STATE BOARD OF EDUCATION SPECIAL MEETING
Thursday, August 23 2007 – 9:00 a.m. MDT; 8:00 a.m. PDT
Len B. Jordan Building
650 W. State Street
Suite 307, 3rd Floor
Boise, Idaho

Teleconference Number: 1-877-232-4392
Participant Code: 156441

EXECUTIVE SESSION (Closed to the Public).

Pursuant to Idaho Code Section 67-2345(1), the State Board of Education may meet in executive session to discuss one or more of the following:

(a) to consider hiring a public officer, employee, staff member or individual agent. This paragraph does not apply to filling a vacancy in an elective office;
(b) to consider the evaluation, dismissal or disciplining of, or to hear complaints or charges brought against a public officer, employee, staff member or individual agent, or public school student;
(c) to conduct deliberations concerning labor negotiations or to acquire an interest in real property which is not owned by a public agency;
(d) to consider records that are exempt by law from public inspection;
(f) to consider and advise its legal representatives in pending litigation or where there is a general public awareness of probable litigation.

EXECUTIVE SESSION ITEMS MAY BE DISCUSSED AND ACTED UPON, IF APPROPRIATE, IN OPEN SESSION.

STATE BOARD OF EDUCATION

1. Approval of FY09 Line Item Budget for Commission for Libraries
2. Approval of Cumulative Science Document Grades 5, 7, and 10

STATE DEPARTMENT OF EDUCATION

1. Approval of 08.02.03, Rules Governing Thoroughness, Math Standards Incorporated by Reference

OTHER / NEW BUSINESS

If auxiliary aids or services are needed for individuals with disabilities, please contact the Board office at 334-2270 no later than two days before the meeting. While the Board attempts to address items in the listed order, some items may be addressed by the Board prior to or after the order listed.

STATE BOARD OF EDUCATION
650 W. State Street • P. O. Box 83720 • Boise, ID 83720-0037
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INSTITUTION/AGENCY AGENDA
IDAHO COMMISSION FOR LIBRARIES

SUBJECT
FY 2009 Line Item budget request: Read To Me

REFERENCE
June 14-15, 2007	Instructions to agencies and institutions regarding submission of budget requests
August 9, 2007	FY 2009 Line Item budget request pulled by agency.

APPLICABLE STATUTE, RULE OR POLICY
Idaho State Board of Education Governing Policies & Procedures, Section V.B.1.

BACKGROUND
At the August 2007 Board meeting, the Line Item request for the Idaho Commission for Libraries was pulled at the agency's request pending further needs assessment and development.

DISCUSSION
The agency desires Board approval of the Line Item for the FY 2009 budget request.

ATTACHMENTS
Attachment 1 – FY 2009 Budget Request: Read to Me Page 3

IMPACT
The approval of this Line Item will allow the agency to include this program in its FY 2009 budget request by the September 4 due date.

STAFF COMMENTS AND RECOMMENDATIONS
This is the only Line Item request for this agency.

BOARD ACTION
A motion to include for final FY 2009 budget development the Read to Me program for Idaho Commission for Libraries ($1,170,000 General Funds), as displayed on Page 3.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

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FY 2009 BUDGET REQUEST

Institution / Agency: **Idaho Commission for Libraries** Agency #: **521**

Decision Unit / Line Item: **12.01** Rank: **1** of **1**

Category: **Expanded Programs**
(New / Expanded Programs, Operating Support, Maintenance / Infrastructure (Including Occupancy Costs), Salary Enhancements)

Title: **Read to Me**
FTP: **3.0**
Gen **$1,170,000** Fed $ Ded/Other $ Total **$1,170,000**

How connected to agency strategic plan:

SBOE Goal: Access

ICFL Strategic Plan, 2008 – 2011
- III.A.1: Develop, coordinate, provide and support reading and literacy programs and services.
  a. Coordinate and support Read to Me.
- IV.C.1: Promote and support outreach projects that encourage partnership.
  a. Collaborate and support Read to Me outreach.

