



## Curriculum and Instruction – Mathematics

### Quarter 2

### Statistics

Quarter 1		Quarter 2		Quarter 3		Quarter 4	
The Nature of Probability and Statistics, Frequency Distributions and Graphs, Data Description		Probability and Counting Rules, Discrete Probability Distributions, The Normal Distribution		Normal Distributions, Confidence Intervals and Sample Size, Hypothesis Testing		Testing the Difference Between Two Means, Two Proportions, and Two Variances, Other Chi-Square Tests, Correlation and Regression	
August 12, 2019 – October 11, 2019		October 21, 2019 – December 20, 2019		January 6, 2020 – March 13, 2020		March 23, 2020 – May 22, 2020	
S.ID.A.1	S.IC.A.3	S.CP.A.1	S.MD.B.10	S.MD.A.6		S.ID.B.10	
S.ID.A.2	S.IC.A.4	S.CP.A.2		S.MD.A.8		S.ID.B.11	
S.ID.A.3	S.IC.A.5	S.CP.A.3		S.MD.B.10		S.ID.B.12	
S.ID.A.4	S.IC.B.8	S.CP.B.4		S.IC.A.6		S.ID.B.13	
S.ID.A.5	S.IC.B.9	S.CP.B.5		S.IC.A.7		S.MD.A.8	
S.ID.A.6	S.IC.B.10	S.MD.A.1		S.IC.C.14		S.IC.B.12	
S.ID.A.7	S.IC.B.11	S.MD.A.2		S.IC.D.15			
S.ID.A.8	S.IC.C.13	S.MD.A.3		S.IC.D.16			
S.ID.A.9		S.MD.A.4		S.IC.D.17			
S.MD.B.9		S.MD.A.5		S.IC.E.18			
S.MD.B.10		S.MD.A.6		S.IC.E.19			
S.IC.A.1		S.MD.A.7a & b		S.IC.E.20			
S.IC.A.2		S.MD.A.8					



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### Introduction

Destination 2025, Shelby County Schools’ 10-year strategic plan, is designed not only to improve the quality of public education, but also to create a more knowledgeable, productive workforce and ultimately benefit our entire community.

### What will success look like?



In order to achieve these ambitious goals, we must collectively work to provide our students with high quality, college and career ready aligned instruction. The Tennessee State Standards provide a common set of expectations for what students will know and be able to do at the end of a grade. The State of Tennessee provides two sets of standards, which include the Standards for Mathematical Content and The Standards for Mathematical Practice. The Content Standards set high expectations for all students to ensure that Tennessee graduates are prepared to meet the rigorous demands of mathematical understanding for college and career. The eight Standards for Mathematical Practice describe the varieties of expertise, habits of mind, and productive dispositions that educators seek to develop in all students. The Tennessee State Standards also represent three fundamental shifts in mathematics instruction: **focus, coherence and rigor**.

## Instructional Shifts for Mathematics



Throughout this curriculum map, you will see resources as well as links to tasks that will support you in ensuring that students are able to reach the demands of the standards in your classroom. In addition to the resources embedded in the map, there are some high-leverage resources around the content standards and mathematical practice standards that teachers should consistently access. For a full description of each, click on the links below.



## How to Use the Maps

### Overview

An overview is provided for each quarter and includes the topics, focus standards, intended rigor of the standards and foundational skills needed for success of those standards.

**Your curriculum map contains four columns that each highlight specific instructional components. Use the details below as a guide for information included in each column.**

### Tennessee State Standards

TN State Standards are located in the left column. Each content standard is identified as Major Content or Supporting Content (for Algebra I, Algebra II & Geometry only). A key can be found at the bottom of the map.

### Content

This section contains learning objectives based upon the TN State Standards. Best practices tell us that clearly communicating measurable objectives lead to greater student understanding. Additionally, essential questions are provided to guide student exploration and inquiry.

