

SPECIFIC GRAVITY

Math, Science and English/Language Arts

Grade: 6

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Acceleration Approach

Standard has been accelerated by moving grade level 6 up to the standard used for grade level 8 and 10.

1	2	3	4	5	6	7	8	9	CIM	CRLS/ CAM yes
					→					
					→					

Organizing Overarching Concept (e.g. systems, patterns of change, models, scales)

Patterns of Change and Relationships.

Organizing Higher Order Skills (e.g. Bloom's, Paul's Model of Reasoning)

Paul's Model of Reasoning: Concepts, Evidence, Data, Assumptions

Differentiation Features - Students:

- Fewer tasks assigned to master standard of learning
- Assessed earlier or prior to teaching
- Clustered by higher order thinking
- Added more variables to study
- Required multiple resources
- Sophisticated content stimuli used
- Cross-disciplinary applications made
- Student conducts original research
- Student uses multiple higher-level skills
- Student uses advanced resources

COMMON CURRICULUM GOAL

Math Properties and Relationships

Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Science – Physical Science

Understand structures and properties of matter and changes that occur in the physical world.

Language Arts – Communications

Communicate supported ideas using oral, visual, written and multi-media forms in ways appropriate to topic, context, audience, and purpose.

CONTENT STANDARDS

Science – Matter

Understand structure and nature of properties

GRADE LEVEL STANDARD

Math

6th Grade—Identify, describe, compare and classify polygons by their sides and angles, using appropriate vocabulary. (Assessed on state knowledge and skills test.)

7th Grade—Determine defining properties that characterize classes of triangles including side and angle measurements and their component parts. (Assessed on state knowledge and skills test.)

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Students will write a paper with answers to questions and a data table showing scientific data.

TASK DEMAND**Sample Task Activity**

- Use text or teacher generated assessment to determine ability level and prior knowledge of the periodic table and environmental influences on matter.
- Teacher reviews volume and its characteristics and provides activities to allow students experience and mastery of standards.
- Students will identify, describe, classify, compare, and graph the “specific gravity” of a variety of substances, such as iron gold, silver, lead, mercury, oxygen, hydrogen, dry ice and others depending on resources.
- Students will give oral presentation of findings.
- Students will write answers to the questions to turn in with their graphs.

Note to Teachers: Cross Disciplinary Examples

- **Writing:**
 - Topic – Why some elements are better/worse for certain types of construction, in certain geographic regions.
 - Persuasion - Convince a company to (or not to) build in a certain location. Compare and contrast different building materials in different environments.
 - Speaking – Oral presentation of findings.
- **Math:**
 - Prepare bid for construction.
 - Calculate predictions of change based on environmental influences.
 - Based on mathematical models compare and contrast man-made materials.

7th Grade— Recognize and represent quadrilaterals and their components (e.g., altitudes, medians, diagonals, bisectors).

10th Grade—Recognize and represent three-dimensional figures and their components.

BENCHMARKS**Science**

8th Grade—Compare properties of specific substances.

10th Grade—Describe properties of elements and their relationship to the periodic table.

Language Arts – Communication

7th Grade—Present information to convey a clear purpose and to engage the audience.

7th Grade—Arrange supporting details, reasons, descriptions, and example effectively and persuasively.

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- What is “specific gravity”?
- What real life applications might you use this information for? (Example: structural engineering)
- How is “specific gravity” determined?
- What type of graphing model lends itself best to presenting “specific gravity” information in comparing data on elements on the Periodic Table?
- What implications are made or what situations in real life might benefit from this knowledge? (Example: human safety considerations)

Implementation Time

3 to 4 weeks

Resources

- Samples of elements such as iron, gold, silver, lead, mercury, oxygen, hydrogen, dry ice, and others
- “Specific gravity” measurement tools
- Periodic Table of elements <http://www.webelements.com/webelements/index.html>
- Science text
- Calculators

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Scoring Guide SCIENCE	6 Exemplary	5 Proficient	4 Strong	3 Developing	2 Emerging	1 Beginning
Students will be able to: Define “specific gravity.”						
Identify which style of graphing best represents differences in “specific gravity.”						
Make assumptions/predictions about “specific gravity” based on the Periodic Table.						

Scoring Guide MATH	6 Exemplary	5 Proficient	4 Strong	3 Developing	2 Emerging	1 Beginning
Students will be able to: Identify, describe, compare, and classify polygons by their sides and angles.						
Define properties that characterize classes of triangles-sides, angle measurements, and their component parts.						
Recognize and represent quadrilaterals and their components (altitudes, medians, diagonals, bisectors).						
Recognize and represent three dimensional figures and their components.						