Description:

If funded, this request will expand Read To Me, the early and family literacy program for public libraries and their school and community partners. Read to Me consists of a variety of program elements so each library can choose those that best match its community's needs and resources. Each program element is designed to be easily customized and implemented by a typical Idaho public library (58%, or 60 of Idaho's 104 library jurisdictions, serve populations of less than 5,000. In FY2006, public libraries employed a median staff of 2.32 FTE).

To help build the capacity of libraries to implement Read To Me (RTM) programs at the local level, ICFL develops and delivers training and technical assistance based on current research and best practices for local library staff and their community partners. ICFL also develops resources for parents and support materials, displays, and web tools for participating libraries to increase public awareness of the RTM program.

The intended outcomes of this expansion are:
- More Idaho children will be "ready to learn" when they begin kindergarten, and
- More Idaho early elementary children will maintain or increase their reading skills over the summer.

To achieve these outcomes, the new funding is to be focused in these areas:

- Under First Book, Idaho public libraries work with community partners to identify at-risk children to receive a book a month for a year and to offer parent workshops on family literacy. Expand from 9 public libraries serving 700 children to additional libraries to serve 5,000 children.
- In the Jump Start program, public libraries collaborate with the local school(s) at kindergarten registration to provide resources for parents (kindergarten readiness and early literacy information, summer reading program invitations) and books for the children. Expand from 40 public libraries working with 72 elementary schools reaching 5,500 children to additional libraries and schools to reach 22,000 children.
- Increase participation in local Summer Reading Programs by 10%, from 40,700 to 44,770.
- Increase the number of library and community partner staff reached with RTM training and technical assistance by 20%.
- Offer mini-grants as seed money for 70 local libraries to establish or expand their RTM programs using best practices in library service to children.

REFERENCE – APPLICABLE STATUTE, RULE OR POLICY

Idaho State Board of Education
GOVERNING POLICIES AND PROCEDURES
SECTION: V. FINANCIAL AFFAIRS
Subsection: B. Budget Policies **August 2006**

1. Budget Requests

   For purposes of Item 1., the community colleges (CSI and NIC), the State Historical Society, and the Commission for Libraries are included.

   a. Submission of Budget Requests

      The Board is responsible for submission of budget request for the institutions, school and agencies under its governance to the executive and legislative branches of government. Only those budget requests which have been formally approved by the Board will be submitted by the office to the executive and legislative branches.

   b. Direction by the Office of the State Board of Education

      The preparation of all annual budget requests is to be directed by the Office of the State Board of Education which designates forms to be used in the process. The procedures for the preparation and submission of budget requests apply to operational and capital improvements budgets.

   c. Preparation and Submission of Annual Budget Requests

      Annual budget requests to be submitted to the Board by the institutions, school and agencies under Board governance are due in the Office of the State Board of Education on the date established by the Executive Director.

   d. Presentation to the Board

      Annual budget requests are formally presented to the designated committee by the chief executive officer of each institution, school or agency or his or her designee. The designated committee will review the requests and provide recommendations to the Board for their action.

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SUBJECT

Approval of the Cumulative Science Document for ISAT Grades 5, 7, and 10.

APPLICABLE STATUTE, RULE, OR POLICY

Section 33-105, Idaho Code; Section 33-1612, Idaho Code

REFERENCE

11/1/06	M/S (Howard/Thilo): To approve the request of the State Department of Education to approve the Idaho Content Standards and the Idaho Alternative Achievement Standards as documented to be incorporated by reference into rule. Roll call vote taken; motion carried unanimously.

BACKGROUND

The Idaho Standards Achievement Tests for science in grades 5, 7, and 10. Because the science test is not given each grade like the other science tests, it's important educators are given clear guidelines as to the cumulative standards students will be tested. The attached document includes the testing blueprints for grades 5, 7, and 10.

DISCUSSION

The Idaho Content Standards for science are currently posted on the Board of Education website (as referenced in IDAPA 08.02.03.004), and the Idaho Standards Achievements Test (ISAT) is currently aligned to these standards. The cumulative content standards include all standards tested on the science ISAT at grades 5, 7, and 10.

IMPACT

N/A

ATTACHMENTS

STAFF COMMENTS AND RECOMMENDATIONS

The State Department of Education recommends approval of the science blueprint.