### Instructional Support & Resources

District and web-based resources have been provided in the Instructional Support & Resources columns. You will find a variety of instructional resources that align with the content standards. The additional resources provided should be used as needed for content support and scaffolding. The inclusion of vocabulary serves as a resource for teacher planning and for building a common language across K-12 mathematics. One of the goals for Tennessee State Standards is to create a common language, and the expectation is that teachers will embed this language throughout their daily lessons.



### Topics Addressed in Quarter

- Probability and Counting Rules
- Discrete Probability Distributions
- The Normal Distribution

### Overview

In this quarter students extend their work in probability and statistics by applying statistics ideas to real-world situations. They link classroom mathematics and statistics to everyday life, work, and decision-making, by applying these standards in modeling situations. Students choose and use appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. The basic concepts of probability are explained including probability experiments, sample spaces, the addition and multiplication rules, and the probabilities of complementary events. Students learn the rule for counting, the differences between permutations and combinations, and how to figure out how many different combinations for specific situations exist. Students take their understanding of probability further by studying expected values, interpreting them as long-term relative means of random variables, functions of the outcomes of a random process, with associated probabilities attached to their possible values. Random variables can be either discrete or continuous. Discrete variables and their distributions are explained and students explore probability distributions in general and a specific, often used distribution called the binomial distribution. Students also begin to discuss and explore the properties of a normal distribution and its applications.



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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
<b>Chapter 4 - Probability and Counting Rules</b> (Allow approximately 4 weeks for instruction, review, and assessment)			
<p><b>Domain:</b> Conditional Probability and the Rules of Probability</p> <p><b>Cluster:</b> Understand and apply basic concepts of probability</p> <p><b>S.CP.A.1</b> Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").</p> <p><b>S.CP.A.3</b> Demonstrate an understanding of the Law of Large Numbers (Strong and Weak).</p> <p><b>Domain:</b> Using Probability to Make Decisions</p> <p><b>Cluster:</b> Understand and use discrete probability distributions.</p> <p><b>S.MD.A.5</b> Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. <i>For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.</i></p>	<p><b>Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>How to use the laws of probability and simulation to make informed decisions?</li> <li>How can large numbers based on a pattern be efficiently calculated to form probabilities?</li> <li>How can you model a simulation to represent a real life situation?</li> <li>How does theoretical probability relate to empirical probability?</li> <li>How do mutually exclusive events affect probability calculations?</li> </ul> <p><b>Objective(s)</b> The student will:</p> <ul style="list-style-type: none"> <li>Determine sample spaces and find the probability of an event.</li> <li>Explain what is meant by the Law of Large Numbers.</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b> 4-1 Sample Spaces and Probability</p> <p><b>Additional Resource(s)</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>                      (PowerPoints, Chapter PDF files, Solutions Manual, etc.)  <a href="#">Against All Odds Videos</a>                      (Against All Odds is a Video Series that introduces a statistical topic and illustrates it with a real-world example)  <a href="#">Khan Academy: Probability</a>  <a href="#">Statistics Education Web</a>  <a href="#">Egg Roulette Game (Grades 9-12)</a></p> <p><b>Statistics Teacher</b>                      (<a href="https://www.statisticsteacher.org/">https://www.statisticsteacher.org/</a>)                      (An online journal published by the American Statistical Association – National Council of Teachers of Mathematics Joint Committee on Curriculum in Statistics and Probability for Grades K-12.)</p> <p><b>Task(s)</b>  <a href="#">Law of Large Numbers</a></p>	<p><b>Vocabulary</b> (Chapter 4)                      classical probability, combination, complement of an event, compound event, conditional probability, dependent events, empirical probability, equally likely events, event, fundamental counting rule, independent events, law of large numbers, mutually exclusive events, outcome, permutation, probability, probability experiment, sample space, simple event, subjective probability, tree diagram, Venn diagrams</p> <p><b>Elementary Statistics Textbook (Bluman)</b>  <i>Statistics Today</i>, pp. 182, 245  <i>Critical Thinking Challenges</i>, p. 248  <i>Speaking of Statistics</i>, p. 240  <i>Applying the Concepts</i>, pp. 195, 203, 220, 232, 239  <i>Extending the Concepts</i>, pp.198, 207, 224, 235  <i>Data Projects</i>, p. 248  <i>TI-83/84 Step by Step</i>, pp. 208, 235</p> <p><b>Utilize <u>Tasks</u> to include the Standards for Mathematical Practice where students have to reason, justify, explain, construct &amp; model their thinking.</b></p>



