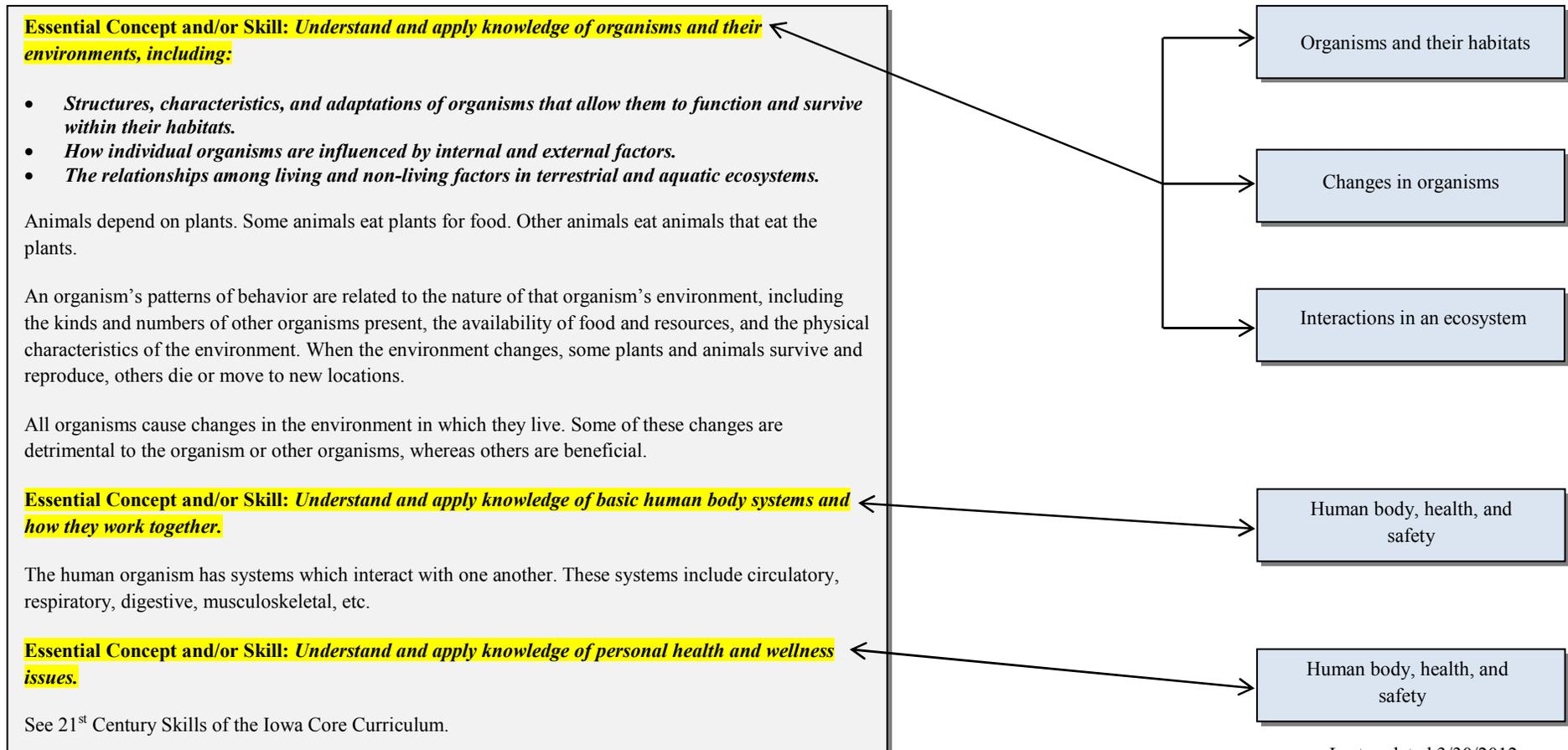
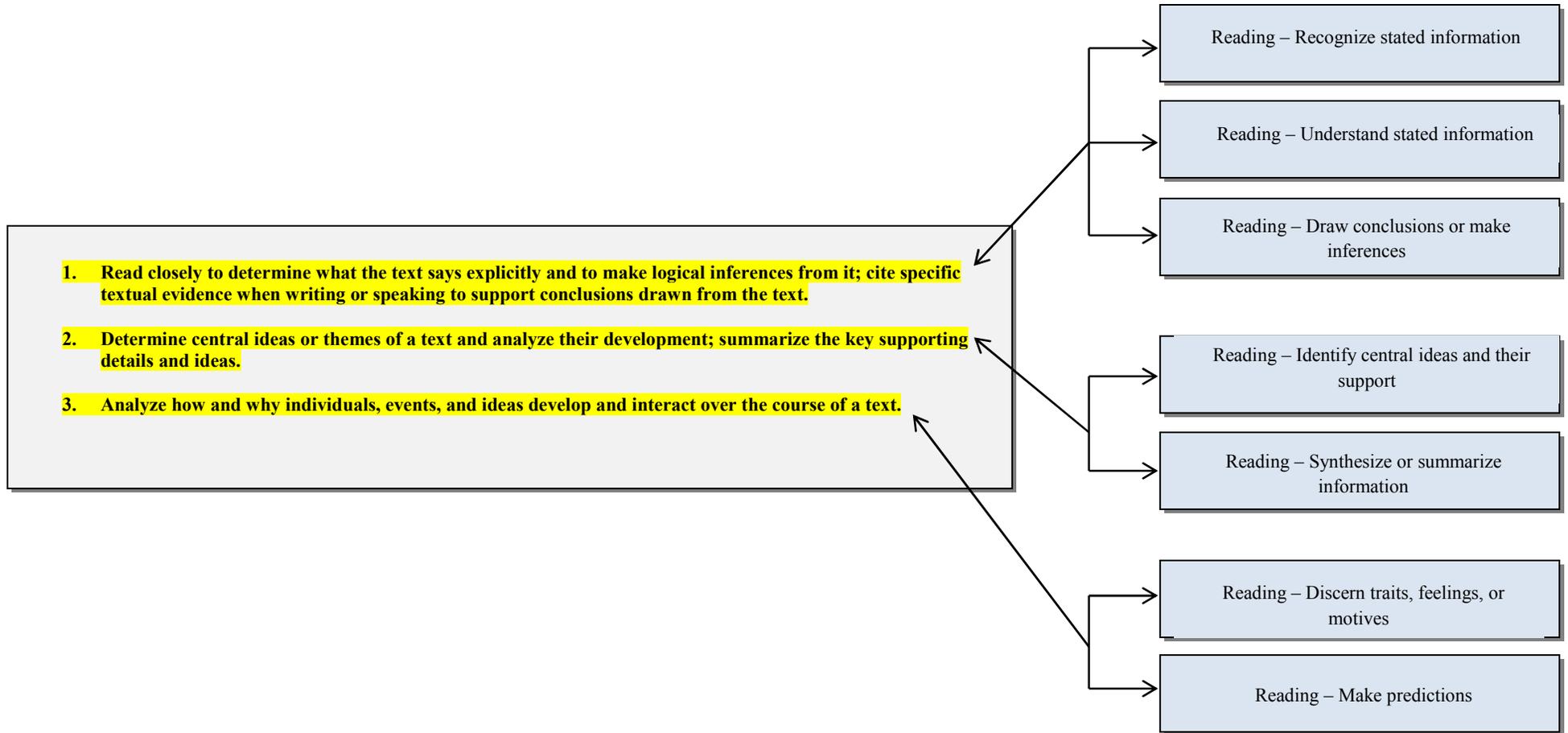