BOARD ACTION

Motion to approve the cumulative science document for ISAT grades 5, 7, and 10.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

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IDAHO Cumulative Science Document
GRADE 5
SCIENCE

To be used as a guide for assessment and not as a guide of content at each grade level
Shaded objectives should be assessed in the classroom, but not included on the ISAT assessment.

Standard 1: Nature of Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
Goal 1.1: Understand Systems, Order, and Organization	5.S.1.1.1 Compare and contrast different systems. (603.01.a) CL: E Content Limit: Compare one item to another; do not make multiple-item comparisons. Systems tested should be familiar to students. Systems that could be used to develop items include classroom systems (stations, seating plans, built-in operation schemes), games (tag, kick ball), school systems (student: teacher: principal), the water cycle, and body systems (skeletal, digestive, respiratory).						

Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	5.S.1.2.1 Use observations and data as evidence on which to base scientific explanations and predictions. (603.02.a) CL: E Content Limit: Explanations and predictions are limited to directly described or illustrated information in the item.	5.S.1.2.2 Explain the difference between observation and inference. (603.02.b) CL: Content Limit:	5.S.1.2.3 Use models to explain or demonstrate a concept. (603.02.c) CL: Content Limit:				
Goal 1.3: Understand Constancy, Change, and Measurement	5.S.1.3.1 Analyze changes that occur in and among systems. (603.03.b) CL: E Content Limit: Analysis is limited to changes directly described or illustrated in the item.	5.S.1.3.2 Measure in both U.S. Customary and International System of Measurement (metric system) units with an emphasis on the metric system. (603.03.c) CL: C Content Limit: Measurement should be in millimeters, centimeters, grams.					
Goal 1.4: Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State	No objectives at this grade level.						

Goal 1.5: Understand Concepts of Form and Function	5.S.1.5.1 Explain how the shape or form of an object or system is frequently related to its use or function. (603.05.a) CL: E Content Limit: Items are limited to very visual content, including the streamlining of a dolphin's body and the webbing on a duck's foot.						
Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	5.S.1.6.1 Write and analyze questions that can be answered by conducting scientific experiments. (604.01.a) CL: C Content Limit: Content should be limited to questions including the amount of water required by bean seedlings grown in small containers for healthy growth, and the conditions necessary for painted lady butterfly larva to pupate.	5.S.1.6.2 Conduct scientific investigations using a control and a variable. (604.01.b) CL: C Content Limit: Assessed in the classroom, not on the ISAT.	5.S.1.6.3 Select and use appropriate tools and techniques to gather and display data. (604.01.c) CL: C Content Limit: Content should be limited to metric rulers, bar graphs, and basic tables.	5.S.1.6.4 Use evidence to analyze descriptions, explanations, predictions, and models. (604.01.d) CL: E Content Limit: Students should be presented a set of evidence or series of observations and be asked to derive information or make predictions based on this evidence.	5.S.1.6.5 State a hypothesis based on observations. (604.01.e) CL: E Content Limit: When provided sequential graphics, students will be able to select the most logical hypothesis from a list of possible options.	5.S.1.6.6 Compare alternative explanations and predictions. (604.01.f) CL: E Content Limit: When provided sequential graphics and a set of possible explanations, students will be able to select the most logical explanation from a list of possible options.	5.S.1.6.7 Communicate scientific procedures and explanations. (604.01.g) CL: Content Limit: Assessed in the classroom, not on the ISAT.
Goal 1.7: Understand That Interpersonal Relationships Are Important in Scientific Endeavors	No objectives at this grade level.						

Goal 1.8: Understand Technical Communication	5.S.1.8.1 Read and follow technical instructions. (613.02.a) CL: C Content Limit: Assessed in the classroom, not on the ISAT.						

