

**Southington Public Schools  
Curriculum Map**

**Subject:** Math

**Grade:** 7

UNIT TITLE	Statistics	Integers I	Integers II
<b>CONTENT</b>	<ul style="list-style-type: none"> <li>• Apply the process of statistical investigation to pose questions</li> <li>• Identify and determine strategies for analyzing and interpreting data</li> </ul>	<ul style="list-style-type: none"> <li>• Define and develop an understanding of integers.</li> <li>• Explore relationship between positive and negative numbers</li> <li>• Develop an understanding of arithmetic operations with positive and negative numbers</li> </ul>	<ul style="list-style-type: none"> <li>• Extend the operations of multiplication and division of positive and negative numbers</li> </ul>
<b>STATE STANDARDS</b>	<p>7.4.1.a. Select the appropriate visual representation of data based on the kind of data collected and the purpose for its use.            (1) Formulate questions, design surveys and samplings, organize and analyze gathered data and defend the analysis.            (2) Organize and display data using appropriate graphical representations and make and defend predictions based on patterns and trends.</p> <p>7.4.2.a. Understand that measures of central tendency and spread can be used to describe data sets and justify conclusions.            (1) Find, use, and interpret measures of central tendency and spread including mode, median, mean, range, and outliers.            (2) Compare two sets of data based on their distributions and measures of central tendency.</p> <p>7.2.1.b. Understand the use of scientific notation as related to powers of ten as an efficient method for writing and comparing very large numbers.            (1) Use powers of ten and positive exponents to express and compare magnitudes of very large numbers and connect to scientific notation.            (2) Develop, describe and use a variety of methods to estimate and calculate with very large numbers.</p>	<p>7.2.2.a . Extend the operations of addition, subtraction, multiplication, and division to negative numbers.            (1) Solve problems with positive and negative numbers using models and number lines.            (2) Use the order of operations to compute and solve a variety of multi-step problems, including those with parentheses and exponents.            (3) Explore absolute value while solving problems involving distance</p> <p>8.2.1.a. Compare and order integers, powers, and roots using number lines and grids            (1) Compare, locate, label and order rational numbers on number lines, scales, coordinate grids and measurement tools.            (3) Solve a variety of problems involving integers, powers, roots, and scientific notation</p>	<p>7.2.2. a. Extend the operations of addition, subtraction, multiplication, and division to negative numbers.            (1) Solve problems with positive and negative numbers using models and number lines.            (2) Use the order of operations to compute and solve a variety of multi-step problems, including those with parentheses and exponents.</p> <p>8.2.1.a. Compare and order integers, powers, and roots using number lines and grids            (1) Compare, locate, label and order rational numbers on number lines, scales, coordinate grids and measurement tools.            (3) Solve a variety of problems involving integers, powers, roots, and scientific notation.</p>

**ASSESSMENT****PERFORMANCE TASK**

**Goal:** To visually represent and analyze data.

**Role:** Researcher for a food magazine

**Audience:** One of the magazine's reporters

**Scenario:** You have been given a assignment to provide graphical and statistical information about frozen pizzas. Your editor has told you that readers want to know about cost, calories, and amount of fat when buying frozen pizzas. He gives you the raw data collected on 29 different pizzas.

**Product:** Considering cheese pizzas and pepperoni pizzas separately, analyze each of the important aspects (cost, calories, and fat). Create a graphical display, calculate the measures of center and describe the variability for each of the six combinations.

**Standards:** The rubric for grading this project will require correct graphs, correct calculations along with the mathematical work that was used, and complete analytical written responses.

**Differentiated Version of Task:**

The task would be the same

Below level students may be assigned a smaller number of combinations. For example, they might just do calories for both cheese and pepperoni.

Above level students could be asked to:

- create circle graphs of cheese and pepperoni pizzas based on one aspect (cost, calories, fat).
- create scatter plots for cheese and pepperoni pizzas comparing two of the aspects.

**PERFORMANCE TASK**

**Goal:** To flexibly compare and add integers

**Role:** Game designer working for XYZ Gaming Department

**Audience:** Children from ages 8 to 12

**Scenario:** you must use a deck of cards to create a game using the idea of positive and negative numbers, comparing them and adding them.

