information given in equations, inequalities tables or graphs.
YouthTouch Topic: ***Writing Equations, Activity # 3***
- G. Select and use appropriate strategies, including concrete materials, to solve number sentences and explain the method of solution.
YouthTouch Topics: ***Adding Algebraically, Activity # 1 Absolute Value, Activity # 4***
- H. Locate and identify points on a coordinate system.
YouthTouch Topics: ***Coordinates, Activities # 1, # 2, # 3, and # 4***
- I. Generate functions from tables of data and relate data to corresponding graphs and functions.
YouthTouch Topics: ***Creating Data Tables, "Extra for Experts" Writing Equations, Activity # 4 Graphing Results, Activity # 2 and "Extra for Experts"***

Academic Standard 2.9.5 : Geometry

- A. Give formal definitions of geometric figures.
Not applicable.
- B. Classify and compare triangles and quadrilaterals according to sides or angles.
Not applicable
- C. Identify and measure circles, their diameters and radii.
YouthTouch Topics: ***Circles, Arcs, and Chords, Activity # 4 Circumference, Activities #1, #2, #3, #4, and "Extra for Experts" Radii, Activities # 1 and # 2***

- D. Describe in words how geometric shapes are constructed.
Not applicable.
- E. Construct two and three dimensional shapes and figures using manipulatives, geoboards, and computer software.
Not applicable.
- F. Find familiar solids in the environment and describe them.
Not applicable.
- G. Create and original tessellation.
Not applicable.
- H. Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles.
YouthTouch Topic: ***Area of a Circle, Activities # 1 and # 2***
- I. Represent and use the concepts of line, point, and plane.
YouthTouch Topics: ***Coordinates, Activities # 3 and # 4***
Planes, Activities # 1 and # 2
- J. Define the basic properties of squares, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi, circles, triangles, cubes, prisms, spheres, and cylinders.
YouthTouch Topics: ***Circles, Arcs, and Chords, Activities # 1, # 2, # 4 , and "Extra for Experts"***
Circumference, Activity # 1
Area of a Circle, Activity # 1
Radii, Activities # 1 and # 2
- K. Analyze simple transformations of geometric figures and rotations of line segments.
Not applicable.
- L. Identify properties of geometric figures (i.e., parallel, perpendicular, similar, congruent, symmetrical).
Not applicable.

Academic Standard 2.10.5 : Trigonometry

- A. Identify and compare parts of right triangle including right angles, acute angles, hypotenuse, and legs.
YouthTouch Topic: ***Angles, Activities # 2, # 3, # 4 and # 5***
- B. Create right triangles on a geoboard.
Not applicable.

Academic Standard 2.11.5 : Concepts of Calculus

- A. Make comparisons of numbers such as more, less, same, least, most, greater than and less than.
YouthTouch Topic: ***Angles, Activities # 2 and # 4***
- B. Identify least and greatest values represented in bar and circle graphs.
Not applicable.
- C. Identify maximum and minimum.
Not applicable.

- D.** Describe the relationship between rates of change and time.
YouthTouch Topic: ***Relative Ratios, Activity # 1***
- E.** Estimate areas and volumes as the sums of areas of tiles and volumes of cubes.
YouthTouch Topic: ***Area of a Circle, "Extra for Experts"***
- F.** Describe the relationship between the size of the unit of measurement and the estimate of the areas and volumes.
Not applicable.