Standard 2: Physical Science

Goals:	Objective 1	Objective 2	Objective 3
Goal 2.1: Understand the Structure and Function of Matter and Molecules and Their Interactions	5.S.2.1.1 Describe the differences among elements, compounds, and mixtures. (605.01.a) CL: D Content Limit: Students should be able to identify the characteristics of an element, compound, and mixture.	5.S.2.1.2 Compare the physical differences among solids, liquids and gases. (605.01.c) CL: D Content Limit: Students should be able to recognize the differences in molecular distance between a solid, a liquid, and a gas, as well as differences in basic molecular motion.	5.S.2.1.3 Explain the nature of physical change and how it relates to physical properties. (605.01.d) CL: D Content Limit: Students should be able to recognize the change(s) in physical properties that take place when physical changes occur including ice melting into water and water being heated into steam.
Goal 2.2: Understand Concepts of Motion and Forces	No objectives at this grade level.		
Goal 2.3: Understand the Total Energy in the Universe is Constant	No objectives at this grade level.		
Goal 2.4: Understand the Structure of Atoms	No objectives at this grade level.		
Goal 2.5: Understand Chemical Reactions	No objectives at this grade level.		

Standard 3: Biology

Goals:	Objective 1	Objective 2
Goal 3.1: Understand the Theory of Biological Evolution	No objectives at this grade level.	
Goal 3.2: Understand the Relationship between Matter and Energy in Living Systems	5.S.3.2.1 Communicate how plants convert energy from the Sun through photosynthesis. (608.01.a) CL: D Content Limit: Students will know that chlorophyll, carbon dioxide, and water are necessary for photosynthesis to occur. Additionally, students will know that the energy necessary to "power" the photosynthetic reaction is provided by the Sun.	
Goal 3.3: Understand the Cell is the Basis of Form and Function for All Living Things	5.S.3.3.1 Compare and contrast the structural differences between plant and animal cells. (606.01.b) CL: E Content Limit: Address only the readily observable organelles: cell wall, cell membrane, and chloroplast.	5.S.3.3.2 Explain the concept that traits are passed from parents to offspring. (606.01.c) CL: D Content Limit: Traits should be limited to clearly observable characteristics including eye color, hair color and texture, and widow's peak.

Standard 4: Earth and Space Systems

Goals:	Objective 1
Goal 4.1: Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth Systems	5.S.4.1.1 Describe the interactions among the solid earth, oceans and atmosphere (erosion, climate, tectonics and continental drift). (609.01.a) CL: D Content Limit: The role wind and water play in erosion, different cloud types, and the formation of earthquakes and volcanoes can all be addressed.
Goal 4.2: Understand Geo-chemical Cycles and Energy in the Earth System	5.S.4.2.1 Explain the rock cycle and identify the three classifications of rocks. (609.02.a) CL: D Content Limit: How sedimentary, igneous, and metamorphic rocks are formed.

Standard 5: Personal and Social Perspectives; Technology

Goals:	Objective 1	Objective 2
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	5.S.5.1.1 Identify issues for environmental studies. (611.01.a) CL: E Content Limit: Content should be limited to events in the local school or community environment including food waste from the hot lunch program, storm runoff entering a local stream, and the impact on grass color due to uneven watering of the school yard.	
Goal 5.2: Understand the Relationship between Science and Technology	5.S.5.2.1 Describe how science and technology are part of a student's life. (610.01.a) CL: Content Limit:	5.S.5.2.2 List examples of science and technology. (610.01.b) CL: Content Limit:
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	5.S.5.3.1 Identify the differences between renewable and nonrenewable resources. (611.03.a) CL: E Content Limit: Content should be limited to issues within a school or local community including recycling programs for paper and aluminum and landfill issues.	

IDAHO Cumulative Science Document
GRADE 6-7
SCIENCE

To be used as a guide for assessment and not as a guide of content at each grade level
Shaded objectives should be assessed in the classroom, but not included on the ISAT assessment.

Standard 1: Nature of Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6
Goal 1.1: Understand Systems, Order, and Organization	7.S.1.1.1 Define small systems as a part of a whole system. (633.01.a) CL: E Content Limit: Items should address content that the student has experience with such as fire drills, the organization of sports teams, an orchestra, or a band. Items can also address topics like organelles in protozoa or the role various plant cell types play in the survival of the plant. The idea is to draw learning together for students.	7.S.1.1.2 Determine how small systems contribute to the function of the whole. (633.01.a) CL: E Content Limit: Material should emphasize major body systems and their component parts including the circulatory, digestive, respiratory, and skeletal systems.	7.S.1.1.3 Identify the different structural levels of an organism (cells, tissues, organs, and organ systems). (633.01.b) CL: E Content Limit: Material should emphasize major body systems and their component parts including the circulatory, digestive, respiratory, and skeletal systems.			

Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	7.S.1.2.1 Describe how observations and data are evidence on which to base scientific explanations and predictions. (633.02.a) CL: E Content Limit: Items should offer choices that have a direct link between the observation offered for consideration and the correct answer.	7.S.1.2.2 Use observations to make defendable inferences. (633.02.b) CL: Content Limit: Graphics or examples should be limited to natural history topics or observable reactions in living systems.	7.S.1.2.3 Use models to explain or demonstrate a concept. (633.02.c) CL: Content Limit: Material should emphasize major body systems and their component parts including the circulatory, digestive, respiratory, and skeletal systems. Cell models, the component parts of an eye, and the atomic positioning in solids, liquids, and gases are also suitable topics.			
Goal 1.3: Understand Constancy, Change, and Measurement	7.S.1.3.1 Identify concepts of science that have been stable over time. (633.03.a) CL: E Content Limit: Address concepts including the cell theory, germ theory of disease, molecular theory of matter, and similar topics.	7.S.1.3.2 Recognize changes that occur within systems. (633.03.b) CL: E Content Limit: Address topics such as the impact of exercise on breathing and heart rate and the impact of light from a window on the direction of plant growth, etc.	7.S.1.3.3 Make metric measurements using appropriate tools. (633.03.c) CL: C Content Limit: Use linear metric measures, volume measures of milliliter and liter, and mass measure of grams.			
Goal 1.4: Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State	Reference to objective 7.S.3.2.1 CL: Content Limit:					
Goal 1.5: Understand Concepts of Form and Function	No objectives at this grade level.					

Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	7.S.1.6.1 Identify controls and variables used in scientific investigations. (634.01.b) CL: E Content Limit: Items should stress the students' ability to distinguish between a control and a variable.	7.S.1.6.2 Use appropriate tools and techniques to gather and display data. (634.01c) CL: C Content Limit: Line graphs, bar graphs, pie charts, and tables are all suitable for use and interpretation.	7.S.1.6.3 Evaluate data in order to form conclusions. (634.01.d) CL: E Content Limit: Data offered for consideration should be linear or tied to a focused topic.	7.S.1.6.4 Use evidence and critical thinking to accept or reject a hypothesis. (634.01.e) CL: E Content Limit: Material offered for consideration should be single-faceted and include topics like the impact of over-watering potted plants or growing plants in light or darkness.	7.S.1.6.5 Evaluate alternative explanations or predictions. (634.01.f) CL: E Content Limit: Students should be able to identify two explanations and/or predictions that are reasonable for a topic.	7.S.1.6.6 Communicate and defend scientific procedures and explanations. (634.01.g) CL: E Content Limit: Items should address pieces of data or evidence that will support or refute an explanation.
Goal 1.7: Understand That Interpersonal Relationships Are Important in Scientific Endeavors	No objectives at this grade level.					
Goal 1.8: Understand Technical Communication	7.S.1.8.1 Read and evaluate technical instructions. (643.02.a) CL: E Content Limit: Items indicate that students can read and follow the instructions for lab procedures and textbook activities.					