# Alignment between Iowa Core and Iowa Assessments

Construction of the Iowa Assessments involves aligning specifications to the Iowa Core. The following slides illustrate the alignment between skills from the Iowa Core and the Iowa Assessments for 5<sup>th</sup> grade in the areas of English Language Arts, Math, Social Studies, and Science. Below is an example.

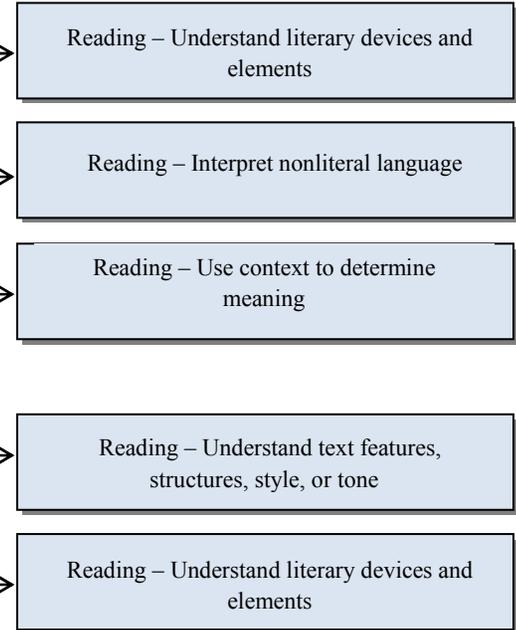


## Reading – Key Ideas and Details



## Reading – Craft and Structure

- 4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- 5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
- 6. Assess how point of view or purpose shapes the content and style of a text.

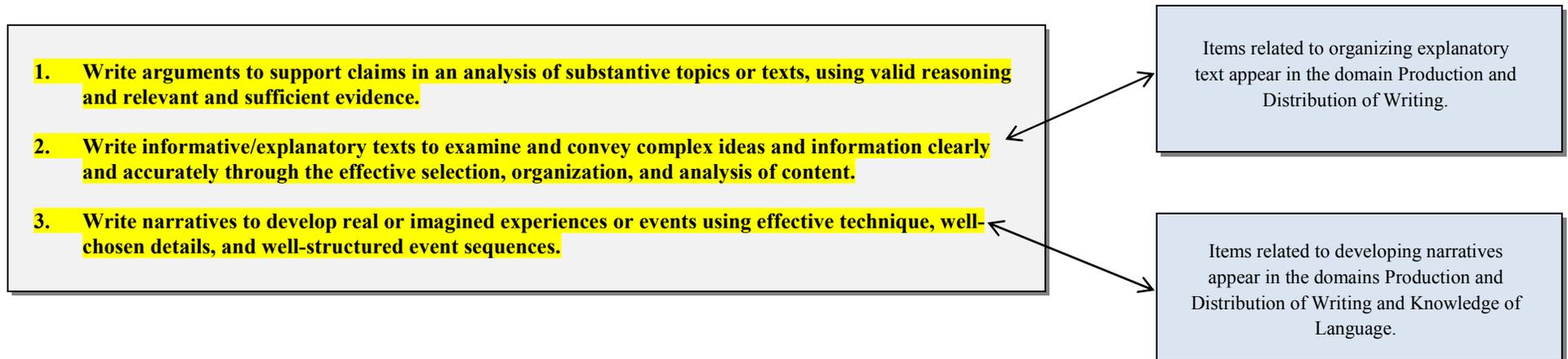


## Reading – Integration of Knowledge and Ideas

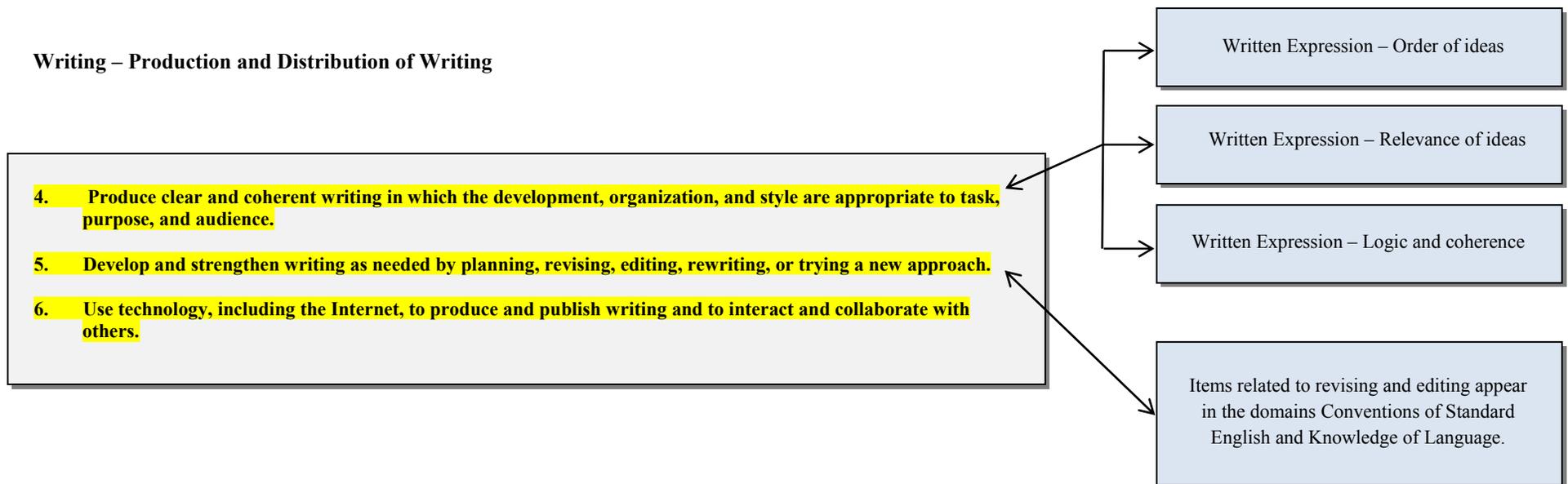
- 7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- 8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
- 9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.