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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
<p><b>Domain:</b> Conditional Probability and the Rules of Probability</p> <p><b>Cluster:</b> Use the rules of probability to compute probabilities of compound events in a uniform probability model.</p> <p><b>S.C.P.B.4</b> Demonstrate an understanding of the addition rule, the multiplication rule, conditional probability, and independence.</p>	<p><b>Objective(s)</b> The student will:</p> <ul style="list-style-type: none"> <li>Find the probability of compound events using the addition rule of probability</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b> 4-2 The Addition Rules for Probability</p> <p><b>Additional Resource(s)</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>                      (PowerPoints, Chapter PDF files, Solutions Manual, etc.)  <a href="#">Khan Academy: Probability</a>  <a href="#">Odd or Even? The Addition and Complement Principles of Probability (Grades 9-12)</a></p>	<p><b>Vocabulary</b> (Chapter 4) classical probability, combination, complement of an event, compound event, conditional probability, dependent events, empirical probability, equally likely events, event, fundamental counting rule, independent events, law of large numbers, mutually exclusive events, outcome, permutation, probability, probability experiment, sample space, simple event, subjective probability, tree diagram, Venn diagrams</p>
<p><b>Domain:</b> Conditional Probability and the Rules of Probability</p> <p><b>Cluster:</b> Use the rules of probability to compute probabilities of compound events in a uniform probability model.</p> <p><b>S.C.P.B.4</b> Demonstrate an understanding of the addition rule, the multiplication rule, conditional probability, and independence.</p>	<p><b>Objective(s)</b> The student will:</p> <ul style="list-style-type: none"> <li>Find the probability of compound events using the multiplication rule of probability.</li> <li>Find the conditional probability of an event.</li> <li>Discuss the concept of independence</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b> 4-3 The Multiplication Rules and Conditional Probability</p> <p><b>Additional Resource(s)</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>                      (PowerPoints, Chapter PDF files, Solutions Manual, etc.)  <a href="#">Against All Odds Videos</a>  <a href="#">Khan Academy: Probability</a>  <a href="#">Statistics Teacher</a>                      (https://www.statisticsteacher.org/)                      (An online journal published by the American Statistical Association – National Council of Teachers of Mathematics Joint Committee on Curriculum in Statistics and Probability for Grades K-12.)</p>	<p><b>Elementary Statistics Textbook (Bluman)</b>  <i>Statistics Today</i>, pp. 182, 245  <i>Critical Thinking Challenges</i>, p. 248  <i>Speaking of Statistics</i>, p. 240  <i>Applying the Concepts</i>, pp. 195, 203, 220, 232, 239  <i>Extending the Concepts</i>, pp.198, 207, 224, 235  <i>Data Projects</i>, p. 248  <i>TI-83/84 Step by Step</i>, pp. 208, 235</p>
<p><b>Domain:</b> Conditional Probability and the Rules of Probability</p>	<p><b>Objective(s)</b> The student will:</p>	<p><b>Elementary Statistics Textbook (Bluman)</b> 4-4 Counting Rules</p>	



