1. What makes shapes alike and different can be determined by geometric properties.
2. Shapes can be moved in a plane or space.
3. Shapes can be described in terms of their location in a place or space.
4. Shapes can be seen from various perspectives.

van Hiele Levels of Geometric Thought

Level 0: Visualization
- sort, classify, draw, build, put together and take apart
Level 1: Analysis
- properties of figures
Level 2: Informal Deduction
- make and test conjectures, informal proofs
Level 3: Deduction
Level 4: Rigor

Shapes and Properties

Sort and classify
- Composing and decomposing (Tangrams)
- Tessellations
- Constructions
- Definitions and proofs
- Pythagorean theorem

Transformations

- Slides, flips, and turns
- Line and rotational symmetry
- Similar figures/proportional reasoning

Location

- Grid systems
- Transformations on a grid
Visualization

- Different orientation - cube activities
- Properties of shapes
- Logical reasoning

Measurement Big Ideas

1. Measurement involves a comparison of an attribute of an item or situation with a unit that has the same attribute.
2. Meaningful measurement and estimation of measurements depend on personal familiarity with the unit of measure being used.
3. Estimation of measures and the development of benchmarks help students increase familiarity with units.
4. Measurement instruments are devices that replace the need to actual measurement units.
5. Area and volume formulas provide a method of measuring these attributes by using only measures on length.
6. Area, perimeter, and volume are related.

Measurable Attributes

Length, time, money, weight, mass, volume, perimeter, area, angles

What is a unit of measurement?

Length - practice with standard (U.S. and metric) and non-standard units.
What level of precision is required?
Measurement is always an estimate.

Time - one-handed clocks, time to the 5 minute

Money - practice with real world situations

Weight and mass - balance, units

Perimeter - 1 dimensional, geoboards, other shapes

Area - 2 dimensional, cover surface so the units need to cover surface, geoboards with various shapes

Volume - 3 dimensional, fill up container, use units that are 3-D. Cube activities

Angles - corners, protractors

Data Analysis
Data Analysis
What is statistics?
Variability
The shape of data


Data Analysis
The Process of Doing Statistics
1. Formulating questions
   Classroom questions
   Comparison questions
2. Data collection
   Print sources
   Websites – great cross curricular connections
   http://nces.ed.gov/nceskids/

Data Analysis
The Process of Doing Statistics
3. Data analysis
   Classification
   Attributes
   Graphical representations
   Bar graphs and tally charts
   Circle graphs
   Line plots
   Stem and leaf plots
   Histograms
   Line graphs
   Scatter plots

Data Analysis
Measures of Central Tendency
Mean, the average
Most, most often
Range, subtract the smallest from the largest
Median, the middle number when they’re lined up
From the greatest to the least.

Box and Whisker Plots

4. Interpreting results
   What does it mean?

What’s in a Name?
Data Analysis

The Process of Doing Statistics
1. Formulating questions
2. Data collection
3. Data analysis
   - Classification
   - Graphical representations
   - Measures of central tendency
4. Interpreting results