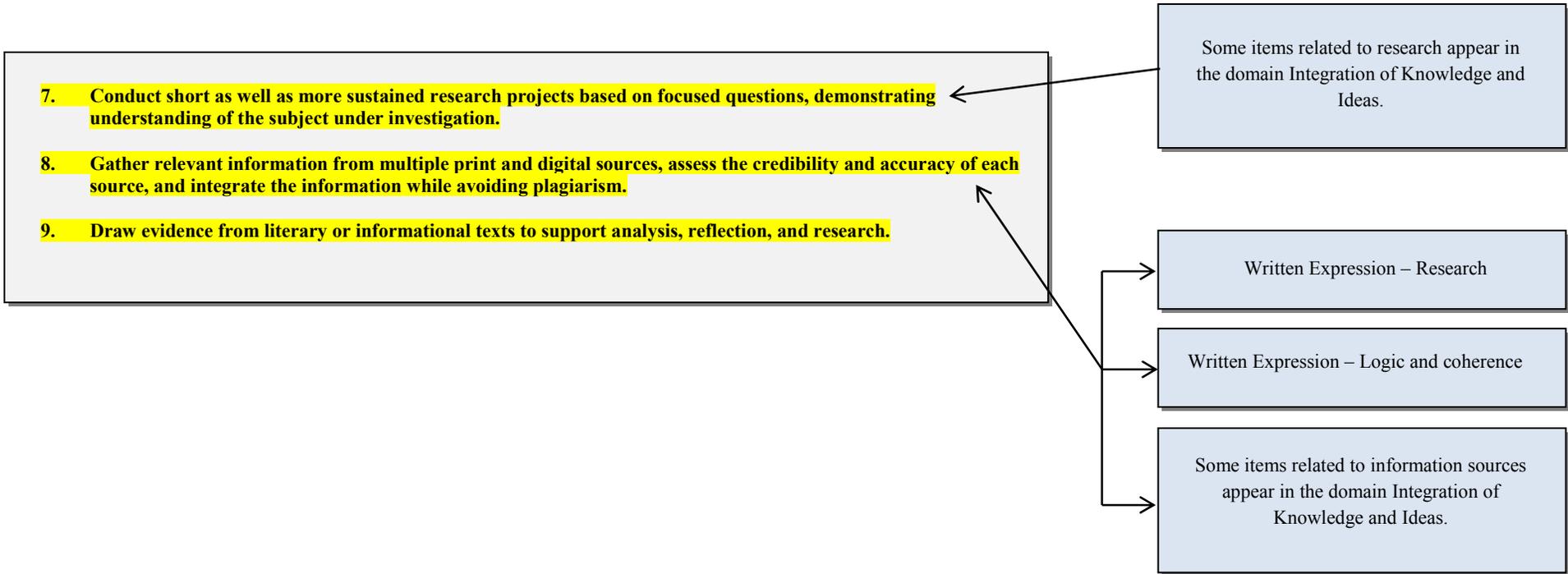
## Writing – Text Types and Purposes



## Writing – Production and Distribution of Writing

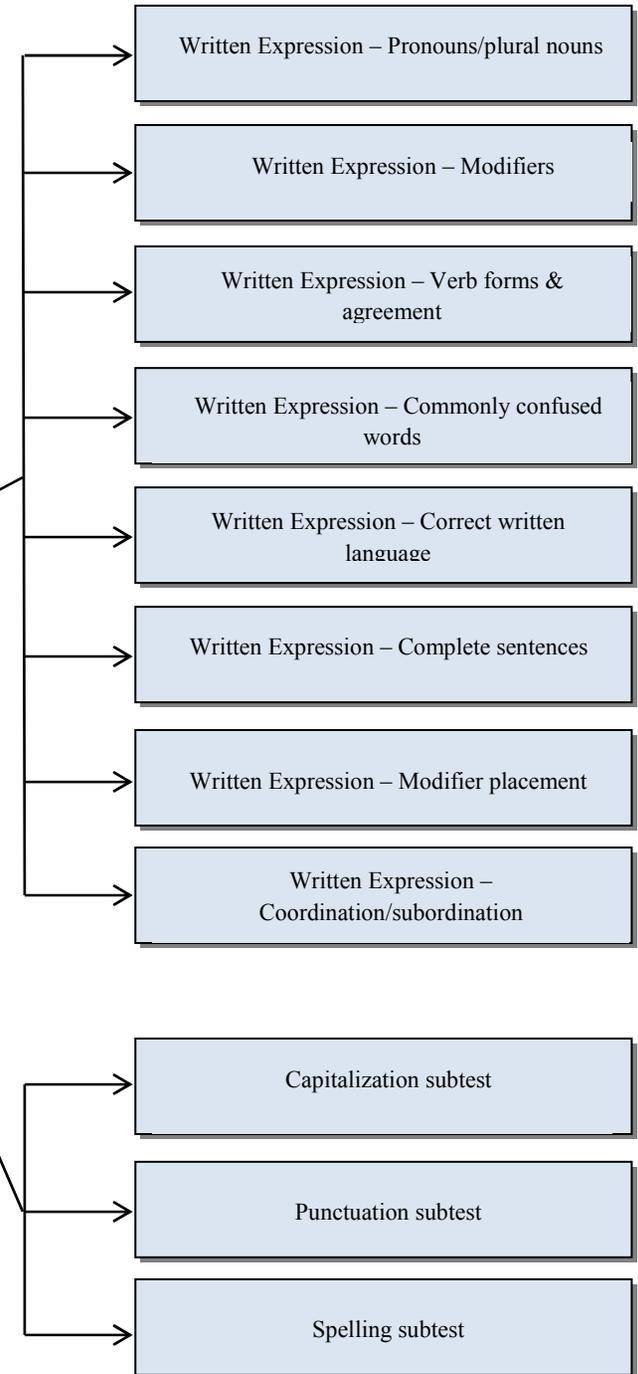


**Writing – Research to Build and