MATH - Grade 6: Numerical and Proportional Reasoning
Whole numbers, fractions, decimals and integers can be modeled on number lines, scales, and the coordinate plane and used to solve problems.


Locate, order and compare whole numbers and integers on number lines, scales and the coordinate grid.
Use absolute value to represent distance between two points on a number line.
Choose appropriate linear, area and set models and pictures of fractions, decimals, mixed numbers, and improper fractions to locate, label, order, compare, round, and estimate values on number lines, coordinate grids, scales and measuring tools.
Explore magnitude of decimal values by comparing 0.1 and 0.01 more and less than a given number
Use estimation to predict reasonable answers and recognize and explain when an estimate will be more or less than an exact answer.
Appropriate computational strategies facilitate problem solving

| $\checkmark$ | $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |  | $\checkmark$ |  | Estimate and use a variety of computational strategies (mental computation, paper-and-pencil, and calculator) to add, subtract, multiply and divide multi-digit numbers in the context of multi-step word and practical problems. |
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|  |  |  |  |  |  |  |  |  |  |  | Use factors of composite numbers, multiples of 10, 100 and 1000 and divisibility rules to estimate products and missing factors. |
|  |  |  |  |  |  |  |  |  |  |  | Choose, construct and use a variety of models and pictures to estimate and demonstrate addition and subtraction of fractions, decimals and mixed numbers, and relate the models to the use of equivalent forms and common denominators. |
|  |  |  |  |  |  |  |  |  |  |  | Estimate and use calculators to add, subtract and multiply fractions and decimals. |
| $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ |  |  |  |  |  | Create and solve a variety of problems involving fractions, decimals, mixed numbers, money and simple percents. <br> Explore place value patterns when multiplying and dividing decimals by $10,100,1000$ and multiples of 10 . |
| Place value patterns may be expressed using exponents to write powers of ten. |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | Use models, number patterns and common factors to rewrite a rational number in its equivalent fraction, decimal, ratio and percent forms and as powers of ten. |
|  |  |  |  |  |  |  |  |  |  |  | Compare large numbers using expanded forms and powers of ten. |
|  |  |  |  |  |  |  |  |  |  |  | Develop, describe and use a variety of ways to estimate and calculate with large numbers and connect the strategies to powers of ten. |
| The division interpretation of fractions may be used to write equivalent decimal forms. |  |  |  |  |  |  |  |  |  |  | Use models and common factors to identify equivalent fractions and decimals. Use models to explore the definition of division with decimals, fractions and mixed numbers. Write and round division problems in fraction form to estimate an answer to a division problem. |
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| With fractions and decimals, products or quotients may be larger or smaller than either factor. |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | Construct and use models and the distributive property to estimate reasonable answers and multiply fractions, decimals, mixed numbers and percents. |
|  |  |  |  |  |  |  |  |  |  |  | Recognize that multiplication by a unit fraction is equivalent to dividing by the fraction's denominator. |
|  |  |  |  |  |  |  |  |  |  |  | Interpret finding a fractional part of a set as a two-step division and multiplication problem. <br> Use models, number patterns and the distributive property to estimate and find the percent of an amount. Use benchmarks and number patterns to estimate and find percents. |
| Percent is an expression of frequency in terms of parts per hundred |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |
| Ratios and rates may be used to compare quantities |  |  |  |  |  |  |  |  |  |  | Use ratios and proportions to calculate simple rate conversions. |
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|  |  | $\checkmark$ | $\sqrt{ }$ |  |  |  |  |  |  |  | Build models of equivalent ratios and use proportions to solve problems. (For ex., scale drawings, similar polygons, equivalent mixtures, probability and unit rates.) |

## MATH - Grade 6: Algebaic Reasoning

Relationships that are expressed in words may be translated into algebraic expressions, equations or inequalities.

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Explore using variables as placeholders, to denote a pattern, to write a formula and to represent a function or relation.
Explore how codes are used to communicate information.
Mathematical relationships may be represented and analyzed with the help of tables, graphs, equations and inequalities


Use substitution to evaluate algebraic expressions and formulas
Describe, extend and analyze numeric, geometric and statistical patterns and use them to identify trends and justify predictions.
dentify linear functions from tables, graphs or equations and use graphs to analyze the nature of changes in linear relationships
Simple one-step equations can be solved using informal methods. Solver simple linear equations using materials that model equivalence such as a balance or guess-and-check
Solve simple linear equations using order of operations and algebraic properties.
When there is a relationship between two variables, the rate of change may be constant or varying
The metric system of measurement is based on powers of ten and ratios where multiples of
reate and use tables, graphs, words, equations and inequalities to represent, analyze and describe relationships, with constant and varying rates of change.
ne menc system of measurement is based on powers of ten and ratios where multiples of ten underlie unit conversions.
Explore the different ratios used to convert between units of length, area and volume in the customary system. Recognize and use powers of ten as conversion ratios in the metric system.
Triangles and some combinations of polygons are more stable than other polygons under stress.