Standard 2: Physical Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 2.1 Understand the Structure and Function of Matter, and Molecules and their interactions	6.S.2.1.1* Compare and contrast the differences among elements compounds and mixtures. (620.01.a) CL: D Content Limit: Items can address that there are more than 100 unique elements. Elements bond to make compounds and can be physically combined to make mixtures. The properties of elements change when compounds are formed. Elements can be physically separated from mixtures.	6.S.2.1.2* Define the properties of matter. (620.01.b) CL: B Content Limit: Items can address ideas like a solid has definite volume and shape, a liquid has a definite volume and an indefinite shape, and a gas has no definite shape or volume.	6.S.2.1.3* Compare densities of equal volumes of a solid, a liquid, or a gas. (619.01.c) CL: D Content Limit: Items must address atomic or molecular spacing in each state of matter.	6.S.2.1.4* Describe the effect of temperature on density. (620.01.c) CL: D Content Limit: Items should address the impact that temperature has on the density of a material.	6.S.2.1.5* Explain the nature of physical change and how it relates to physical properties (the distance between molecules as water changes from ice to liquid water and to water vapor). (620.01.d) CL: D Content Limit: Items address the effect of temperature on the spacing and movement of atoms or molecules.
Goal 2.2 Understand Concepts of Motion and Forces	6.S.2.2.1* Describe the effects of different forces (gravity and friction) on the movement, speed, and direction of an object. (620.03.d) CL: D Content Limit: Items will address friction's effect on motion and that gravity is an attractive force between objects.				
Goal 2.3: Understand the Total Energy in the Universe is Constant	No objectives at this grade level.				
Goal 2.4: Understand the Structure of Atoms	No objectives at this grade level.				
Goal 2.5: Understand Chemical Reactions	No objectives at this grade level.				

*Depends upon when content is taught.

Standard 3: Biology

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 3.1: Understand the Theory of Biological Evolution	7.S.3.1.1 Describe how natural selection explains species change over time. (637.01.a) CL: D Content Limit: Items should address environments in flux (new volcanic islands, lakes being impacted by pollution, the margins of a hot spring), and give insights into how life forms would respond to environmental pressure over time.				
Goal 3.2: **Understand the Relationship between Matter and Energy in Living Systems**	7.S.3.2.1 Describe how energy stored in food is primarily derived from the Sun through photosynthesis. (638.01.a) CL: D Content Limit: Items should probe the basic photosynthetic reaction and the role of producers in the food web.	7.S.3.2.2 Describe how the availability of resources (matter and energy) limits the distribution and abundance of organisms. (638.01.b) CL: E Content Limit: Use the food web and interaction of trophic levels to probe this content.	7.S.3.2.3 Illustrate how atoms and molecules cycle among the living and nonliving components of the biosphere. (638.01.c) CL: D Content Limit: Assessed in the classroom, not on the ISAT.	7.S.3.2.4 Identify how energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores, carnivore, and decomposers. (638.01.d) CL: D Content Limit: Use the food web as the basis for items.	
Goal 3.3: Understand the Cell is the Basis of Form and Function for All Living Things	7.S.3.3.1 Explain the relationships among specialized cells, tissues, organs, organ systems, and organisms. (636.01.a) CL: E Content Limit: Items should address the components of an individual system, such as the digestive system.	7.S.3.3.2 Identify the parts of specialized plant and animal cells. (636.01.b) CL: B Content Limit: Include neurons, skeletal muscle, smooth muscle, cardiac muscle, stomata, and root hairs.	7.S.3.3.3 Identify the functions of cell structures. (636.01.b) CL: D Content Limit: Organelles that are visible with a light microscope, like vacuoles, chloroplasts, and the nucleus are suitable. Organelles that require an electron microscope for observation (endoplasmic reticulum, ribosomes, etc.) should not be addressed.	7.S.3.3.4 Describe cell functions that involve chemical reactions. (630.01.c) CL: D Content Limit: Include organelles that are visible with a light microscope: nucleus, vacuoles, chloroplasts, and the cell membrane.	7.S.3.3.5 Describe how dominant and recessive traits are inherited. (636.01.e) CL: D Content Limit: Include traits easily observed: hair color, eye color, and skin color.

Standard 4: Earth and Space Systems

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 4.1 Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth's Systems	6.S.4.1.1* Explain the interactions among the solid earth, oceans, atmosphere, and organisms. (624.01.a) CL: D Content Limit: Items will address layers of Earth, the effect of weathering on rocks, and the impact bodies of water have on weather.	6.S.4.1.2* Explain the water cycle and its relationship to weather and climate. (624.01.b) CL: D Content Limit: Items should address the water cycle and its impact on the movement of water in the system (precipitation).	6 S.4.1.3* Identify cumulus, cirrus, and stratus clouds and how they relate to weather changes. (624.01.c) CL: D Content Limit: Items should address cloud types and the weather patterns associated with each.		
Goal 4.2: Understand the Geo-chemical Cycles and Energy in the Earth System	No objectives at this grade level.				