Present Knowledge**

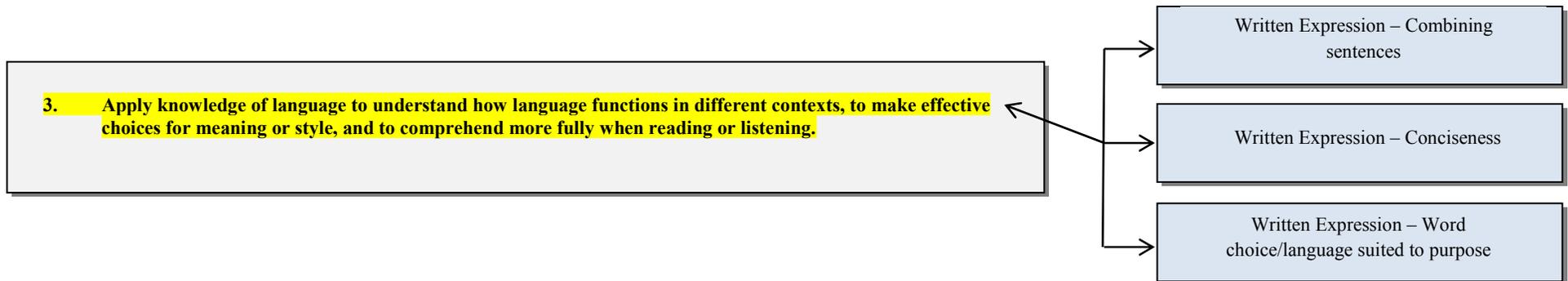


## Language – Conventions of Standard English

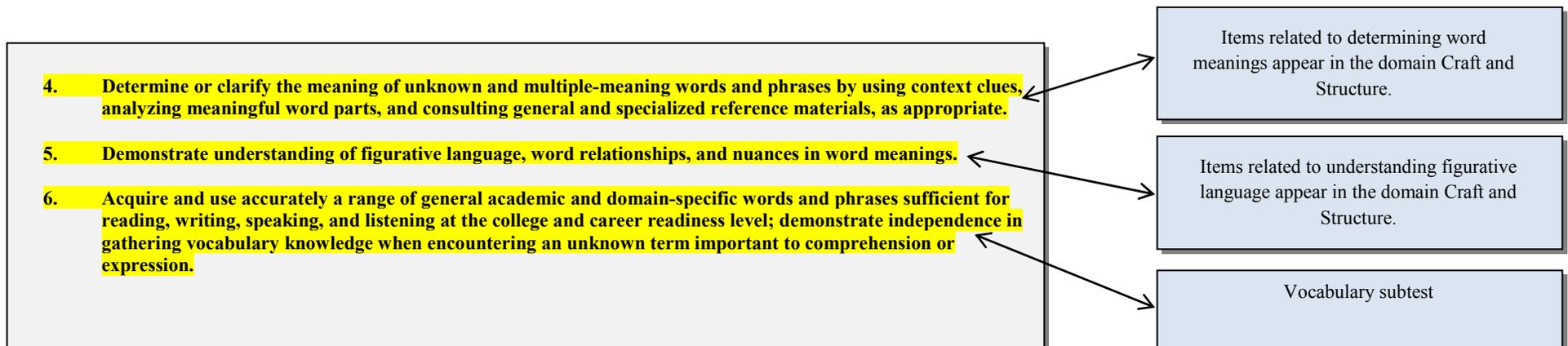
1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.