Explore similarity of polygons and the effect of dilations (a reduction or enlargement) on changes of perimeter and area
use the relationships of sides and angles to classify sets and subsets of polygons.
Estimate and measure angles based on rotation about a point. Locate points on a circular coordinate system. Build and use angle measurement tools such as: circular protractor, angle ruler, and goniometer. rectangle.

Use the rectangle as a basic shape to model and develop formulas for the area of triangles, parallelograms, trapezoids and circles. Explore symmetry on rectangular and circular coordinate grids.
Explore the relationship of radius, diameter, circumference and area of the circle. Approximate the value of pi.
Problems involving measurement can be solved through the use of appropriate tools, techniques and strategies



## MATH - Grade 6: Working with Data: Probability and Statistics

Sets of data can be displayed and compared using various systematic or graphical representations.



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dentify the effect the number of trials has on predicting outcomes over the long run.

| Probability can be expressed in various forms. |
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| Express probabilities as fractions, ratios, decimals and percents. |  |  |  |  |  |  |  |  |  |

## SCIENCE - Grade 6: Core Scientific Inquiry, Literacy and Numeracy

Materials can be classified as pure substances or mixtures, depending on their chemical and physical properties.


Describe the properties of common elements such as oxygen, hydrogen, carbon, iron and aluminum.
Describe how the properties of simple compounds, such as water and table salt, are different from the properties of the elements of which they are made. Explain how mixtures can be separated by using the properties of the substances from which they are made, such as particle size, density, solubility and boiling pt.
An ecosystem is composed of all the populations that are living in a certain space and the physical factors with which they interact.


Describe how abiotic factors such as temperature, water and sunlight affect plants' ability to create their own food through photosynthesis. Explain how populations are affected by predator-prey relationships.
Describe common food webs in different Connecticut ecosystems.


Describe the effect of heating on the movement of molecules in solids, liquids and gases
Explain how local weather conditions are related to the temperature, pressure and water content of the atmosphere and the proximity to a large body of water Explain how the uneven heating of the Earth's surface causes winds and affects the seasons.
Water moving across and through earth materials carries with it the products of human activities.

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| $\boldsymbol{J}$ | Explain the role of septic and sewage systems on the quality of surface and ground water sources. |  |  |  |  |  |  |  |  |  |  |

## TECH ED - Grades 5-8 - Economics

Students will understand the link between technology and the economy, and recognize that link as the force behind societal emergence and evolution.

| $\checkmark$ |  | $\checkmark$ | $\checkmark$ |  | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |  | $\checkmark$ | Describe how societies are organized to produce and distribute goods and services in a structured manner. |
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| $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ |  | Describe how society uses resources and distributes its goods and services. |
|  | $\sqrt{ }$ | $\sqrt{ }$ |  |  | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ |  |  |  | Describe how a business produces profit. |
|  |  | $\sqrt{ }$ |  |  | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ |  |  |  | Describe the major economic and political systems in relation to technological activity. |


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Identify three types of businesses.
Describe free enterprise
Analyze a product for its ability to satisfy consumer demands.
develop skills in making wise consumer decisions.
TECH ED - Grades 5-8 - Technological Impact
Students will understand the impact that technology has on the social, cultural and environmental aspects of their lives.

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Explain how technology has expected and unexpected effects.
Explore personal, societal, economic and environmental effects of tectnological systems.
race the historical development of at least one technology, identifying its effects and hypothesizing about its future identify the social and economic impacts of automation and computer-controlled processing
Describe the universal input, process, output, feedback (IPOF) systems model
Develop criteria for evaluating technology
dentify and describe how individual technological innovations may be combined to create new technologies.
Awareness

| $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | Describe how technological development affects careers and occupation |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Demonstrate awareness of changes in job requirements over time. |
| $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | Describe strategies for assuming responsibility. |
| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | Develop personal responsibility and accountability in the workplace. |
| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Define and discuss personal and professional ethics. |
| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | Discuss coping strategies for change. |
| $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | Identify expectations in the workplace. |
| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | Define and discuss the concept of "work ethic." |
| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | Explore career options. |
| $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | Define and discuss "career path." |