**Product:** you must create a rule-book describing the rules of your game. You must have a name for your game with a creative cover. You must include comparing and adding integers.

**Standards:** The rubric would require a clear organization of rules and the ability to repeat "play" the game.

**Differentiated Version of Task:**

-the students must use subtraction in the game.

-given a game, the students will write the rules.

-the students can create their own game (not necessarily with cards)

-the students can create a game that also includes a coordinate grid

**PERFORMANCE TASK**

**Goal:** To perform computation of integers flexibly and fluently.

**Role:** Student

**Audience:** Next year's seventh grade students

**Scenario:** You have just learned how to multiply and divide integers. Create an activity (math movie, game, or presentation for example), or poster that your teacher could use to show next year seventh grade students. You must demonstrate at least three scenarios of multiplying and dividing integers in your activity.

**Product:** An activity, lesson, or poster on multiplication and division of integers.

**Standards:** The students will be assessed upon a rubric based on the clarity.

Teacher must give model based on Integers I and use as a guide to help assessment.

**Differentiated Version of Task:**

- give students an example of a game and they must give the possible outputs
- limit to only one operation
- use multiple operations in one equation
- instant feedback through the use of the calculator
- limit the scenarios to one or two

	<p><b><u>OTHER EVIDENCE</u></b></p> <ul style="list-style-type: none"> <li>• Supplemental materials</li> <li>• Graphs and models</li> <li>• Periodic quizzes, exit questions, and verbal assessments</li> <li>• Journal entries/ written explanations with numerical and pictorial representations</li> <li>• Student self-assessments</li> <li>• Notebook checks</li> </ul>	<p><b><u>OTHER EVIDENCE</u></b></p> <ul style="list-style-type: none"> <li>• Supplemental materials</li> <li>• Periodic quizzes, exit questions, and verbal assessments</li> <li>• Journal entries / written explanations with numerical and pictorial representations</li> <li>• Student self-assessments</li> <li>• Notebook checks</li> </ul>	<p><b><u>OTHER EVIDENCE</u></b></p> <ul style="list-style-type: none"> <li>• Supplemental Materials</li> <li>• Graphs and models</li> <li>• Periodic quizzes, exit questions, and verbal assessments</li> <li>• Journal entries/ written explanations with numerical and pictorial representations</li> <li>• Student self-assessments</li> <li>• Notebook checks</li> </ul>
<p><b>SKILLS</b></p>	<ul style="list-style-type: none"> <li>• Create bar graphs, line graphs, and stem-and-leaf plots from data that is collected</li> <li>• Compare large numbers</li> <li>• Estimate with large numbers</li> <li>• Calculate with large numbers</li> <li>• Decide how to collect data</li> <li>• Organize data</li> <li>• Summarize data</li> <li>• Identify relationships using the results of the data</li> <li>• Compare data sets</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a number line that includes negative and positive integers.</li> <li>• Make a coordinate grid that includes negative and positive integers.</li> <li>• Add negative and positive integers.</li> <li>• Determine whether one integer is greater than, less than, or equal to another integer.</li> <li>• Model situations with integers</li> <li>• Use integers to solve problems</li> <li>• Use integers in real-world situations.</li> <li>• Graph in 4 quadrants</li> <li>• Answer questions using equations, tables, and graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• Add, subtract, multiply, divide positive and negative numbers</li> <li>• Model situations with integers</li> <li>• Use integers to solve problems</li> <li>• Use integers in real-world situations.</li> <li>• Graph in 4 quadrants</li> <li>• Answer questions using equations, tables, and graphs</li> <li>• Develop strategies and algorithms for multiplying and dividing integers</li> </ul>