## Language – Knowledge of Language



## Language – Vocabulary Acquisition and Use



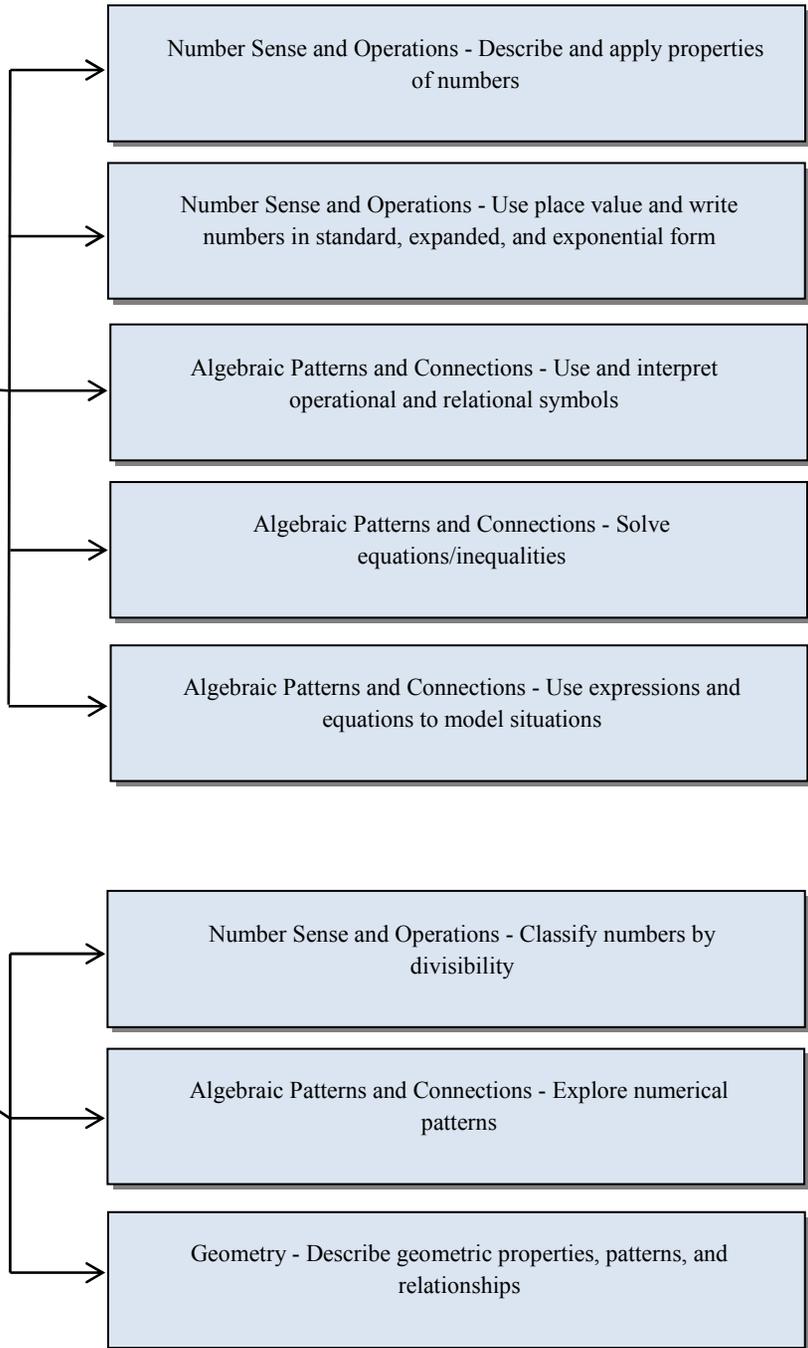
# Operations and Algebraic Thinking

**Write and interpret numerical expressions.**

1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. **(5.OA.1)**
2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as  $2 \times (8 + 7)$ . Recognize that  $3 \times (18932 + 921)$  is three times as large as  $18932 + 921$ , without having to calculate the indicated sum or product.* **(5.OA.2)**

**Analyze patterns and relationships.**

3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.* **(5.OA.3)**



## Number and Operations in Base Ten

### Understand the place value system.

1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and  $1/10$  of what it represents in the place to its left. **(5.NBT.1.)**
2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. **(5.NBT.2.)**
3. Read, write, and compare decimals to thousandths.
  - a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g.,  $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ .
  - b. Compare two decimals to thousandths based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons. **(5.NBT.3.)**
4. Use place value understanding to round decimals to any place. **(5.NBT.4.)**

### Perform operations with multi-digit whole numbers and with decimals to hundredths.

5. Fluently multiply multi-digit whole numbers using the standard algorithm. **(5.NBT.5.)**
6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. **(5.NBT.6.)**
7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. **(5.NBT.7.)**

Number Sense and Operations - Represent, compare, and order numbers

Number Sense and Operations - Demonstrate ways of performing operations

Number Sense and Operations - Use place value and write numbers in standard, expanded, and exponential form

Number Sense and Operations - Estimate and round real numbers

Number Sense and Operations - Classify numbers by divisibility

Number Sense and Operations - Describe and apply properties of numbers

Number Sense and Operations - Demonstrate ways of performing operations

Number Sense and Operations - Estimate and round real numbers

## Number and Operations – Fractions

### Use equivalent fractions as a strategy to add and subtract fractions.

1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example,  $2/3 + 5/4 = 8/12 + 15/12 = 23/12$ . (In general,  $a/b + c/d = (ad + bc)/bd$ .)* **(5.NF.1.)**
2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result  $2/5 + 1/2 = 3/7$ , by observing that  $3/7 < 1/2$ .* **(5.NF.2.)**

### Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

3. Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret  $3/4$  as the result of dividing 3 by 4, noting that  $3/4$  multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size  $3/4$ . If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?* **(5.NF.3.)**
4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
  - a. Interpret the product  $(a/b) \times q$  as a parts of a partition of  $q$  into  $b$  equal parts; equivalently, as the result of a sequence of operations  $a \times q \div b$ . *For example, use a visual fraction model to show  $(2/3) \times 4 = 8/3$ , and create a story context for this equation. Do the same with  $(2/3) \times (4/5) = 8/15$ . (In general,  $(a/b) \times (c/d) = ac/bd$ .)*
  - b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. **(5.NF.4.)**
5. Interpret multiplication as scaling (resizing), by:
  - a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
  - b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence  $a/b = (n \times a)/(n \times b)$  to the effect of multiplying  $a/b$  by 1. **(5.NF.5.)**
6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. **(5.NF.6.)**
7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
  - a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for  $(1/3) \div 4$ , and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that  $(1/3) \div 4 = 1/12$  because  $(1/12) \times 4 = 1/3$ .*
  - b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for  $4 \div (1/5)$ , and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that  $4 \div (1/5) = 20$  because  $20 \times (1/5) = 4$ .*
  - c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share  $1/2$  lb of chocolate equally? How many  $1/3$ -cup servings are in 2 cups of raisins?* **(5.NF.7.)**

Number Sense and Operations - Represent, compare, and order numbers

Number Sense and Operations - Demonstrate ways of performing operations

Number Sense and Operations - Estimate and round real numbers

Number Sense and Operations - Demonstrate ways of performing operations

Number Sense and Operations - Estimate and round real numbers

## Measurement and Data

### Convert like measurement units within a given measurement system.

1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. **(5.MD.1.)**

### Represent and interpret data.

2. Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.* **(5.MD.2.)**

### Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
  - a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
  - b. A solid figure which can be packed without gaps or overlaps using  $n$  unit cubes is said to have a volume of  $n$  cubic units. **(5.MD.3.)**
4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. **(5.MD.4.)**
5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
  - a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
  - b. Apply the formulas  $V = l \times w \times h$  and  $V = b \times h$  for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
  - c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. **(5.MD.5.)**

Measurement - Measure length/distance, time, temperature, weight, mass, and volume

Measurement - Estimate measurements with appropriate precision

Measurement - Identify and use appropriate units of measurement and measurement tools

