Review III

1. Section 12.1
    a. Isometry (or Rigid Motion of the Plane)
        1) Preserves Congruent Sides
        2) Preserves Congruent Angles
        3) Preserves Congruent Circles
        4) Preserves Parallel Line (Segments)
    b. Translation (or Slide)
        1) Pre-Image
        2) Slide Arrow or Vector
        3) Image
        4) Construction of Translation
            a) Geoboard (or Coordinate System)
            b) Compass and Straight Edge
        5) Coordinate Representation
            a) (x,y) -> (x+a,y+b)
    c. Rotation (or Turn)
        1) Turn Center
        2) Turn Direction
        3) Turn Angle
        4) Construction of Rotation
            a) Geoboard (or Coordinate System)
    d. Slopes of Perpendicular Lines

2. Section 12.2
    a. Reflection
        1) Construction of Reflection
            a) Folding
            b) Geoboard (or Coordinate System)
            c) Compass and Straight Edge
    b. Glide Reflection

3. Section 12.3
    a. Size Transformation
        1) Center
        2) Scale Factor
        3) Scales Line Segments by Scale Factor
        4) Preserves Congruent Angles
        5) Construction
            a) Geoboard (or Coordinate System)
        6) Similar Figures

4. Section 12.4
    a. Line Symmetries
    b. Rotational Symmetries
    c. Point Symmetries (Half-Turn Symmetries)
    d. Symmetry Groups
        1) Planar Figures (Rectangle, Square, Isosceles Triangle, Equilateral Triangle)
        2) Arithmetic Tables for Symmetry Group of Planar Figures
    e. Frieze Patterns (Infinite Symmetry Patterns under Planar Isometries)
        1) Seven Categories

5. Section 7.1
    a. Experiment
    b. Outcome
    c. Sample Space
    d. Event
    e. Probability
        1) Experimental (or Empirical)
        2) Theoretical

f. Probability of Events in Sample Spaces of Equally Likely Outcomes

1) $P(A) = \frac{n(A)}{n(S)}$

g. Mutually Exclusive Events

h. Complementary Event $\bar{A}$ (to event A)

i. Probability Properties (for Events A and B)

1) $0 \# P(A) \# 1$

2) $P(A \cup B) = P(A) + P(B)$ if A and B are mutually exclusive

3) $P(\bar{A}) = 1 - P(A)$

4) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ if A and B are not mutually exclusive

6. Section 7.2

a. Multistage Experiments

b. Tree Diagrams

c. Multiplication Rule for Probabilities

d. Drawing Experiments (Objects from a Container)

1) Trees and Probabilities for Drawing Without Replacement

2) Trees and Probabilities for Drawing With Replacment

e. Independent Events

7. Section 7.4

a. Odds

1) In favor of Event A = $\frac{P(A)}{P(\bar{A})}$

2) Against Event A = $\frac{P(\bar{A})}{P(A)}$

b. Expected Value

1) $E = a_1 \cdot p_1 + a_2 \cdot p_2 + a_2 \cdot p_3 + \ldots + a_n \cdot p_n$

8. Section 7.5

a. Permutations of Unlike Objects

1) Order of Selection Matters

a) Officers, Prize Winners

b) Alphabetic Arrangements

b. n!

c. Formula for ${}_nP_r$

d. Permutations of Like Objects

e. Formula

f. Combinations of Objects

1) Order of Selection Does Not Matter

a) Committees

b) Books from a Collection

g. Formula for ${}_nC_r$

9. Section 8.1

a. Statistical Graphs

1) Pictographs

a) Key

b) Lost Data

c) Categories (3-7)

2) Line Plots

a) One Group of Data

b) Less Than 50 Values

c) Plot Frequency

d) Outliers, Gaps, Clusters

3) Stem-Leaf Plots

a) One Group of Data

b) Less Than 50 Values

c) Numerical Data

d) Ordered Stem-Leaf Plots

4) Frequency Tables
   a) Classes (5 - 20)
   b) Uniform Class Width
   c) No Overlap Between Classes
   d) Each Value Belongs to a (Unique) Class
   e) Class Mark
5) Histograms
   a) Adjoining Bars
   b) Height of Bars = Frequency
   c) Area of Bars = Relative Percent of Data
   d) Axis Labeled with Class Labels, Class Limits or Class Marks
6) Bar Graphs
   a) Gaps Between Bars
   b) Height of Bars = Frequency or Measurements
   c) Multiple Groups of Contrasting Data
7) Line Graphs
   a) Trends over Time
8) Pie/Circle Graphs
   a) Area = Percentage of Frequency or Measurements

10. Section 8.2
   a. Measures of Central Tendency
      1) Mean = Arithmetic Average of Data
      2) Median = "Midpoint" Value of Data
         a) Sort Data
         b) Choose "Middle" Value
      3) Mode = Most Frequent Data Value
   b. Measures of Dispersal
      1) Range
      2) Interquartile Range
         a) Find Median
         b) Find Q_1 and Q_3
         c) Lower and Upper Quartiles
      3) Box-and-Whisker Plots
         a) Outliers
      4) Standard Deviation
         a) Formula (Average Sum of Square Deviations from the Mean)
         b) Formula (Machine Formula)

11. Section 8.3
   a. Abuses of Statistics