**Southington Public Schools  
Curriculum Map**

**Subject:** Math

**Grade:** 7

UNIT TITLE	Volume and Surface Area	Probability	Ratio and Proportions
<b>CONTENT</b>	<ul style="list-style-type: none"> <li>To develop an understanding of volume and surface area</li> <li>To find strategies to determine volume and surface area in a three dimensional figure.</li> <li>To use and interpret nets</li> </ul>	<ul style="list-style-type: none"> <li>To develop an understanding of probability</li> <li>Determine experimental and theoretical probability</li> </ul>	<ul style="list-style-type: none"> <li>To determine the ratio and proportional relationships between quantities</li> </ul>
<b>STATE STANDARDS</b>	<p>7.3.2. a. Understand how three-dimensional objects can be represented in two-dimensions using base plans (footprints), orthogonal views, nets isometric drawings.</p> <p>(1) Draw and interpret nets, cross-sections and front, side, top views of various solids.</p> <p>(2) Develop and use strategies to determine the surface area of three-dimensional objects.</p>	<p>7.4.1. a. Select the appropriate visual representation of data based on the kind of data collected and the purpose for its use. Organize and display data using appropriate graphical representations and make and defend predictions based on patterns and trends.</p> <p>7.4.3. a. Compare and determine experimental and theoretical probabilities.</p> <p>(1) Identify the two ways of obtaining probabilities-by gathering data from experiments (experimental probability) and by analyzing the possible and likely outcomes (theoretical probability).</p> <p>(2) Conduct experiments and compare experimental to theoretical probabilities.</p> <p>(3) Solve problems involving the probability of simple and compound events in familiar contexts.</p>	<p>6.2.1.d. Compare quantities and solve problems using ratios, rates, and percents.</p> <p>(1) Estimate and find percents using benchmarks and number patterns.</p> <p>(2) Convert between rates using ratios and proportions.</p> <p>7.2.1.a. Represent real world situations and solutions to problems using the appropriate symbolic form (fractions, decimals, or percents)</p> <p>(6) Solve practical problems involving rates, scale factors, mixtures, and percents with proportions.</p>
<b>ASSESSMENT</b>	<p><b><u>PERFORMANCE TASK</u></b></p> <p><b>Goal:</b> The students will design two different cartons to hold sport drink boxes; record data (dimensions, total volume, and surface area of each carton) in a comparison table, and write a statement recommending the best design.</p> <p><b>Role:</b> Carton designer</p> <p><b>Audience:</b> Grocery store managers and juice box manufacturers</p> <p><b>Scenario:</b> The students need to come up</p>	<p><b><u>PERFORMANCE TASK</u></b></p> <p><b>Goal:</b> The student will create a game for a carnival that will make a profit for their school and then write a report of their results.</p> <p><b>Role:</b> Game creator for a school carnival.</p> <p><b>Audience:</b> School Carnival Committee</p> <p><b>Scenario:</b> Students will work together to create a game for a school carnival and to test the game. They will each write a report to the carnival committee</p> <p><b>Product:</b> The students will prepare a model</p>	<p><b><u>PERFORMANCE TASK</u></b></p> <p><b>Goal:</b> Use proportional reasoning to determine the cost for an individual camper</p> <p><b>Role:</b> State of CT summer camp coordinator</p> <p><b>Audience:</b> Camp program leaders</p> <p><b>Scenario:</b> To save money on camp expenses you have negotiated bulk purchases on necessities such as food, craft supplies and cleaning supplies. You also know about how much income you need to cover salaries and advertising. Now you must use this</p>

with the best design for a juice box carton, use comparisons to defend the best design, and write a statement defending one of the designs. They need to communicate which design will cost the least to make.

**Product:** Sketch a design of two different carton's net, comparison table and a recommendation statement.

**Standard:** A rubric will assess the designs, the comparison table and the recommendation statement.

**Differentiated Version of Task:**

- students can be given steps to follow to complete the task
- students can give just one solution to the problem
- the students can be given an outline for the persuasive writing.
- students can be given a similar solution to follow as a guide.
- the students will sketch only one design.

**OTHER EVIDENCE**

- Supplemental materials
- Periodic quizzes, exit questions, and verbal assessments
- Journal entries / written explanations with numerical and pictorial representations
- Student self-assessments
- Notebook checks

of a game and write a report about the game. The report will include probability of winning the game, predicted amount collected, and expected payout per game and why the game should be chosen.

**Standard:** A rubric employs a point scale for two separate areas of assessment for a total of 22 points. It will require a model of the game that is easy to use and easy to construct, clear rules, and verification that the game will make a profit.(see attached)

**Differentiated Version of Task:**

- The task would be the same  
Some students would be given the following:
- a game would be given, they would then find probabilities and write rules
  - A template for letter.
  - The model could be given
  - Experimental probability could be found after trying the game for several trials
  - The students could discuss differences between their theoretical probability and experimental probability and why in their letter.

