Foundations of Math 120

Course Outline

Resources: Text- (Nelson) Foundations of Mathematics 12

(Nelson) Mathematical Modeling Book 2

Teacher: Mrs. McIntyre

Outcomes: Curriculum Reference:

S1- Normal distribution, including standard deviation, *z*-scores

S2- Confidence intervals, margin of error

**Statistics: S1, S2**

Normal Distribution

Standard Deviation

Z-Scores

Confidence Intervals

Confidence Levels

Margin of Error

**LR1- Analyze Puzzles and Games: (Ongoing) LR1**

Numerical and Logical reasoning

Problem Solving Strategies

**LR2- Set Theory Application LR2**

Empty Sets

Disjoint Sets

Subsets

Universal Set

Graphic Organizers- (Carroll, Venn, Euler Diagrams)

“AND, OR, NOT” set notation

Complement (A’)

Intersection or Union of Sets

**LR3- Conditional Statements LR3**

If – Then statements

What if?

Converse

Inverse

Contrapositive of an “If- Then statement

Veracity

Biconditional Statements

**P1.** Interpret and assess the validity of odds and probability statements.

**P2.** Probability of mutually exclusive and non–mutually exclusive events.

**P3.** Solve problems that involve the probability of two events.

**Probability P1, P2, P3**

Express odds as a Probability and Probability as odds

Determine the Probability or Odds of:

Mutually exclusive events

Non-Mutually exclusive events

Complementary events

Dependent events

Independent events

Given a previous event

Two dependent events

Two independent events

**P4.** Solve problems that involve the fundamental counting principle.

**P5.** Solve problems that involve permutations.

**P6.** Solve problems that involve combinations.

**P7.** Expand powers of a binomial in a variety of ways, including using the binomial theorem

(restricted to exponents that are natural numbers).

**Fundamental Counting Principle P4, P5, P6, P7**

Count the total number of possible choices

Graphic Organizers – (Lists / Tree Diagrams)

Represent and solve Counting Problems

Permutations: Factorial Notation

Value of Factorial

Simplify Factorials

Solve equations involving Factorials

Determine number of “n elements taken r at a time”

Determine number of “n elements taken n at a time”

Explain effect on total with two or more are identical.

Combinations: Why order is not important

Determine number of combinations of n elements taken r at a time Generalize strategies

Expand powers of a binomial (Binomial Theorem)

Explain the patterns found in (x+y)n, n< 4, and n belongs to N

Explain the subsequent row in Pascal’s Triangle

Relate (x+y)n to (n+1) of Pascal’s Triangle

Explain how the coefficients in the expansion of (x+y)n are determined by combinations

Expand using the Binomial Theorem (x+y)n

Determine a specific term of (x+y)n

**RF1.** Represent data, using polynomial functions (of degree ≤ 3), to solve problems.

**RF2.** Represent data, using exponential and logarithmic functions, to solve problems.

**RF3.** Represent data, using sinusoidal functions, to solve problems.

**Functions (Polynomial, Exponential and Logarithmic, Sinusodial) RF1, RF2, RF3**

Describe orally and in written form the characteristics by Graphs and Equations

Match equations with graphs

Determine the best function to approximate data

Interpret the graph of a function

**Evaluation:**

Summative Evaluation/Assessment 60%

Observation & Communication 10%

Demonstration of Knowledge 30%