Scoring Guide: ENGLISH/LANGUAGE ARTS/COMMUNICATIONS	6 Exemplary	5 Proficient	4 Strong	3 Developing	2 Emerging	1 Beginning
Student will be able to: See ODE Speaking Scoring Guide in Appendix						

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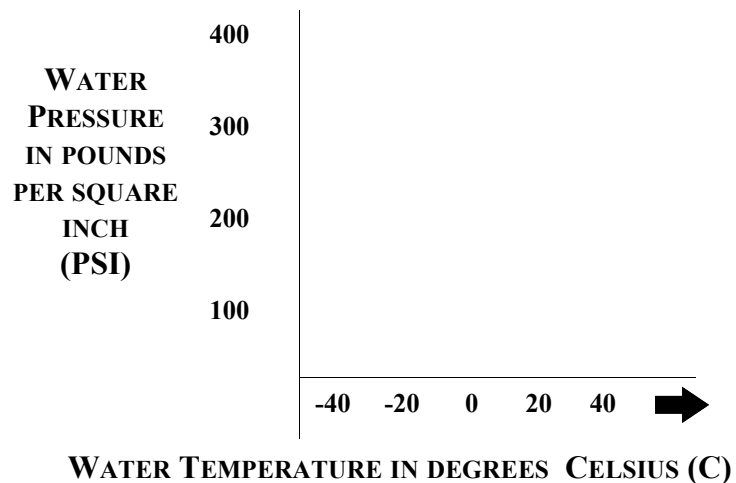
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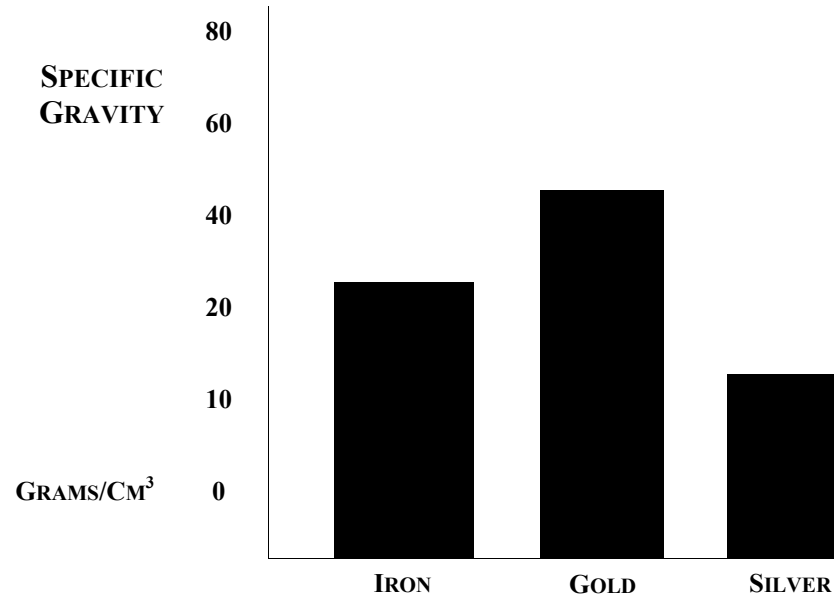
SAMPLE DATA TABLE FORMAT WITH GRAPHING

ENVIRONMENTAL INFLUENCES ON IRON (Fe)