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<p><b>Cluster:</b> Use the rules of probability to compute probabilities of compound events in a uniform probability model.</p> <p><b>S.CP.B.4</b> Demonstrate an understanding of the addition rule, the multiplication rule, conditional probability, and independence.</p> <p><b>S.CP.B.5</b> Apply the general Multiplication Rule in a uniform probability model, <math>P(A \text{ and } B) = P(A)P(B A) = P(B)P(A B)</math>, and interpret the answer in terms of the model</p>	<ul style="list-style-type: none"> <li>Find the total number of outcomes in a sequence of events using the fundamental counting rule.</li> <li>Find the number of ways that <math>r</math> objects can be selected from <math>n</math> objects, using the permutation rule.</li> <li>Find the number of ways that <math>r</math> objects can be selected from <math>n</math> objects, without regard to order, using the combination rule.</li> </ul>	<p><b>Additional Resource(s)</b></p> <p><a href="#">Elementary Statistics 7th edition Bluman</a> (PowerPoints, Chapter PDF files, Solutions Manual, etc.)</p> <p><a href="#">Against All Odds Videos</a></p> <p><a href="#">Khan Academy: The Counting Principle</a></p>	
<p><b>Domain:</b> Conditional Probability and the Rules of Probability</p> <p><b>Cluster:</b> Understand and apply basic concepts of probability</p> <p><b>S.CP.A.2</b> Use permutations and combinations to compute probabilities of compound events and solve problems.</p>	<p><b>Objective(s)</b> The student will:</p> <ul style="list-style-type: none"> <li>Find the probability of an event using the counting rules.</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b> 4-5 Probability and Counting Rules</p> <p><b>Additional Resource(s)</b></p> <p><a href="#">Elementary Statistics 7th edition Bluman</a> (PowerPoints, Chapter PDF files, Solutions Manual, etc.)</p> <p><a href="#">Against All Odds Videos</a></p> <p><a href="#">Khan Academy: The Counting Principle</a></p> <p><a href="#">Statistics Education Web</a></p> <p><a href="#">Statistics Teacher</a> (<a href="https://www.statisticteacher.org/">https://www.statisticteacher.org/</a>)</p>	
<p><b>Chapter 5 - Discrete Probability Distributions</b> (Allow approximately 3 weeks for instruction, review, and assessment)</p>			
<p><b>Domain:</b> Using Probability to Make Decisions</p> <p><b>Cluster:</b> Understand and use discrete probability distributions.</p> <p><b>S.MD.A.1</b> Define a random variable for a quantity of interest by assigning a numerical</p>	<p><b>Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>What probability distribution patterns occur in real life situations?</li> <li>How do you distinguish when to use the three distributions (poison, binomial, geometric)?</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b> 5-1 Probability Distributions</p>	<p><b>Vocabulary (Chapter 5):</b> Binomial distribution, binomial experiment, discrete probability distribution, expected value, hypergeometric distribution, multinomial distribution, Poisson distribution, random variable</p>



