East Penn School District
Secondary Curriculum

A Planned Course Statement
for

Pre-Algebra

Course #   **7310**   Grade(s)   **7**

Department: **Mathematics**

Length of Period (mins.) **43**   Total Clock Hours: _____

Periods per Cycle: **6**   Length of Course (yrs.) **1**

Type of Offering: √ required   _____ elective

Credit: 1

Adopted: 6/28/10

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Description of Course #7310

Course Title: Pre-Algebra

Description: This course is designed to prepare students for Algebra 1. Content will include introductory Algebra concepts on integers and rational numbers, evaluating expressions, solving equations using algebraic properties, graphs of linear equations, and systems of equations. Units on probability, data analysis, geometry, unit conversions, ratio, proportion and percent will also be covered. Students will complete a performance based assessment during each marking period of this course.

Goals:
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 Requirements:
• A or B in 6th grade math
• High score on Algebra Prognosis Test
• Good work ethic

Text: McDougal Littell Pre-Algebra

Key to Levels of Achievement (Listed with each learning objective)

Awareness (A):   Students are introduced to concepts, forms, and patterns.

Learning (L):   Students are involved in a sequence of steps and practice activities which involved further development and allow evaluation of process.

Understanding (U):   Students demonstrate ability to apply acquired concepts and skills to individual assignments and projects on an independent level.

Reinforcement (R):   Students maintain and broaden understanding of concepts and skills to accomplish tasks at a greater level of sophistication

Unit	Num	Objective	Level	Content	Evaluation	Standard
Numbers, Number Systems and Number Relationships	1	Students will model and compare values of **integers**, mixed numbers, fractions, and decimals.	U	• Use a number line to order real numbers	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.1.7.A.
Numbers, Number Systems and Number Relationships	2	Students will represent and use numbers in **equivalent forms** (e.g. **integers**, fractions, decimals, percents, **exponents**, **powers**, **roots**, **absolute values**).	U	• Convert between fractions, decimals, percents, exponents, and roots mentally, on paper, and with calculator	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.1.7.B.
Numbers, Number Systems and Number Relationships	3	Students will use **ratio** and **proportion** to model relationships between quantities.	U	• Use proportions to solve problems including similar objects, scale drawings, unit rates, and word problems • Relate careers to individual and personal interests, abilities, and aptitudes.	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.1.7.C. 13.1.8.A 13.1.8.B
Numbers, Number Systems and Number Relationships	4	Students will apply place-value concepts to order and compare decimals; use the number line to order and compare decimals, fractions, mixed numbers, and/or **integers.**	U	• Use a number line to order real numbers	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.1.7.D.
Numbers, Number Systems and Number Relationships	5	Students will apply concepts of **prime** and **composite** numbers to calculate GCFs (Greatest Common Factor) and LCMs (Least Common Multiple) of numbers.	R	• Utilize 1-100 chart, divisibility rules, and prime factorization to determine if a number is prime or composite	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.1.7.E.
Numbers, Number Systems and Number Relationships	6	Students will use the concepts of **ratio**, **proportion**, percents, and **rates** to determine unknown quantities in **equations.** This should include enlarged or reduced representations.	U	• Use proportions to solve problems including similar objects, scale drawings, unit rates, and word problems • Solve percent equations using cross-products	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.1.7.F.

A – Awareness   L – Learning   U-Understanding   R - Reinforcement

Unit	Num	Objective	Level	Content	Evaluation	Standard
Computation & Estimation	7	Students will add, subtract, multiply, and divide **integers**.	L	• Calculate basic operations including whole numbers, fraction, and mixed numbers using straight computations or word problems	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.2.7.B.
Computation & Estimation	8	Students will add, subtract, multiply, and divide rational numbers in equations.	L	• Calculate basic operations with integers using straight computation or word problems	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.2.7.B.
Measurement & Estimation	10	Student will demonstrate an understanding of the units, unit systems and processes of measurement.	L	• Convert measurement of length, mass, and capacity within the same system of measurement (metric and customary) • Explain how both traditional and nontraditional careers offer or hinder career opportunities. • Explain the relationship of career training programs to employment opportunities	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.3.7.A. 13.1.8.C 13.1.8.D
Measurement & Estimation	11	Students will develop strategies for and use appropriate units to determine lengths, areas, and perimeters of compound shapes.	L	• Find the measure of missing sides and calculate perimeter or area	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.3.7.B.
Measurement & Estimation	12	Students will use measurement formulas to calculate and estimate surface area, volume, area, and perimeter and to calculate circumference and area of circles.	L	• Select appropriate formulas and calculate surface area, volume, area, perimeter of various polygons and circumference and area of circles	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.3.7.C. 2.3.7.F.
Measurement & Estimation	13	Students will use conversions to add and subtract measurement quantities within the **metric** and within the **customary systems**.	L	• Add and Subtract measurements of length, mass, and capacity within the same system of measurement (metric and customary)	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.3.7.D.