**OTHER EVIDENCE**

- Supplemental materials
- Periodic tests and quizzes, exit questions, and verbal assessments
- Journal entries/written explanations with numerical and pictorial representations
- Student self-assessments
- Notebook checks

information to decide how much to charge each camper to cover your expenses.

**Product:** You will produce a table showing how you calculated a per camper charge. You will also explain in writing how you calculated the charge.

**Standard:** The rubric would require a clear explanation and justification of their findings.

**Differentiated Version of Task:**

- the students will be given an outline of samplings that they need to take
- the students can be given steps to follow
- the students can find their own topic to research and set up their own sampling
- the students can work in groups
- the students can show various visual representations of their solution
- the students can create their own problem in addition to the fish (plant life, water, etc)

**OTHER EVIDENCE**

- Supplemental materials
- Periodic quizzes, exit questions, and verbal assessments
- Journal entries / written explanations with numerical and pictorial representations
- Student self-assessments
- Notebook checks

**SKILLS**

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|---|---|--|
| <ul style="list-style-type: none"><li>• Find the volume and the surface area of any prism.</li><li>• Find surface areas of prisms and cylinders</li><li>• Solve problems involving the surface areas and volumes of prisms, cylinders, cones, and spheres.</li><li>• Estimate the volume of an irregular shape by measuring the amount of water displaced by the solid</li><li>• Draw the net for a 3-D object.</li></ul> | <ul style="list-style-type: none"><li>• Identify the difference between independent and dependent events</li><li>• Analyze situations involving either independent or dependent events</li><li>• Determine whether games of chance are fair or unfair</li><li>• Find ways to make unfair games fair</li><li>• Determine whether an outcome is equally likely or unequally likely</li><li>• Compare theoretical and experimental probabilities</li><li>• Use probability to compute expected value</li><li>• Use probability analysis to help make decisions</li><li>• Use area model to represent the probability to two or more dependent events</li><li>• Use area models and the concept of expected value to solve probability problems</li></ul> | <ul style="list-style-type: none"><li>• Determine unit rates</li><li>• Interpret ratios from numbers given or implied</li><li>• Represent data in tables and graphs</li><li>• Find a missing value in a proportion</li><li>• Apply proportional reasoning to estimate population counts</li><li>• Use several ways to make comparisons</li></ul> |
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**Southington Public Schools  
Curriculum Map**

**Subject:** Math

**Grade:** 7

UNIT TITLE	Transformations	Introduction to Algebra	
<b>CONTENT</b>	<ul style="list-style-type: none"> <li>• Identify similar figures by comparing corresponding parts</li> <li>• Use scale factors and ratios to describe relationships among the side lengths of similar figures</li> </ul>	<ul style="list-style-type: none"> <li>• Recognize problem situations in which two or more variables have a linear relationship to each other</li> <li>• Construct tables, graphs, and symbolic equations that express linear relationships</li> <li>• Understand the connections between linear equations and patterns in the tables and graphs of those relations-rate of change, slope, and y-intercept</li> <li>• Solve linear equations</li> </ul>	
<b>STATE STANDARDS</b>	<p>6.3.2.a Construct similar polygons on coordinate grids.            (1) Explore similarity of polygons as a result of dilations (a reduction or enlargement) and their effects on their measurements.            7.3.1.a The students will describe and classify polygons according to their transformational properties.            (1) Identify which classes of polygons have line and/or rotational symmetry.            (2) Use rectangular grids to represent polygons and perform transformations (translations, rotations, reflections, and dilations) on those polygons.            (3) Describe the effect of transformations on polygons with line and/or rotational symmetry.            7.3.3.a. Solve geometric and measurement problems through the use of a variety of tools, techniques and strategies.            (1) Use estimation and measurement strategies to solve problems involving the areas of irregular polygons and volumes of irregular solids.</p>	<p>6.1.1.a identify relationships and make generalizations through the use of patterns.            (1) Describe, analyze, and extend numeric, geometric and statistical patterns and use them to identify trends and justify predictions.            6.1.2.a represent and analyze mathematical relationships with the help of tables, graphs, equations, and inequalities            (1) Determine the nature of changes in linear relationships using graphs, tables, and equations.            (2) Represent numerical and contextual situations with algebraic expressions, equations and inequalities.            6.1.3.a Solve real-world problems using algebraic methods.            (1) Use variables as placeholders, to denote a pattern, to write a formula and to represent a function or relation.            (2) Evaluate algebraic expressions and formulas using substitution.            7.1.3.b Maintain equivalence in equations to determine solutions.            (1) Model and solve one-step and two-step linear equations using a variety of methods.</p>	