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<p>value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions</p>	<ul style="list-style-type: none"> <li>How do you apply your understanding of probability distribution to determine examples of it?</li> </ul> <p><b>Objective(s):</b> The student will:</p> <ul style="list-style-type: none"> <li>Construct a probability distribution for a random variable.</li> </ul>	<p><b>Additional Resource(s)</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>            (PowerPoints, Chapter PDF files, Solutions Manual, etc.)  <a href="#">Against All Odds Videos</a>  <a href="#">Khan Academy: Statistics and Probability</a>  <a href="#">Statistics Education Web</a></p>	<p><b>Elementary Statistics Textbook (Bluman)</b>  <i>Statistics Today</i>, pp. 252, 295  <i>Critical Thinking Challenges</i>, p. 296  <i>Speaking of Statistics</i>, p.256,  <i>Applying the Concepts</i>, pp. 257, 266, 276, 289  <i>Extending the Concepts</i>, pp. 259, 268, 279  <i>Data Projects</i>, p. 297  <i>TI-83/84 Step by Step</i>, pp. 269, 281, 291</p>
<p><b>Domain:</b> Using Probability to Make Decisions  <b>Cluster:</b> Understand and use discrete probability distributions.  <b>S.MD.A.2</b> Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.  <b>S.MD.A.4</b> Analyze discrete random variables and their probability distributions, including binomial and geometric.  <b>S.MD.A.6</b> Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. <i>For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?</i>  <b>S.MD.A.7</b> Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.            a. Find the expected payoff for a game of chance. <i>For example, find the</i></p>	<p><b>Objective(s):</b> The student will:</p> <ul style="list-style-type: none"> <li>Find the mean, variance, standard deviation, and expected value for a discrete random variable.</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b>            5-2 Mean, Variance, Standard Deviation, and Expected Value  <b>Additional Resource(s)</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>            (PowerPoints, Chapter PDF files, Solutions Manual, etc.)  <a href="#">Against All Odds Videos</a>  <a href="#">Statistics Education Web</a>  <a href="#">Statistics Teacher</a>            (https://www.statisticteacher.org/)            (An online journal published by the American Statistical Association – National Council of Teachers of Mathematics Joint Committee on Curriculum in Statistics and Probability for Grades K-12.)</p>	<p><b>Vocabulary</b> (Chapter 5):            Binomial distribution, binomial experiment, discrete probability distribution, expected value, hypergeometric distribution, multinomial distribution, Poisson distribution, random variable  <b>Elementary Statistics Textbook (Bluman)</b>  <i>Statistics Today</i>, pp. 252, 269, 295  <i>Critical Thinking Challenges</i>, p. 296  <i>Speaking of Statistics</i>, p.256  <i>Applying the Concepts</i> pp. 257, 266, 276, 289  <i>Extending the Concepts</i>, pp. 259, 268, 279  <i>Data Projects</i>, p. 297  <i>TI-83/84 Step by Step</i>, pp. 269, 281, 291</p>



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<p><i>expected winnings from a state lottery ticket or a game at a fast-food restaurant.</i></p> <p>b. Evaluate and compare strategies on the basis of expected values. <i>For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.</i></p> <p><b>S.MD.A.8</b> Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).</p>			
<p><b>Domain:</b> Using Probability to Make Decisions</p> <p><b>Cluster:</b> Understand and use discrete probability distributions.</p> <p><b>S.MD.A.3</b> Design a simulation of random behavior and probability distributions (e.g., drawing by lots, using a random number generator, and using the results to make fair decisions).</p> <p><b>S.MD.A.6</b> Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. <i>For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?</i></p> <p><b>S.MD.A.8</b> Analyze decisions and strategies using probability concepts (e.g., product</p>	<p>The student will:</p> <ul style="list-style-type: none"> <li>• Construct a probability distribution for a random variable using a simulation.</li> <li>• Find the expected value of the simulation.</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b> 14-3 Simulation Techniques and Expected Value</p> <p><b>Additional Resource(s)</b> <a href="#">Elementary Statistics 7th edition Bluman</a> (PowerPoints, Chapter PDF files, Solutions Manual, etc.) <a href="#">Against All Odds Videos</a> <a href="#">Statistics Teacher</a> (<a href="https://www.statisticteacher.org/">https://www.statisticteacher.org/</a>)</p> <p><b>Vocabulary (Section 14-3):</b> Simulation technique, Monte Carlo method</p> <p><b>Elementary Statistics Textbook (Bluman)</b> <i>Applying the Concepts</i>, pp. 742</p>	



