7th 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
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 inequalities on a number line
3. Number Properties
   - build the real number system:
     - Ŭ counting numbers, whole numbers, integers, rational numbers and irrational numbers
   - apply the basic properties including
     - Ŭ Commutative of addition and multiplication ; Associative of addition and multiplication; Distributive Property; Order of Operations; Properties of Powers; Properties of Radicals;
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

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, pyramids and cylinders using appropriate units of measurements
   - calculate surface area of prisms, pyramids and cylinders

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 $P(E) = \frac{success}{totalsamplespace}$
    - use probability event formula to determine probability of a simple event
    - make reasonable predictions from relative frequencies
    - interpret probabilities of zero and one

INSTRUCTIONAL STRAGEGIES: (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 and Cumulative Tests, quizzes, homework, class participation
Grading is weighted: 40% Tests; 30% Quizzes; 10% Homework; 20% Class participation

TECHOLOGY:

Texas Instrument Scientific Calculator TI-30
TI-83 (Provided for in-class use)

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 20-30 minutes per night.

RESOURCES:

Prentice Hall Mathematics: Pre-Algebra