

Algebra I Statistics Through a Geometry Lens



SOUTH CAROLINA
STATE DEPARTMENT
OF EDUCATION

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CCSS – Mathematics Standards for High School

Statistics and Probability

http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Appendix A: Designing High School Mathematics Courses Based on the Common Core State Standards

Algebra I

[http://www.corestandards.org/assets/CCSSI Mathematics Appendix A.
pdf](http://www.corestandards.org/assets/CCSSI_Mathematics_Appendix_A.pdf)

**Discussion of the
Algebra I
Statistics Standards**

Group Work Session

Algebra I Statistics Topics

- Dot plots, box plots, and histograms
- Center and spread
- Shape and outliers
- Two-way tables
- Marginal, joint, conditional relative frequencies
- Scatter plots
- Linear regression equation, slope, and y-intercept
- Correlation coefficient
- Residuals
- Correlation vs. causation

Baseball – Height and Weight Activity

Group Work Session

Appendix A: Designing High School Mathematics Courses Based on the Common Core State Standards

Geometry

[http://www.corestandards.org/assets/CCSSI_Mathematics_Appendix_A.
pdf](http://www.corestandards.org/assets/CCSSI_Mathematics_Appendix_A.pdf)

**Discussion of the
Geometry
Statistics Standards**

Group Work Session

Review of Statistics
Terms used in Geometry

1. complement of a set A (not A) – all outcomes from the sample space of a chance experiment that are not in event A
2. union of two events A and B (A or B , $A \cup B$) – all outcomes that are in at least one of the events
3. intersection of two events A and B (A and B , $A \cap B$) all of the outcomes that are in **both** events A and B

$$4. p(E) = \frac{\text{\# of outcomes favorable to } E}{\text{\# of outcomes in the sample space}}$$

5. Addition Rule

$$p(E \text{ or } F) = p(E) + p(F) - p(E \text{ and } F)$$

$$p(E \cup F) = p(E) + p(F) - p(E \cap F)$$

$$6. \text{ Conditional Probability } p(E | F) = \frac{p(E \cap F)}{p(F)}$$

7. Multiplication Rule

$$p(E \cap F) = p(E) \cdot p(F | E) = p(F) \cdot p(E | F)$$

8. Permutation – a selection of objects with regard to order

$${}_n P_r = \frac{n!}{(n-r)!}$$

9. Combination – a selection of objects without regard to order

$${}_n C_r = \frac{n!}{(n-r)! \cdot r!}$$

Formulas to Prove Whether Two Events are Independent

1. Two events A and B are independent if $P(A \text{ and } B) = P(A) \cdot P(B)$
2. Two events A and B are independent if $P(A|B) = P(A)$

**Favorite Subject Vs.
Gender Activity**

Group Work Session

Lunch

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Statistics and Probability

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**Extra Statistics
Problems for Geometry**

Group Work Session

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Algebra I

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pdf](http://www.corestandards.org/assets/CCSSI_Mathematics_Appendix_A.pdf)

**Glued to the Tube or
Hooked on the Books?
Activity**

Group Work Session

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