<http://www.webelements.com/webelements/elements/text/Fe/key.html>



COMPARISON OF DIFFERENT ELEMENTS USING A BAR GUIDE



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TAG NEEDS ADDRESSED

<p>INTELLECTUALLY GIFTED</p> <p><input type="checkbox"/> Advanced Critical Reasoning</p> <p><input type="checkbox"/> Scholarly Interaction</p> <p><input checked="" type="checkbox"/> Continuous Progress for Level and Rate*</p> <p><input checked="" type="checkbox"/> Challenging Resources</p> <p><input type="checkbox"/> Effecting Change</p> <p><input checked="" type="checkbox"/> Decision Making; Ethical Use of Influence</p> <p><input type="checkbox"/> Leadership Training/Career</p> <p><input type="checkbox"/> Realistic Goal Setting</p> <p><input type="checkbox"/> Regular Interaction with Intellectual Peers</p> <p><input type="checkbox"/> Social-Emotional Issues; Support; Coping Strategies</p> <p><input type="checkbox"/> Advanced Academic Planning</p> <p><input type="checkbox"/> Opportunity for Competition/Failures/Successes</p> <p><input checked="" type="checkbox"/> Creative Problem Solving with Real Problems/ Audiences</p> <p><input type="checkbox"/> Pursuit of Advanced Level Research</p> <p><input type="checkbox"/> Advanced Vocabulary Development</p>	<p>ADVANCED SCIENCE KNOWLEDGE/SKILLS</p> <p><input checked="" type="checkbox"/> Advanced Critical Thinking in Science</p> <p><input type="checkbox"/> Continuous Progress/Level and Rate* in Science</p> <p><input type="checkbox"/> Challenging Science Resources</p> <p><input checked="" type="checkbox"/> Creative Problem Solving Strategies in Science</p> <p><input type="checkbox"/> Science Advanced Vocabulary Development</p> <p><input type="checkbox"/> Leadership Training/ Career</p> <p><input checked="" type="checkbox"/> Decision Making; Ethical Use of Influence</p> <p><input type="checkbox"/> Regular Interaction with Talented Science Peer</p> <p><input type="checkbox"/> Realistic Goal Setting</p> <p><input type="checkbox"/> Opportunity for Competition/Failures/Successes</p> <p><input type="checkbox"/> Advanced Academic Planning in Science</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>* Rate requires monitoring to ensure that the student was allowed to move ahead upon acquiring concepts.</p> </div>	<p>ACADEMICALLY TALENTED MATH</p> <p><input type="checkbox"/> Advanced Critical Thinking in Math</p> <p><input checked="" type="checkbox"/> Continuous Progress/Level and Rate in Math</p> <p><input type="checkbox"/> Challenging Math Resources</p> <p><input checked="" type="checkbox"/> Creative Problem Solving Strategies in Math</p> <p><input type="checkbox"/> Math Advanced Vocabulary Development</p> <p><input type="checkbox"/> Leadership Training/ Career</p> <p><input checked="" type="checkbox"/> Decision Making; Ethical Use of Influence</p> <p><input type="checkbox"/> Regular Interaction with Talented Math Peers</p> <p><input type="checkbox"/> Realistic Goal Setting</p> <p><input type="checkbox"/> Opportunity for Competition/Failures/Successes</p> <p><input type="checkbox"/> Advanced Academic Planning in Math</p>	<p>ACADEMICALLY TALENTED ENG/LA</p> <p><input type="checkbox"/> Advanced Critical Thinking in LA</p> <p><input type="checkbox"/> Continuous Progress/Level and Rate* in LA</p> <p><input type="checkbox"/> Challenging LA Resources</p> <p><input type="checkbox"/> Creative Problem Solving Strategies in LA</p> <p><input type="checkbox"/> Advanced Vocabulary Development</p> <p><input type="checkbox"/> Leadership Training/Career</p> <p><input type="checkbox"/> Decision Making; Ethical Use of Influence</p> <p><input type="checkbox"/> Regular Interaction with Talented LA Peer</p> <p><input type="checkbox"/> Realistic Goal Setting</p> <p><input type="checkbox"/> Opportunity for Competition/Failures/Successes</p> <p><input type="checkbox"/> Advanced Academic Planning in LA</p>	<p>CAREER RELATED LEARNING STANDARDS FOR CAM - Certificate of Advanced Mastery</p> <p><input checked="" type="checkbox"/> Personal Management</p> <p><input type="checkbox"/> Problem Solving</p> <p><input checked="" type="checkbox"/> Communication</p> <p><input type="checkbox"/> Teamwork</p> <p><input type="checkbox"/> Employment Foundations</p> <p><input type="checkbox"/> Career Development</p>	<p>TEACHER CHECKS THE BENCHMARK LEVEL STUDENT IS PURSUING</p> <p>Science:</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> CIM</p> <p><input type="checkbox"/> CAM</p> <p>Math:</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> CIM</p> <p><input type="checkbox"/> CAM</p> <p>English/LA:</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> CIM</p> <p><input type="checkbox"/> CAM</p>
<p>Student _____ Grade _____</p> <p>Teacher _____ School _____</p> <p>Date Initiated _____ Date Completed _____</p> <p>Check TAG Identification category:</p> <p><input type="checkbox"/> Intellectual <input type="checkbox"/> Academic Math <input type="checkbox"/> Academic LA</p>					