

08 Analyzing Data

Content Area: **Mathematics**
Course(s):
Time Period: **Week1**
Length: **1 Week**
Status: **Published**

Stage 1: Desired Results

Unit Overview/ Rationale

Standards & Indicators

Common Core: Mathematics, Common Core: Grade 8, Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

MA.7.7.SP.A.1

Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

MA.7.7.SP.A.2

Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

MA.7.7.SP.B.3

Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

Big Ideas - Students will understand that...

- Random sampling can be used to draw inferences about a population.
- Informal comparative inferences about two populations can be drawn.
- Sampling has an effect on data collection.

Essential Questions - What provocative questions will foster inquiry and transfer of learning

- How can data be gathered that is fair and indicative of a population?
- How can inferences be drawn based upon gathered data?
- How can data about two populations be compared?

Content - Students will know...

Key concepts:

biased question, box plot, inference, interquartile range, mean absolute deviation, population, random sample, sample, variability

Skills - Students will be able to...

- Learn how to gather data about a population.
- Use data from samples to make predictions and estimates about populations.
- Compare data about two populations using measures of center and measures of variability.

-Solve problems involving data sets.

Stage 2: Assessment Evidence

Assessment

Stage 3: Learning Plan

Learning Activities

Activities: Students will identify a random sample and to write a survey question.

Formative Assessment: Teacher observation of student work in small-group and independent practice.

Closure: Students will be asked to determine if a sample is random and if a survey question is fair or biased.

Example: Which question is biased?

What is your favorite activity after school?

Do you like the calm, soothing ocean?

Sample Solution: a

Activities: Students will estimate the population size using proportions.

Formative Assessment: Teacher observation of student work in small-group and independent practice.

Closure: Students will be asked to use a proportion to estimate each population.

Example: Use a proportion to estimate the animal population from the given information.

Total eagles counted: 75

Tagged eagles counted: 10

Total tagged eagles: 60

Sample Solution: about 450

Activities: Students will use data from random samples to draw inferences about populations.

Formative Assessment: Teacher observation of student work in small-group and independent practice.

Closure: Students will be asked to use data from random samples of a population to draw inferences about the entire population.

Example: A factory makes 10,000 cell phone batteries each day. On Monday, 3 inspectors test a random sample of 300 batteries each. The first inspector (sample 1) finds 299 batteries to be good. The second inspector (sample 2) finds 296 batteries to be good. The third inspector (sample 3) finds 298 batteries to be good.

For each sample, estimate how many batteries made at the factory on Monday are defective.

Sample Solution:

Sample 1: about 33;

Sample 2: about 135;

Sample 3: about 67

Activities: Students will compare data about two populations by using measures of center and measures of variability.

Formative Assessment: Teacher observation of student work in small-group and independent practice.

Closure: Students will be asked to calculate the mean and MAD of a given data set.

Example: The number of raisins per package from two different brands, ten boxes each, are given below:

Brand A: 1 box with 35 raisins, 2 boxes with 36 raisins, 4 boxes with 37 raisins, 2 boxes with 38 raisins, and 1 box with

39 raisins

Brand B: 4 boxes with 33 raisins, 3 boxes with 34 raisins, 2 boxes with 35 raisins, 1 box with 36 raisins

Determine the MAD for each data set.

Sample Solution: Brand A: 0.8; Brand B: 0.8

Resources

Pearson

Algebra 1

c2012,

Unit 8