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*The mission of the Chardon Local Schools is high achievement  
for all students where learning is our most important work.*

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# Course of Study – MATH

*Revised November 2021*

## **AP STATISTICS**

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**COS — MATH — Revised November 2021**

**AP Statistics**

**Strand: Exploring One-Variable Data**

<p><b>Learning Standard:</b></p> <ul style="list-style-type: none"> <li>• Variation in categorical and quantitative variables</li> <li>• Representing data using tables or graphs</li> <li>• Calculating and interpreting statistics</li> <li>• Describing and comparing distributions of data</li> <li>• The normal distribution</li> </ul>	<p><b>How Taught?</b>  <b>Teaching activities may include, but are not limited to:</b></p> <ul style="list-style-type: none"> <li>• Direct Instruction</li> <li>• Cooperative Groups</li> <li>• Stations</li> <li>• Data Driven Instruction</li> <li>• Scaffolding</li> </ul>
<p><b>Materials:</b></p> <ul style="list-style-type: none"> <li>• Texas Instrument Graphing Calculator</li> <li>• Chromebook</li> <li>• AP Classroom</li> </ul>	<p><b>How Assessed?</b>  <b>Assessments may include, but are not limited to:</b></p> <ul style="list-style-type: none"> <li>• Pre-Assessments (pre-tests, observation, anticipation guide, questioning, diagnostics)</li> <li>• Formative Assessments (entry/exit slips, group work, reflections, discussions, writer's workshops, homework/classwork, self and peer evaluations, observations, conferences, rubrics)</li> <li>• Summative Assessments (formal essays, using rubrics; tests/exams, projects, creative assignments, presentations)</li> </ul> <p><b>How Re-Taught?</b>  <b>Re-teaching activities may include, but are not limited to:</b></p>



## COS — MATH — *Revised November 2021*

### AP Statistics

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|  | <ul style="list-style-type: none"><li>• breaking down concept into smaller components</li><li>• presenting the information again in a different way</li><li>• Universal Design for Learning principles offering students opportunities to experience and engage material in new and different way</li><li>• practice activities such as computer tutorials, games, hands-on activities</li><li>• review sessions</li></ul> |
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### AP Statistics

#### Strand: Exploring Two-Variable Data

<p><b>Learning Standard:</b></p> <ul style="list-style-type: none"><li>• Comparing representations of 2 categorical variables</li><li>• Calculating statistics for 2 categorical variables</li><li>• Representing bivariate quantitative data using scatter plots</li><li>• Describing associations in bivariate data and interpreting correlation</li><li>• Linear regression models</li><li>• Residuals and residual plots</li><li>• Departures from linearity</li></ul>	<p><b>How Taught?</b> <b>Teaching activities may include, but are not limited to:</b></p> <ul style="list-style-type: none"><li>• Direct Instruction</li><li>• Cooperative Groups</li><li>• Stations</li><li>• Data Driven Instruction</li><li>• Scaffolding</li></ul>
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#### Strand: Collecting Data

<p><b>Learning Standard:</b></p> <ul style="list-style-type: none"><li>● Planning a study</li><li>● Sampling methods</li><li>● Sources of bias in sampling methods</li><li>● Designing an experiment</li><li>● Interpreting the results of an experiment</li></ul>	<p><b>How Taught?</b> <b>Teaching activities may include, but are not limited to:</b></p> <ul style="list-style-type: none"><li>● Direct Instruction</li><li>● Cooperative Groups</li><li>● Stations</li><li>● Data Driven Instruction</li><li>● Scaffolding</li></ul>
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### AP Statistics

#### Strand: Probability, Random Variables, and Probability Distributions

<p><b>Learning Standard:</b></p> <ul style="list-style-type: none"><li>• Using simulation to estimate probabilities</li><li>• Calculating the probability of a random event</li><li>• Random variables and probability distributions</li><li>• The binomial distribution</li><li>• The geometric distribution</li></ul>	<p><b>How Taught?</b> <b>Teaching activities may include, but are not limited to:</b></p> <ul style="list-style-type: none"><li>• Direct Instruction</li><li>• Cooperative Groups</li><li>• Stations</li><li>• Data Driven Instruction</li><li>• Scaffolding</li></ul>
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### AP Statistics