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<p>testing, medical testing, pulling a hockey goalie at the end of a game).</p> <p><b>Domain:</b> Using Probability to Make Decisions  <b>Cluster:</b> Understand and use discrete probability distributions.  <b>S.MD.A.2</b> Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.  <b>S.MD.A.6</b> Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. <i>For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?</i>  <b>S.MD.A.8</b> Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).</p>	<p>The student will:</p> <ul style="list-style-type: none"> <li>Find the exact probability for <math>X</math> successes in <math>n</math> trials of a binomial experiment.</li> <li>Find the mean, variance, and standard deviation for the variable of a binomial distribution.</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b>            5-3 The Binomial Distribution</p> <p><b>Additional Resource(s)</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>            (PowerPoints, Chapter PDF files, Solutions Manual, etc.)  <a href="#">Khan Academy: Binomial Distribution</a>  <a href="#">Against All Odds Videos</a>  <a href="#">STatistics Education Web</a>  <a href="#">Statistics Teacher</a>            (https://www.statisticteacher.org/)</p> <p><b>Task(s)</b>  <a href="#">Georgia Standards of Excellence - Testing Learning Task, p.30</a></p>	<p><b>Vocabulary</b> (Chapter 5):            Binomial distribution, binomial experiment, discrete probability distribution, expected value, hypergeometric distribution, multinomial distribution, Poisson distribution, random variable</p> <p><b>Elementary Statistics Textbook (Bluman)</b>  <i>Statistics Today</i>, pp. 252, 295  <i>Critical Thinking Challenges</i>, p. 296  <i>Speaking of Statistics</i>, p.256  <i>Applying the Concepts</i>, pp. 257, 266, 276, 289  <i>Extending the Concepts</i>, pp. 259, 268, 279  <i>Data Projects</i>, p. 297  <i>TI-83/84 Step by Step</i>, pp. 269, 281, 291</p>
<p><b>Domain:</b> Using Probability to Make Decisions  <b>Cluster:</b> Understand and use discrete probability distributions.  <b>S.MD.A.2</b> Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.  <b>S.MD.A.6</b> Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. <i>For example, find a current data distribution on the</i></p>	<p>The student will:</p> <ul style="list-style-type: none"> <li>Find the probabilities for outcomes of variables, using <b>Geometric</b>, Poisson, hypergeometric, and multinomial distributions.</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b>            5-4 Other Types of Distributions            Geometric Probability</p> <p><b>Additional Resource(s)</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>            (PowerPoints, Chapter PDF files, Solutions Manual, etc.)  <a href="#">Khan Academy: Probability for a Geometric Random Variable</a></p>	



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<p>number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?</p> <p><b>S.MD.A.8</b> Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).</p>		<p><a href="#">Against All Odds Videos</a>  <a href="#">Statistics Education Web</a></p>	
<p><b>Chapter 6-The Normal Distribution (Sections 1 &amp; 2)</b>            (Allow approximately 2 weeks for instruction, review, and assessment)</p>			
<p><b>Domain:</b> Using Probability to Make Decisions  <b>Cluster:</b> Understand the normal probability distribution.</p> <p><b>S.MD.B.10</b> Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.</p>	<p><b>Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>What characteristics of a problem influence the choice of representation and analysis of the data?</li> <li>How can data be represented to best communicate important information about a problem?</li> </ul> <p>The student will:</p> <ul style="list-style-type: none"> <li>Identify distributions as symmetric or skewed.</li> <li>Identify the properties of a normal distribution.</li> <li>Find the area under the standard normal distribution, given various z values.</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b>            6-1 Normal Distributions</p> <p><b>Additional Resource(s)</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>            (PowerPoints, Chapter PDF files, Solutions Manual, etc.)  <a href="#">Khan Academy: Normal Distributions</a>  <a href="#">Against All Odds Videos</a>  <a href="#">Statistics Education Web</a>  <a href="#">Statistics Teacher</a>            (https://www.statisticteacher.org/)</p> <p><b>Vocabulary</b> (Sections 6-1 &amp; 6-2):            Binomial distribution, binomial experiment, discrete probability distribution, expected value, hypergeometric distribution, multinomial distribution, Poisson distribution, random variable</p> <p><b>Elementary Statistics Textbook (Bluman)</b>  <i>Statistics Today</i>, p.300  <i>Applying the Concepts</i>, p. 311, 324  <i>Extending the Concepts</i>, pp. 313  <i>T1-83/84 Step by Step</i>, pp. 315, 329</p>	
<p><b>Domain:</b> Using Probability to Make Decisions  <b>Cluster:</b> Understand the normal probability distribution.</p> <p><b>S.MD.B.10</b> Use the mean and standard deviation of a data set to fit it to a normal</p>	<p>The student will:</p> <ul style="list-style-type: none"> <li>Find probabilities for a normally distributed variable by transforming it into a standard normal variable.</li> </ul>	<p><b>Elementary Statistics Textbook (Bluman)</b>            6-2 Applications of the Normal Distribution</p> <p><b>Utilize <u>Tasks</u> to include the <i>Standards for Mathematical Practice</i> where students have to <i>reason, justify, explain, construct &amp; model</i> their thinking.</b></p>	



