

(A) Lesson Context

BIG PICTURE of this UNIT:	<ul style="list-style-type: none"> • How do we analyze and then make conclusions from a data set? (Math) • How do I present my data and the outcomes of my analysis? (Math) • How do I use data & statistics to make decisions? • How do I decide on the validity/reliability of my data? Of my analysis? Of my conclusions? Of my decision? 		
CONTEXT of this LESSON:	Where we've been Using data & visual representations, present your current understandings of what Statistics is	Where we are How do we visually represent data?	Where we are heading How do I analyze and make conclusions from a data set, in whatever way this data gets presented?

(B) Lesson Objectives:

- Describe data as either being qualitative (categorical) or quantitative (numerical)
- Introduce the idea that quantitative data can be either discrete or continuous
- Introduce different ways to organize & visually represent data → using dot plots, stem & leaf plots, frequency tables, grouped data, histograms/column graphs

(C) Describing Data (go online to find definitions/clarifications/examples for these terms)

a. Qualitative Data →

b. Quantitative Data →

1. Discrete quantitative data →

2. Continuous quantitative data →

(D) Activity #1 – Organizing and Representing Data

Mr Santowski has two athletes competing in a 400m sprint and he needs to collect data in order to help the coaching staff decide which sprinter is the better of the two. Over the course of the training season, the two sprinters have had numerous time trial data collected and the results are listed below

Sprinter #1	57.54	55.23	59.32	58.42	58.21	56.37	57.41	56.10
	53.11	55.42	57.31	58.46	57.19	55.16	54.12	56.25
	54.26	55.71	54.70	53.89	56.25	54.68	53.19	53.82
	57.29	55.54	54.96	53.87	55.21	53.32	54.10	53.61
	55.49	53.15	54.64	55.91	57.80	54.48	53.93	55.12
	57.91	58.13	52.95	52.62	53.10	54.54	58.04	56.81

Sprinter #2	57.67	56.29	58.01	54.28	54.63	57.95	56.21	55.04
	55.45	57.96	53.82	57.31	56.19	54.67	56.91	53.43
	55.17	54.44	56.28	57.34	54.99	57.22	56.23	56.31
	53.52	55.20	54.83	54.96	57.03	54.05	54.27	53.61
	55.26	57.36	57.38	54.93	53.82	53.01	54.82	56.67
	55.93	57.21	57.58	56.91	55.33	58.11	54.96	54.60

To help with the data analysis from each experiment, your group will:

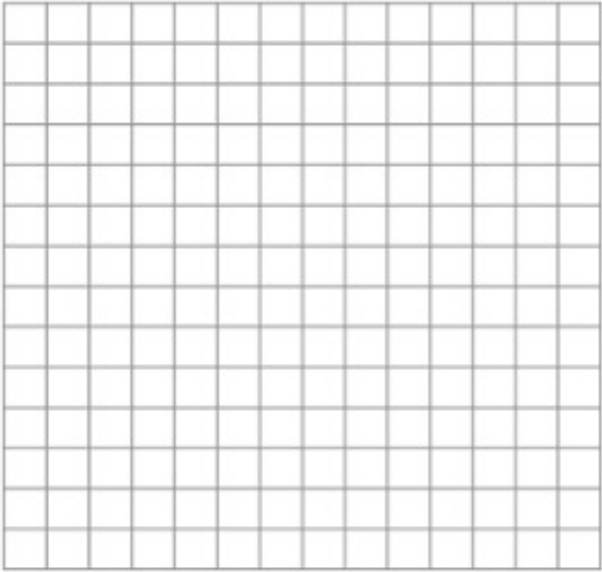
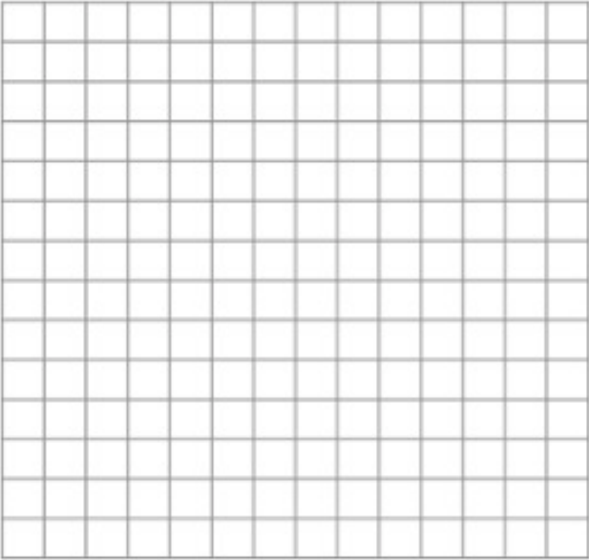
- (a) Prepare a Stem and Leaf plot for each data set. (Here are three links showing you how to prepare a stem and leaf plot) → [Link #1 from Math is Fun](#); [Link #2 from PurpleMath](#) and [Link #3 from our Haese and Harris reference text](#) on page 113.

SPRINTER #1		SPRINTER #2	
Stem	Leaf	Stem	Leaf

- (b) Prepare a Frequency table for each data set. (Here are two links showing you how to prepare a frequency table) → [Link #1 from MathsTeacher.com](#) and [Link #2 from our Haese and Harris reference text](#) on page 113

SPRINTER #1			SPRINTER #2		
Interval	Tally	Frequency	Interval	Tally	Frequency

- (c) Prepare a Column graph by hand for each data set. (Here are three links showing you how to prepare a frequency histogram from a frequency table) → [Link #1 from Math is Fun](#); [Link #2 from Open High School Courses](#); and [Link #3 from our Haese and Harris reference text](#) on page 114.