Data Analysis, Probability, and Statistics - Apply probability concepts and counting rules

Data Analysis, Probability, and Statistics - Understand and apply measures of central tendency and variability

Data Analysis, Probability, and Statistics - Interpret data and make predictions

Data Analysis, Probability, and Statistics - Understand sampling

Geometry - Identify, classify, and compare geometric figures

Geometry - Describe geometric properties, patterns, and relationships

Geometry - Apply concepts of perimeter, area, and volume

Geometry - Estimate geometric measurements

Measurement - Measure length/distance, time, temperature, weight, mass, and volume

Measurement - Estimate measurements with appropriate precision

Measurement - Identify and use appropriate units of measurement and measurement tools

# Geometry

## Graph points on the coordinate plane to solve real-world and mathematical problems.

1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g.,  $x$ -axis and  $x$ -coordinate,  $y$ -axis and  $y$ -coordinate). **(5.G.1.)**
2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. **(5.G.1.)**

## Classify two-dimensional figures into categories based on their properties.

3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.* **(5.G.1.)**
4. Classify two-dimensional figures in a hierarchy based on properties. **(5.G.1.)**

Geometry - Identify, classify, and compare geometric figures

Geometry - Describe geometric properties, patterns, and relationships

Geometry - Apply concepts of perimeter, area, and volume

Geometry - Estimate geometric measurements

Measurement - Measure length/distance, time, temperature, weight, mass, and volume

Measurement - Estimate measurements with appropriate precision

Measurement - Identify and use appropriate units of measurement and measurement tools

Geometry - Identify, classify, and compare geometric figures

Geometry - Describe geometric properties, patterns, and relationships

Geometry - Estimate geometric measurements

**Essential Concept and/or Skill: Understand the role of scarcity and economic trade-offs and how economic conditions impact people's lives.**

- Understand that goods and services are scarce because there are not enough resources to satisfy all of the wants of individuals, governments, and societies
- Understand that consumers buy less of products and services when prices go up and buy more when prices go down.
- Understand that businesses are willing to sell more products and services when prices go up and less when the price goes down.
- Understand the concept of unemployment.
- Understand the importance of work.
- Understand how competition among sellers results in lower costs and higher product quality.

**Essential Concept and/or Skill: Understand the functions of economic institutions.**

- Understand that banks provide money to consumers and serve as the intermediary between savers and borrowers.

**Essential Concept and/or Skill: Understand how governments throughout the world influence economic behavior.**

- Understand that the government pays for goods and services it provides by taxing and borrowing.
- Understand that all societies have developed economic systems and there are advantages and disadvantages to each type of system.
- Understand when consumers buy goods some of the money that goes to the business is used to pay for resources and taxes.

**Essential Concept and/or Skill: Understand factors that create patterns of interdependence in the world economy.**

- Understand that when countries specialize they become more interdependent.
- Understand the impact of increasing economic interdependence in different regions of the world.
- Understand that local goods and services are part of the global economy.
- Understand the concepts of exports and imports.

**Essential Concept and/or Skill: Understand that advancing technologies impact the global economy.**

- Understand that technologies have costs and benefits associated with them.
- Understand that new inventions reflect people's needs and wants; and when these change, technology changes to reflect the new needs and wants.
- Understand that the design process is a series of methodical steps for turning ideas into useful products and systems.
- Understand that the manufacturing process includes designing product, gathering the resources, and producing a finished product.

**Essential Concept and/or Skill: Understand that all economies throughout the world rely upon universal concepts.**

- Understand that there are producers and consumers in all economies.
- Understand supply and demand in various types of economies.
- Understand that production, distribution, exchange, and consumption of goods and services are economic decisions with which all societies and nations must deal.
- Understand how nations throughout the world have joined with one another to promote economic development and growth.
- Understand barriers to trade among people across nations.

Work and workers

Needs, wants, and choices

Economic principles

Economic principles

Needs, wants, and choices

Economic issues and viewpoints

Economic issues and viewpoints

Production and technology

Economic principles

## Geography

**Essential Concept and/or Skill: Understand the use of geographic tools to locate and analyze information about people, places, and environments.**

- Understand political, topographical and historical maps, aerial photos and maps.
- Understand the use of mental maps to organize information about people, places, and environments in a spatial context.
- Understand the concepts of title, legend, cardinal directions, distance, grids.
- Understand the use of data sources, atlases, data bases, grid systems, charts, graphs, and maps to generate, manipulate, and interpret information.
- Understand the spatial elements of point, line, area and volume.
- Understand the representations of major physical and human features on maps and globes.

**Essential Concept and/or Skill: Understand how geographic and human characteristics create culture and define regions.**

- Understand the characteristics of regions--physical and cultural.
- Understand regions change over time and the causes and consequences of these changes.
- Understand ways regional, ethnic, and national cultures influence individuals' daily lives.
- Understand how people from different cultures think about and deal with their physical environment and social conditions.
- Understand language, stories, folktales, music and artistic creations serve as expressions of culture and influence behavior of people.

**Essential Concept and/or Skill: Understand how human factors and the distribution of resources affect the development of society and the movement of populations.**

- Understand causes and effects of human migration.
- Understand reasons for the growth and decline of settlements.
- Understand density and sparcity in terms of human settlement.
- Understand the relationship between population growth and resource use.
- Understand the concepts of renewable and non-renewable resources.
- Understand recycling.
- Understand the relation between economic activities and natural resources in areas.
- 

**Essential Concept and/or Skill: Understand how physical processes and human actions modify the environment and how the environment affects humans.**

- Understand the characteristics of places are shaped by physical and human processes.
- Understand humans interact and adapt to the physical environment.
- Understand ways to monitor science and technology in order to protect the physical environment, individual rights and the common good.
- Understand laws and policies that govern the environment.

Earth's features

People and the environment

People and the environment

People and the environment

People and the environment

# History

## Essential Concept and/or Skill: *Understand historical patterns, periods of time and the relationships among these elements.*

- Understand the similarities and differences between various civilizations within a time period.
- Understand problems, issues, and dilemmas of life in the past and their causes.
- Understand differences in life today compared to life in the past
- Understand causes and effects of events within a time period.

