

## 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@bgasd.k12.wa.us

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### 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

- **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 situations—understand 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**

- 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
- 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**

Spedsheet 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.

- **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  
Micro Chip Manufacturer  
Marketing Surveys

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**LAB TITLE: Standard Deviation**

**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: \_\_\_\_\_ 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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