SPRINTER #1	SPRINTER #2
	

- (d) Now you need to make a decision → who's the BEST and why?

- (e) Now you have an opportunity to ASK QUESTIONS about the data, about the data collection, about the conditions, etc

- (f) Prepare a Column graph on your graphing calculator for each data set ([instructions linked here.](#))

Name: _____

Date: _____

Frequency Histograms

Algebra 1

An effective way to learn how to organize data is by using a frequency table and a frequency histogram. We have used a frequency table in previous lessons but we have not constructed frequency histograms. A **frequency histogram** is a bar graph that helps you visualize the information presented in a frequency table.

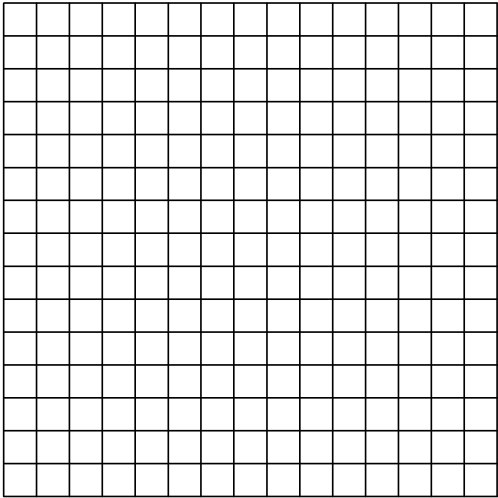
Exercise #1: The 2006 – 2007 Arlington High School Varsity Boy’s basketball team had an excellent season, compiling a record of 15 – 5 (15 wins and 5 losses). The total points scored by the team for each of the 20 games are listed below in the order in which the games were played:

76, 55, 76, 64, 46, 91, 65, 46, 45, 53, 56, 53, 57, 67, 62, 64, 67, 52, 58, 62

(a) Complete the frequency table below.

POINTS SCORED	TALLY	FREQUENCY
40 - 49		
50 - 59		
60 - 69		
70 - 79		
80 - 89		
90 - 99		

(b) On the graph grid provided, create a histogram using the frequency table from (a) above.



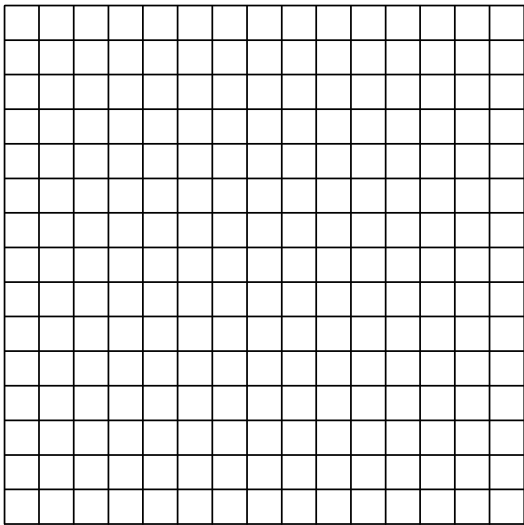
Note: There should be no spaces between the bars on a frequency histogram because there are no gaps between intervals in the frequency table.

Exercise #2: The following set of data represents the scores on a mathematics quiz:

58, 79, 81, 99, 68, 92, 76, 84, 53, 57, 81, 91, 77, 50, 65, 57, 51, 72, 84, 89

Complete the frequency table below and, on the accompanying grid, draw and label a frequency histogram of these scores.

Mathematics Quiz Scores		
Interval	TALLY	FREQUENCY
50 - 59		
60 - 69		
70 - 79		
80 - 89		
90 - 99		



Exercise #3: In what interval does the median of this data set lie?

Exercise #4: In what interval does the lower quartile of this data set lie?

Name: _____

Date: _____

Frequency Histograms
Algebra 1 Homework

Applications

1. Jim Shorts is a star basketball player for the Arlington High School basketball team. The number of points scored by Jim in each of his last 20 games are as follows:

35, 28, 25, 34, 41, 26, 19, 23, 32, 20, 11, 8, 38, 48, 22, 25, 16, 19, 22, 40

(a) Complete the table to find the number in each interval.

Interval	Tally	Frequency
0 to 9		
10 to 19		
20 to 29		
30 to 39		
40 to 49		

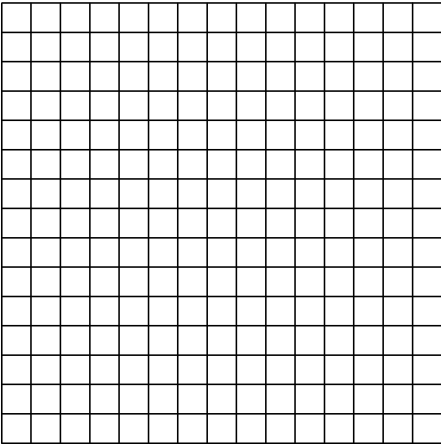
(b) Which interval contains the greatest frequency?

(c) In what percent of these 20 games did Jim score 30 or more points?

(d) In what interval does the median of this data set lie?

(e) In what interval does the upper quartile of this data set lie?

(f) Construct a frequency histogram for points scored by Jim in these 20 games.



- (a) From Haese & Harris Mathematics Textbook ➔ Complete Exercise 5A, p 111, Q1 & 2.
- (b) From Haese & Harris Mathematics Textbook ➔ Complete Exercise 5B, p 116-7, Q1 – 6.