TECH ED - Grades 5-8 - Problem Solving/Research \& Development
Students will recognize technology as the result of a creative act, and will be able to apply disciplined problem-solving strategies to enhance

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Define decision-making, research and invention.
discuss how technological systems have been used to solve human problems.
Select and apply a general problem-solving model in a laboratory setting.
dentify research methods, materials and techniques.
pply cooperative techniques while engaged in group problem-solving activities.
Engage in an activity that requires creativity.
escribe and apply the processes used to make decisions,
Apply appropriate and effective questioning techniques.
vol
fop, test and modify a design idea through experimentation.
Develop a sor innovation

## TECH ED - Grades 5-8 - Leadership

Students will identify and develop leadership attributes and apply them in team situations.

|  |  |  |  |  |  |  |  |  |  |  | Create a simple flowchart of their daily activities. |
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| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Engage in presentation activities. |
| $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Identify the elements of interpersonal communication. |
| $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Identify and demonstrate organizational skills. |
| $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Explore different roles while working cooperatively and effectively in team situations. |
| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Demonstrate strategies for effectively managing time. |
| $\sqrt{ }$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | Develop organizational skills through practical experiences. |
| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Explore different roles within a team environment. |

[^0]Students will know the origins, properties and processing techniques associated with the material building blocks of technology.


Identify and describe a group of new and recycled materials used in technological systems.
Differentiate between primary and secondary raw materials.
Explore methods used to convert raw and recycled materials into usable products.
Demonstrate the appropriate selection and safe operation of basic hand and power tools.
Use manual and electronic measuring devices accurately.
Explore the principles of manual material-processing techniques.
Describe how products are manufactured.
Demonstrate a working knowledge of the layout, shaping, smoothing, assembly and finishing techniques used to produce a product.
Explore the principles of computer-controlled processing techniques.
Produce simple products from a variety of materials, using manual and computer controlled devices.
TECH ED - Grades 5-8 - Communication Systems
Students will understand and be able to effectively apply physical, graphic and electronic communications techniques in processing, transmitting, receiving and organizing information.


Identify and give examples of integrated technologies.
Identify the elements of interpersonal communication.
dentify the elements of mass communications.
Acquire technology based information and apply it in classroom and laboratory situations.
Explore and explain the integration of communication technologies into transportation and production systems.
Apply techniques of interpersonal and mass communication through activities such as sketching, CAD, photography, and video.
Evaluate and select appropriate methods of communication for a given problem or situation.

## TECH ED - Grades 5-8 Production Systems

Students will understand and be able to demonstrate the methods involved in turning raw materials into usable products.

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Describe how products are manufactured using the methods of single craftsman, line and mass, and automated-robotics manufacturing.
Identify and describe the tools and methods used in manufacturing products.
Identify the characteristics of sub- and superstructures
identify and describe the tools, materials, and methods used in constructing sub- and superstructures.
Design, construct and test models of shelters and other structures.
Produce a product using a simple production sequence: layout, shaping, smoothing, assembly, and finishing techniques.

## TECH ED - Grades 5-8 - Transportation Systems

Students will understand transportation systems and the environments used to move goods and people, and the subsystems common to each.

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diferentiate between vehicular and stationary transportation systems.
Differentiate between fixed and random-route land transportation systems.
Describe and be able to identify the trans. subsystems of body/frame, propulsion, suspension, control, guidance and support in a variety of transportation devices
Explore the characteristics of lighter than air and heavier than air atmospheric transportation systems.
Apply the concept of transportation subsystems while solving transportation problems.
Entify and experiment with devices used to protect product and personnel in transportation systems.
Explore, build and experiment with model marine, space, land and airportation systems.
TECH ED - Grades 5-8 - Enterprise
Students will demonstrate the techniques of enterprise and how they relate to product and service production, economics, human and material resources, and technology.


Describe the evolution of techological enterprise
Discuss the influence of enterprise on culture, society, and the environment.

Explore the career possibilities and responsibilities in enterprise.
dentify and explore a variety of organizational structures, describing the advantages and disadvantages of each
Explore market research and its relationship to satisfying consumer needs.
Develop, distribute and evaluate a customer survey

## TECH ED - Grades 5-8 - Engineering Design

Students will be able to apply the engineering design process to achieve desired outcomes across all technology content areas.

| $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | Identify the elements of design. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ | Discuss the differences between problem soving and engineering design strategies |
| $\sqrt{ }$ | $\sqrt{ }$ | $\checkmark$ | $\checkmark$ | $\sqrt{ }$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | Explain the role of creativity in the engineering design |




[^0]:    TECH ED - Grades 5-8 - Materials and Processes