## Essential Concept and/or Skill: *Understand how and why people create, maintain, or change systems of power, authority, and governance.*

- Understand groups and institutions work to meet individual needs and the common good of all.
- Understand that belief systems affect government policies and laws.
- Understand the consequences of governmental decisions.

## Essential Concept and/or Skill: *Understand the role of culture and cultural diffusion on the development and maintenance of societies.*

- Understand ways culture has influenced interactions of various groups.
- Understand ways culture affects decisions of a society, group or individual.
- Understand major historical events and developments that involved interaction among various groups.

## Essential Concept and/or Skill: *Understand the role of individuals and groups within a society as promoters of change or the status quo.*

- Understand roles of important individuals and groups in technological and scientific fields.
- Understand that specific individuals had a great impact on history
- Understand the people, events, problems, and ideas that were significant in creating the history of their state.
- Understand how democratic values have been exemplified by people, events, and symbols.

## Essential Concept and/or Skill: *Understand the effect of economic needs and wants on individual and group decisions.*

- Understands factors that shaped the economic system in the United States.
- Understand that economic activities in the community have changed over time.
- Understand that the types of work local community members do have changed over time.

## Essential Concept and/or Skill: *Understand the effects of geographic factors on historical events.*

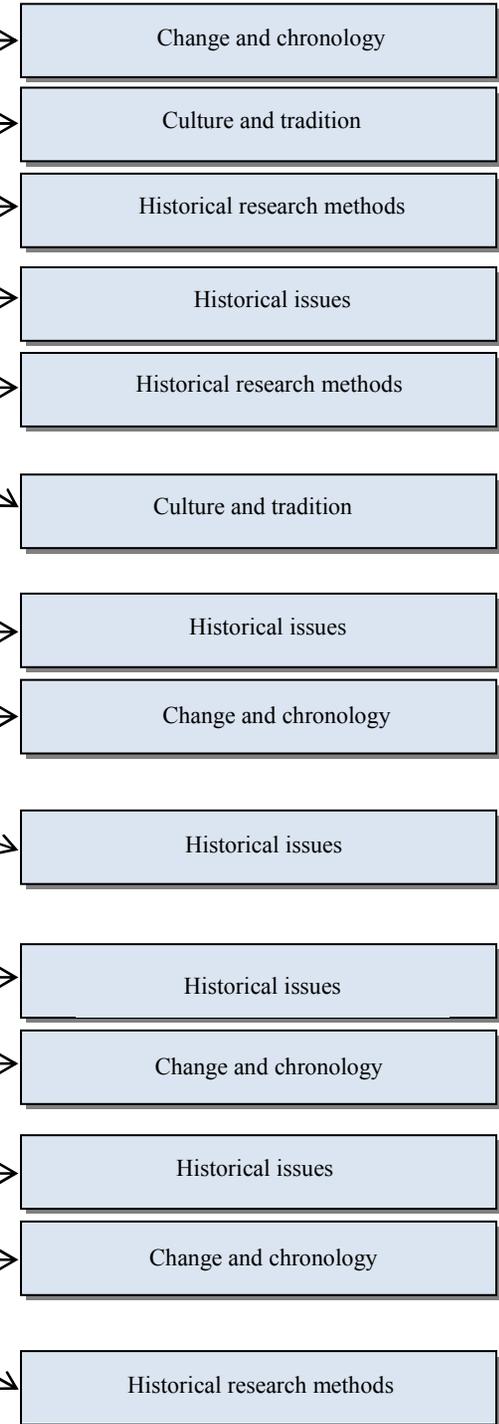
- Understand varying landforms and geographic features and their importance in the development of communities.
- Understand seasons, climate, and weather, environmental change and crises affect social and economic development.
- Understand major land and water routes of explorers.

## Essential Concept and/or Skill: *Understand the role of innovation on the development and interaction of societies.*

- Understand the influence of cultural, scientific, and technological decisions on societies.
- Understand ways science and technology have changed the way people think about the natural world
- Understands that the use of technology in the local community has changed over time.

## Essential Concept and/or Skill: *Understand cause and effect relationships and other historical thinking skills in order to interpret events and issues.*

- Understand processes important to reconstructing and interpreting the past.
- Understand the historical perspective including cause and effect.
- Understand how to view the past in terms of the norms and values of the time.
- Understand interpretation of data in timelines.



## Political Science/Civic Literacy

**Essential Concept and/or Skill: *Understand the rights and responsibilities of each citizen and demonstrate the value of lifelong civic action.***

- Understand what it means to be a citizen.
- Understand why civic responsibility is important and know examples of civic responsibility.
- Understand that Congress passes laws to protect individual rights.
- Understand how people can participate in their government.
- Understand what political leaders do and why leadership is necessary in a democracy.
- Understand opportunities for leadership and public service in the student's own classroom, school, community, state, and the nation.
- Understand the importance of voluntarism as a characteristic of American society.

**Essential Concept and/or Skill: *Understand how the government established by the Constitution embodies the enduring values and principles of democracy and republicanism.***

- Understand the fundamental values and principles of American democracy.
- Understand the difference between power and authority.
- Understand fundamental values and principles of American democracy are expressed in documents such as the Declaration of Independence, the Preamble to the United States Constitution, and the Bill of Rights, as well as in American songs, stories, and speeches.
- Understand the costs and benefits of diversity in American society.

**Essential Concept and/or Skill: *Understand the purpose and function of each of the three branches of government established by the Constitution.***

- Understand that the legislative branch passes laws to protect individual rights.
- Understand that the executive branch carries out and enforces laws to protect individual rights.
- Understand that the judicial branch, headed by the Supreme Court, makes decisions concerning the law that aim to protect individual rights.

**Essential Concept and/or Skill: *Understand the differences among local, state and national government.***

- Understand the roles of local, state and national government and the roles of representative leaders at these levels such as mayor, governor and President.
- Understand major services provided by national, state, and local governments.
- Understand how national, state and local government officials are chosen.

**Essential Concept and/or Skill: *Understand the role of the United States in current world affairs.***

- Understand that the world is divided into many different nations with each one having its own government.
- Understand the major ways nations interact with each other such as trade, diplomacy, cultural contacts, treaties or agreements, and use of military force.
- Understand factors that contribute to cooperation and cause disputes within and among groups and nations.