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Unit	Num	Objective	Level	Content	Evaluation	Standard
Mathematical Reasoning & Connections	14	Students will evaluate the truth of conditional relationships expressed as if…then statements	A	• Problem solving skills using PSSA open-ended format and rubric	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.4.7.A 2.4.7.B
Mathematical Problem Solving & Communication	15	Students will develop a plan to analyze a problem, identify the information needed to solve the problem, carry out the plan, apply estimation skills as appropriate, check whether the plan makes sense, and explain how the problem was solved in grade appropriate contexts.	U	• Problem solving skills using PSSA open-ended format and rubric	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.5.7.A.
Mathematical Problem Solving & Communication	16	Students will use appropriate mathematical language, notation and representations, including numerical tables, **expressions** and **equations**; including formulas, charts, graphs and diagrams to explain and interpret results.	L	• Problem solving skills using PSSA open-ended format and rubric	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.5.7.B.
Statistics & Probability	17	Students will identify different ways of selecting a sample and choosing an appropriate sampling technique for a given situation.	L	• Recognize biased samples, identify sampling methods, and make estimates of a population based on a sample	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.6.7.A.
Statistics & Probability	18	Students will organize and display data using an appropriate data display, such as circle graphs, **histograms**, line graphs, double bar graphs, and **stem-and-leaf plots**, **Venn diagrams**, Box and Whisker Plots, tables, and charts.	U	• Collect, organize, and create appropriate representation of data • Interpret and predict outcomes based on display of data	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.6.7.B.
Statistics & Probability	19	Students will use measures of **central tendency** and range to compare data sets.	R	• Calculate or find the mean, median, mode and range • Choose personal electives and extra curricular activities based upon personal career interests, abilities and academic strengths.	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.6.7.C. 2.6.7.D. 13.1.8.H
Statistics & Probability	20	Students will interpret trends and make predictions based on data displayed in a graph.	L	• Interpret and predict outcomes based on display of data	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.6.7.E.

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Unit	Num	Objective	Level	Content	Evaluation	Standard
Statistics & Probability	21	Students will predict the outcome of a grade-level appropriate **probability** experiment.	U	• Predict theoretical probability based on a particular experiment	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.7.7.A.
Statistics & Probability	22	Students will organize data collected in an experiment and select an appropriate format to display the data.	L	• Conduct an experiment and create an appropriate graph to display the data	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.7.7.B
Statistics & Probability	23	Students will express the **probability** of a **compound** or **complementary event** as a fraction, decimal, or percent.	U	• Solve for simple and compound probability expressed in different forms	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.7.7.C.
Statistics & Probability	24	Students will list the possible outcomes for two or more **independent events** and compare the outcomes.	L	• Determine outcomes of events by listing sample spaces or drawing tree diagrams	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.7.7.D.
Statistics & Probability	25	Students will find and interpret the experimental or theoretical **probability** of an outcome of a simple event.	U	• Distinguish between theoretical and experimental probability • Find and interpret both theoretical and experimental probability for an event	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.7.7.E.
Algebra	26	Students will use the concept of equality to demonstrate understanding of properties applied to **rational numbers** (e.g. **identity**, **distributive**, **associative**, **commutative**).	U	• Recognize and apply properties of equality	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.8.7.A.
Algebra	27	Students will evaluate and simplify algebraic **expressions.**	U	• Evaluate and simplify algebraic expressions by substitution and combining like terms with positive and negative coefficients	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.8.7.B.

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Algebra	28	Students will solve and graph linear **equations** (functions) and **inequalities**.	L	• Solve One Step, Two Step, Multi Step, variables on both sides, graph linear equations using tables, inequalities on a number line, simple linear systems	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.8.7.B.
Algebra	29	Students will recognize, describe, extend, create, replicate, form a rule, and/or find a missing element for a variety of **rational number patterns**, **sequences**, and relationships verbally, numerically, symbolically, and graphically.	L	• Find the missing numbers in a numerical patterns and write a rule	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.8.7.C. 2.8.7.D.
Algebra	30	Students will use combinations of symbols and numbers to create **expressions, equations, and inequalities** in one **variable** that model problem situations.	L	• Write variable expressions, equations or inequalities from words	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.8.7.E 2.8.7. F
Geometry	31	Students will identify, define, label, and/or describe properties of 1-dimensional shapes.	R	• Recognize basic geometry vocabulary (lines, angles and polygons)	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.9.7.A.
Geometry	32	Students will identify, define, label, and/or describe properties of 2-dimensional shapes and their related parts, and classify and compare 2-dimensional shapes on the basis of their properties	U	• Identify 2-dimensional shapes based on the properties and use algebraic equations	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.9.7.A.
Geometry	33	Students will identify, define, label, and/or describe properties of 3-dimensional shapes and their related parts, and classify and compare 3- dimensional shapes on the basis of their properties.	L	• Recognize space figures, vertices, edges, bases and faces • Identify 3-dimensional shapes based on the properties	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.9.7.A.
Geometry	34	Students will predict and describe the result of a **translation** (slide), **rotation** (turn), and/or **reflection** (flip) of a 2-dimensional shape on a coordinate plane.	A	• Transform plane figures using translations, rotations and reflections • Predict the result of each transformation	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.9.7.B.

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Unit	Num	Objective	Level	Content	Evaluation	Standard
Geometry	35	Students will identify on a 2-dimensional **coordinate system** the location of points with **rational number** coordinates; plot in a two-dimensional **coordinate system** a point represented by an ordered pair of **rational numbers**.	U	• Graph on the coordinate plane given ordered pairs in all four quadrants	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.9.7.C.
Trigonometry	36	Students will compute the length of missing sides using the Pythagorean Theorem	L	• Use the Pythagorean Theorem to calculate missing side of right triangle	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.10.7.A.
Calculus	37	Students will compare and order **rational numbers**; identify the maximum and/or minimum values of a set of numbers.	L	• Convert values to the same form in order to compare numbers and find the maximum and minimum values of the set	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.11.7.A.
Calculus	38	Students will describe and use the relationship of data shown in a graph; solve problems involving slope and constant rate of change.	L	• Recognize constant and variable rates of change by calculating the slope of a line	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.11.7.B.

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