ASSESSMENT	<u>PERFORMANCE TASK</u>	<u>PERFORMANCE TASK</u>	<u>PERFORMANCE TASK</u>
	<p><b>Goal:</b> Use the properties of geometric shapes and the coordinate grid to transform and also enlarge polygons. Find and compare the areas of the two figures using ratios.</p> <p><b>Role:</b> Graphic Designer</p> <p><b>Audience:</b> Microsoft Corporation</p> <p><b>Scenario:</b> You are a designer comparing two floor plans of similar rectangles representing bedrooms. Using scale factor - determine the cost of carpeting the room with the unknown dimensions.</p> <p><b>Product:</b> Using scale factor compare the relationship of area and create a rule for similar figures.</p> <p><b>Standards:</b> The assessment would require correct drawings. The student will justify the similarity of these two rooms using area, perimeter, and ratios.</p> <p><b><u>OTHER EVIDENCE</u></b></p> <ul style="list-style-type: none"> <li>• Supplemental Materials</li> <li>• Coordinate grid drawings</li> <li>• Periodic quizzes, exit questions, and verbal assessments</li> <li>• Journal entries/ written explanations with numerical and pictorial representations</li> <li>• Student self-assessments</li> </ul>	<p><b>Goal:</b> To represent mathematical situations as an equation, graph and predict amounts of songs purchased.</p> <p><b>Role:</b> You want to buy songs for your new MP3 player.</p> <p><b>Audience:</b> Your parents</p> <p><b>Scenario:</b> You have saved enough money to purchase an MP3 player. You have only a few songs to play on it and you would like to purchase some more (but you don't have any more money). Your parents made you research some websites and you found three different places you could buy songs. You now need to convince your parents on which website would be the best.</p> <p><b>Product:</b> You must make a table, write an equation and graph each website offer on one graph. You must predict how much it would cost for 250 songs. You must then write a persuasive letter to your parents stating which one would be the best.</p> <p><b>Standards:</b> The performance task would require correct tables, equations, graphs showing student work and a clear organization of information.</p> <p><b>Differentiated Version of Task:</b> The task would be the same Some students could be given any of the following:</p> <ul style="list-style-type: none"> <li>• only two websites to analyze</li> <li>• a smaller amount to predict</li> <li>• tables already set up (blank template)</li> <li>• graphs already set up (blank template)</li> </ul> <p><b><u>OTHER EVIDENCE</u></b></p> <ul style="list-style-type: none"> <li>• Supplemental Materials</li> <li>• Graphs and models</li> <li>• Periodic quizzes, exit questions, and verbal assessments</li> <li>• journal entries/ written explanations with numerical and pictorial representations</li> <li>• student self-assessments</li> <li>• notebook checks</li> </ul>	<p><b><u>OTHER EVIDENCE</u></b></p>



	<ul style="list-style-type: none"> <li>• Notebook checks</li> </ul>		
<b>SKILLS</b>	<ul style="list-style-type: none"> <li>• enlarge and reduce figures</li> <li>• identify similar and distorted figure</li> <li>• use a coordinate grid</li> <li>• measure using a metric and customary ruler</li> <li>• draw or construct counterexamples to explore similarity transformations</li> </ul>	<ul style="list-style-type: none"> <li>• search for patterns of change that show relationships among variables</li> <li>• select an appropriate range of values for the variables</li> <li>• create tables, graphs, and simple symbolic rules that describe patterns of change</li> <li>• make decisions using tables, graphs, and rules</li> </ul>	