Rights and responsibilities

Viewpoints and issues

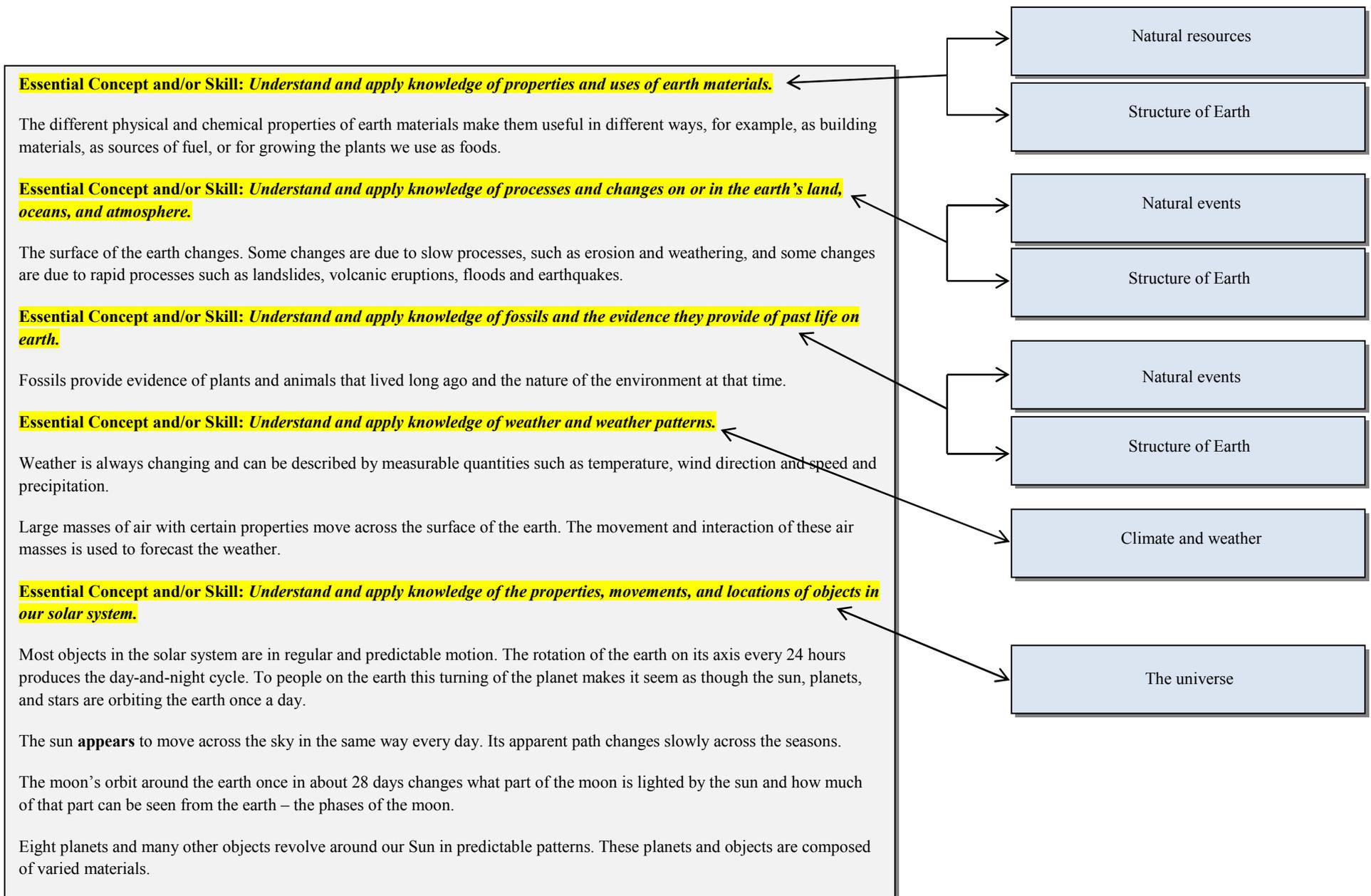
Social structures/government systems

Laws and principles of U.S. government

Laws and principles of U.S. government

Viewpoints and issues

## Earth and Space



## Physical

**Essential Concept and/or Skill: *Understand and apply knowledge of how to describe and identify substances based on characteristic properties.***

It may be necessary to use magnification to observe the component parts of some materials.

A substance has characteristic properties. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties.

The properties of a substance can be measured using tools and technology.

When a new material (compound) is made by chemically combining two or more materials, it has properties that are different from the original materials. For that reason, many different materials can be made from a small number of basic materials.

**Essential Concept and/or Skill: *Understand and apply knowledge of states of matter and changes in states of matter.***

Materials can exist in different states – solid, liquid and gas. Some common materials can be changed from one state to another by heating or cooling.

**Essential Concept and/or Skill: *Understand and apply knowledge of the concept of conservation of mass/matter.***

When something is broken into parts, the parts have the same total mass as the original item.

**Essential Concept and/or Skill: *Understand and apply knowledge of sound, light, electricity, magnetism, and heat.***

Sound is produced when vibrations from objects travel through a medium and are received. Sound can vary in volume. The pitch of a sound can be varied by changing the rate of vibration.

Light travels in a straight line until it strikes an object. Light can be reflected by a mirror, refracted by a lens, or absorbed by an object.

Electricity in circuits can produce light, heat, sound, and magnetic effects. Electricity can only flow through a closed circuit.

Magnets attract and repel each other and certain kinds of other materials.

Heat can be produced in many ways, such as burning, rubbing, or mixing one substance with another. Heat can move from one object to another by conduction.

**Essential Concept and/or Skill: *Understand and apply knowledge of how forces are related to an object's motion.***

The motion of an object can be described by its position, direction of motion, and speed. That motion can be measured and represented on a graph.

Changes in speed or direction of motion are caused by forces. The greater the force, the greater the change in motion. The more massive an object, the less effect a given force will have in changing its motion.

Types and properties of matter

Physical and chemical changes

Types and properties of matter

Physical and chemical changes

Types and properties of matter

Physical and chemical changes

Forms of and changes in energy

Forces and motion

## Life

