#### Lab Framework

#### **Text: Algebra I**

#### Unit number and title: Lesson 7.6 Standard Deviation

**Short Description**: Uses Excel to produce Standard Deviation (Measure of Dispersion)

#### **Developed by: Richard Bell**

Contact Information: bell.richard@bgsd.k12.wa.us Date:6/24/08

#### Lab Title

### **Using Technology to Calculate Standard Deviation**

#### LAB PLAN

#### TEACHER: Teacher Prep/ Lesson Plan

- Lab Objective
  - Find the variance of a set of data.
  - Calculate standard deviation for the set of data. Read data from a normal curve. Estimate the area under a curve.
- Statement of pre-requisite skills needed (i.e., vocabulary, measurement techniques, formulas, etc.) Basic Excel skills
  - Basic Excel skill
- Vocabulary
  - Variance: A measure of dispersion.

Standard Deviation: The square root of the variance of a set of data. Normal Curve: A curve that represents a common distribution of data. Also known as a bell curve.

#### Materials List

Excel Spreadsheet

#### • GLEs (State Standards) addressed

Math: 1.1.1.Understand and apply concepts and procedures from number sense—number and numeration; computation; estimation.

1.1.4.Understand and apply concepts and procedures from probability and statistics—probability; statistics.

2.2.2.Construct solutions—select and use relevant information; apply appropriate strategies and procedures; determine a solution that is viable and mathematically correct.

3.3.1.Analyze information—analyze and compare mathematical information.

3.3.3.Verify results—justify results; check for reasonableness of results; validate thinking.

5.5.2.Relate mathematical concepts and procedures to other disciplines identify and use mathematical patterns, thinking, and modeling in other subject areas; describe examples of contributions to the development of mathematics.

5.5.3.Relate mathematical concepts and procedures to real-world situationsunderstand how mathematics is used in everyday life and in career settings.

Reading: 3.2 Read to perform a task.

Writing: 3.3 Knows and applies writing conventions

appropriate for the grade level.

#### • Leadership Skills

1.4 The student will be involved in activities that require applying theory, problem-solve, and use critical and creative thinking skills while understanding outcomes of related decisions.

SCAN Skills/Workplace Skills

#### **Basic Skills**

- A. Locates, understands, and interprets written information and documents
  - including manuals, graphs and schedules to perform tasks
- B. Identifies relevant details, facts and specifications
- Writing
  - o A. Communicates thoughts, ideas, information, and messages in writing
  - B. Records information completely and accurately

#### • Arithmetic

- A. Performs basic computations
- B. Uses basic numerical concepts such as whole numbers and percentages in practical situations.
- C. Approaches practical problems by choosing appropriately from a variety of mathematical techniques.
- D. Uses quantitative data to construct logical explanations for real world situations
- Listening
  - A. Receives, attends to, interprets, and responds to verbal messages and other cues such as body language in ways that are appropriate to the purpose
  - B. For example, to comprehend
  - o C. To learn
- Reasoning
  - A. For example, uses logic to draw conclusions from available information, extracts rules or principles from a set objects or written text
  - B. Applies rules and principles to a new situation, or determines which conclusions are correct when given a set of facts and a set of conclusions

#### • Set-up information

Speadsheet to contain large data set. Data set will be in random order.

• Lab organization(-Grouping/leadership opportunities/cooperative learning expectations; -Timeline required)

1Class Period (55 Minutes)- Students will act independently. They will make their own calculations and decisions about the data.

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- **Teacher Assessment of student learning** (scoring guide, rubric) Successful completion of the task and completed worksheet.
- **Summary of learning** (to be finished after student completes lab) -discuss real world application of learning from lab

-opportunity for students to share/present learning

- Optional activities
- Career Applications

Prompt students for career choices that involve standard deviation. Weather Person Chemical Technician Quality Control Technician Mico Chip Manufacturer Marketing Surveys



#### LAB TITLE: <u>Standard Deviation</u> STUDENT INSTRUCTIONS:

- Statement of problem addressed by lab Calculate Standard Deviation for a large data set.
- Grouping instructions and roles Each student will do the activity by themselves.
- Procedures steps to follow/instructions
  Place your answers on the data sheet provided.

#### • Outcome instructions

Calculate the standard deviation for the data set. Use the Excel formula for standard deviation. Create a chart/illustration that illustrates values for the bell curve.

#### • Assessment instructions (peer-teacher) Students receive points based on a completed lab.

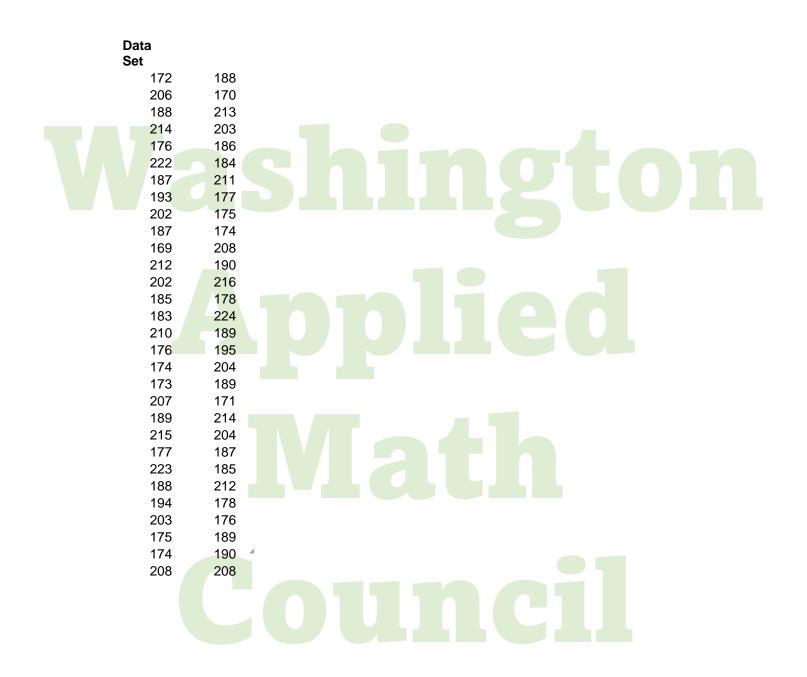
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#### Lab Data Collection

Student: l	Date:
Unit:	
Lab Title: Criteria: Write the problem/objective in statement form	
Data Collection: Record the collected/given data	
Calculations: Complete the given calculations to	solve for an answer(s)
Summary Statement:	
Other Assessment(s)	





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