

8th Grade Above-level Math

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GOALS: (What we learn)

Patterning

1. Numerical Patterning
 - identify relationships and trends in order to make generalizations from linear patterns
 - investigate non-linear patterning
 - identify a parabolic shape without and with a graphing calculator
 - identify an exponential shape without and with a graphing calculator
2. Graphing
 - graph a linear equation of the form $y = mx + b$; where m is the slope and b is the y-intercept
 - determine a reasonable domain
 - graph an equation of the form $y = mx + b$ using a graphing calculator
 - graph $y = ax^2 + bx + c$ without and with a graphing calculator
 - graph an absolute value equation
 - graph linear inequalities on a number line
 - graph absolute value inequalities on a number line
3. Number Properties
 - build the real number system:
 - counting numbers, whole numbers, integers, rational numbers and irrational numbers
 - apply the basic properties including
 - Commutative of addition and multiplication ; Associative of addition and multiplication; Distributive Property; Order of Operations; Properties of Powers; Properties of Radicals; Quadratic Formula
4. Algebraic Problem Solving
 - solve linear equations
 - solve linear inequalities
 - evaluate algebraic expressions
 - write linear equations from relationships in a problem solving situation and translate mathematical vocabulary to algebraic symbols in a linear equation/inequality
 - solve quadratic equations
 - solve absolute value equations and inequalities
 - factor polynomials
 - simplify rational expressions

Measurement

1. Calculating with Instruments
 - measure two-dimensional object to appropriate units of measure
2. Units of Measurement
 - calculate angle with degree measurement
3. Computing with Formulas
 - calculate perimeter of irregular shapes
 - calculate area of irregular shapes and choose appropriate units of measurement
 - calculate volume of prisms using appropriate units of measurements

Geometry

1. Construct
 - draw three-dimensional geometric figures including prisms, pyramids, cylinders and cones
 - draw rigid transformations on coordinate plane with/without technology (mod tech)
2. Compute
 - state the Pythagorean Theorem and converse
 - apply the Pythagorean Theorem to find the third side of a given right triangle
 - use the Pythagorean Theorem to determine the length of the diagonal of a rectangle
 - calculate supplementary and complementary angles
 - calculate the sum of the angles in a triangle
 - use the triangle inequality property

Data, Organization, and Analysis

1. Displaying Data
 - construct, read, and interpret a double bar graph
 - collect data from a probability experiment and organize it in a chart format using tallies
2. Analyze Data
 - calculate mean, mode, and range with and without a calculator give a set of ten data points
3. Probability
 - use the formula $P(E) = \frac{\text{success}}{\text{totalsamplespace}}$
 - use probability event formula to determine probability of a simple event
 - make reasonable predictions from relative frequencies
 - interpret probabilities of zero and one

INSTRUCTIONAL STRATEGIES: (How we learn)

Combination of lecture with note-taking; math journaling; vocabulary study; think-pair-share activities; charts; Venn diagrams, oral presentations; exit slips

ASSESSMENTS:

Chapter tests , Mid-Term Tests and Final Tests, quizzes, homework, class participation
Grading is weighted: 50% Tests; 25% Quizzes; 15% Homework; 10% Class participation

TECHNOLOGY:

Texas Instrument Scientific Calculator TI-30/ Texas Instrument Graphing Calculator TI-84 plus

HOMEWORK:

Students will have homework as needed to reinforce math concepts learned. This is usually 4 to 5 nights a week. Each homework assignment should take approximately 30-45 minutes per night.

RESOURCES:

Algebra I, Illinois Edition, copyright 2008 by Larson, Boswell, Kanold and Stiff
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