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### Statistics

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.		<b>Additional Resource(s)</b> <a href="#">Elementary Statistics 7th edition Bluman</a> (PowerPoints, Chapter PDF files, Solutions Manual, etc.) <a href="#">Khan Academy: Normal Distributions</a> <a href="#">Against All Odds Videos</a> <a href="#">Statistics Education Web</a> <a href="#">What Does the Normal Distribution Sound Like?</a>  <b>Task(s)</b> <a href="#">The Normal Distribution</a> <a href="#">Is Your Score Normal</a>	

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## Curriculum and Instruction – Mathematics

### Quarter 2

### Statistics

#### RESOURCE TOOLKIT

<p><b>Textbook Resources</b>  <a href="#">Elementary Statistics 7th edition Bluman</a>            (Includes PowerPoints, Chapter PDF files, Solutions Manual, etc.)</p>	<p><b>Standards</b>  <a href="#">Common Core Standards - Mathematics</a>  <a href="#">Common Core Standards - Mathematics Appendix A</a>  <a href="#">The Mathematics Common Core Toolbox</a>  <a href="#">Common Core Lessons</a>  <a href="#">Tennessee Academic Standards for Mathematics</a></p>	<p><b>Videos</b>  <a href="#">Against All Odds Videos (with Study Guides)</a> (A Video Series that introduces a statistical topic and illustrates it with a real-world example.)  <a href="#">Khan Academy</a></p>
<p><b>Calculator</b>  <a href="#">Texas Instruments Education</a>  <a href="http://www.casioeducation.com/educators">http://www.casioeducation.com/educators</a>  <a href="#">Desmos</a></p>	<p><b>Interactive Manipulatives</b>  <a href="#">Stat Trek</a>  <a href="#">AmStat.org</a>  <a href="#">Applet Collection</a></p>	<p><b>Additional Sites</b>  <a href="https://www.statisticsteacher.org/">Statistics Teacher</a> (https://www.statisticsteacher.org/)            (An online journal published by the American Statistical Association – National Council of Teachers of Mathematics Joint Committee on Curriculum in Statistics and Probability for Grades K-12.)  <a href="#">The Data and Story Library</a>  <a href="#">Fed Stats</a>  <a href="#">Bureau of Labor Statistics</a>  <a href="#">Educational Statistics</a>  <a href="#">NCTM Math Illuminations</a>  <a href="#">United States Census Bureau</a>  <a href="#">Statistics Education Web</a>  <a href="#">Illustrative Math – Statistics &amp; Probability Tasks</a>  <a href="#">Mathematics Vision Project: Modeling Data</a>  <a href="#">Georgia Standards of Excellence: Unit 9 Probability</a>  <a href="#">Georgia Standards of Excellence: Unit 8: Inferences &amp; Conclusions from Data</a>  <a href="#">Edutoolbox (formerly TNCore)</a></p>
<p><b>ACT &amp; SAT</b>  <a href="#">TN ACT Information &amp; Resources</a>  <a href="#">ACT College &amp; Career Readiness Mathematics Standards</a>  <a href="#">SAT Connections</a>  <a href="#">SAT Practice from Khan Academy</a></p>		