#### Strand: Sampling Distributions

<p><b>Learning Standard:</b></p> <ul style="list-style-type: none"><li>• Variation in statistics for samples collected from the same population</li><li>• The central limit theorem</li><li>• Biased and unbiased point estimates</li><li>• Sampling distributions for sample proportions</li><li>• Sampling distributions for sample means</li></ul>	<p><b>How Taught?</b> <b>Teaching activities may include, but are not limited to:</b></p> <ul style="list-style-type: none"><li>• Direct Instruction</li><li>• Cooperative Groups</li><li>• Stations</li><li>• Data Driven Instruction</li><li>• Scaffolding</li></ul>
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## COS — MATH — Revised November 2021

### AP Statistics

#### Strand: Inference for Categorical Data: Proportions

##### Learning Standard:

- Constructing and interpreting a confidence interval for a population proportion
- Setting up and carrying out a test for a population proportion
- Interpreting a p-value and justifying a claim about a population proportion
- Type I and Type II errors in significance testing
- Confidence intervals and tests for the difference of 2 proportions

##### How Taught?

Teaching activities may include, but are not limited to:

- Direct Instruction
- Cooperative Groups
- Stations
- Data Driven Instruction
- Scaffolding

##### Materials:

- Texas Instrument Graphing Calculator
- Chromebook

##### How Assessed?

Assessments may include, but are not limited to:

- Pre-Assessments (pre-tests, observation, anticipation guide, questioning, diagnostics)
- Formative Assessments (entry/exit slips, group work, reflections, discussions, writer's workshops, homework/classwork, self and peer evaluations, observations, conferences, rubrics)
- Summative Assessments (formal essays, using rubrics; tests/exams, projects, creative assignments, presentations)



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**AP Statistics**

**Strand: Inference for Quantitative Data: Means**

<p><b>Learning Standard:</b></p> <ul style="list-style-type: none"><li>• Constructing and interpreting a confidence interval for a population mean</li><li>• Setting up and carrying out a test for a population mean</li><li>• Interpreting a p-value and justifying a claim about a population mean</li><li>• Confidence intervals and tests for the difference of 2 population means</li></ul>	<p><b>How Taught?</b> <b>Teaching activities may include, but are not limited to:</b></p> <ul style="list-style-type: none"><li>• Direct Instruction</li><li>• Cooperative Groups</li><li>• Stations</li><li>• Data Driven Instruction</li><li>• Scaffolding</li></ul>
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### AP Statistics

#### Strand: Inference for Categorical Data: Chi-Square

<p><b>Learning Standard:</b></p> <ul style="list-style-type: none"><li>• The chi-square test for goodness of fit</li><li>• The chi-square test for homogeneity</li><li>• The chi-square test for independence</li><li>• Selecting an appropriate inference procedure for categorical data</li></ul>	<p><b>How Taught?</b> <b>Teaching activities may include, but are not limited to:</b></p> <ul style="list-style-type: none"><li>• Direct Instruction</li><li>• Cooperative Groups</li><li>• Stations</li><li>• Data Driven Instruction</li><li>• Scaffolding</li></ul>
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#### Strand: Inference for Quantitative Data: Slopes

<p><b>Learning Standard:</b></p> <ul style="list-style-type: none"><li>• Confidence intervals for the slope of a regression model</li><li>• Setting up and carrying out a test for the slope of a regression model</li><li>• Selecting an appropriate inference procedure</li></ul>	<p><b>How Taught?</b> <b>Teaching activities may include, but are not limited to:</b></p> <ul style="list-style-type: none"><li>• Direct Instruction</li><li>• Cooperative Groups</li><li>• Stations</li><li>• Data Driven Instruction</li><li>• Scaffolding</li></ul>
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