*Depends upon when content is taught.

Standard 5: Personal and Social Perspectives; Technology

Goals:	Objective 1	Objective 2
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	No objectives at this grade level.	
Goal 5.2: Understand the Relationship between Science and Technology	7.S.5.2.1 Explain how science and technology are interrelated. (640.01.a) CL: Content Limit:	7.S.5.2.2 Explain how science advances technology. (640.01.b) CL: Content Limit:
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	7.S.5.3.1 Identify alternative sources of energy. (641.03.a) CL: D Content Limit: Content may include solar and wind power and hybrid vehicles.	

IDAHO Cumulative Science Document
GRADE 8, 9, 10
Science

To be used as a guide for assessment and not as a guide of content at each grade level
Shaded objectives should be assessed in the classroom, but not included on the ISAT assessment.

Standard 1: Nature of Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
Goal 1.1: Understand Systems, Order, and Organization	9-10.B.1.1.1 Explain the scientific meaning of system, order, and organization. (648.01a) CL: E Content Limit: Students should be able to identify the components of a system and how the components interact to allow the system to function. Suitable systems to test include the structure of an electric motor, the Earth-Moon system, the solar system, the respiratory system, and the cell as a system.	9-10.B.1.1.2 Apply the concepts of order and organization to a given system. (648.01a) CL: E Content Limit: Students should be able to identify the components of a system and the role each component has in the system's function.					

Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	9-10.B.1.2.1 Use observations and data as evidence on which to base scientific explanations. (648.02a) CL: E Content Limit: When presented observations and data (including different cell types, genetic traits, or environmental changes over time), students will be able to select the most reasonable explanation from a list of possibilities.	9-10.B.1.2.2 Develop models to explain concepts or systems. (648.02b) CL: Content Limit: Assessed in the classroom, not on the ISAT.	9-10.B.1.2.3 Develop scientific explanations based on knowledge, logic and analysis. (648.02c) CL: Content Limit: Assessed in the classroom, not on the ISAT.				
Goal 1.3: Understand Constancy, Change, and Measurement	9-10.B.1.3.1 Measure changes that can occur in and among systems. (648.03b) CL: E Content Limit: Students should be able to explain changes that occur in systems. Topics may include heart rate, breathing rate, dilation of pupils, cells, ecosystems, biogeochemical cycles, and chemical reactions.	9-10.B.1.3.2 Analyze changes that can occur in and among systems. (648.03b) CL: E Content Limit: Students should be able to analyze changes that take place in system performance due to external or environmental changes. Topics may include heart rate, breathing rate, and dilation of pupil changes.	9-10.B.1.3.3 Measure and calculate using the metric system. (648.03c) CL: C Content Limit: Students should be able to use metric units to record and analyze data.				

Goal 1.4: Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State	Reference to 7.S.3.2.1 CL: Content Limit:						
Goal 1.5: Understand Concepts of Form and Function	No objectives in Biology.						
Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	9-10.B.1.6.1 Identify questions and concepts that guide scientific investigations. (649.01a) CL: E Content Limit: When presented a number of questions, students will be able to identify questions that can be investigated.	9-10.B.1.6.2 Utilize the components of scientific problem solving to design, conduct, and communicate results of investigations. (649.01b) CL: E Content Limit: Items should address experimental design.	9-10.B.1.6.3 Use appropriate technology and mathematics to make investigations. (649.01c) CL: C Content Limit: Students should be able to identify suitable forms of technology and mathematics needed to solve a problem presented in the question stem.	9-10.B.1.6.4 Formulate scientific explanations and models using logic and evidence. (649.01d) CL: E Content Limit: Assessed in the classroom, not on the ISAT.	9-10.B.1.6.5 Analyze alternative explanations and models. (649.01e) CL: E Content Limit: When offered a variety of possible explanations, students should be able to identify the most logical option to fit with the question stem.	9-10.B.1.6.6 Communicate and defend a scientific argument. (649.01f) CL: D Content Limit: When offered a variety of possible explanations, students should be able to identify the option that will fit with the question stem.	9-10.B.1.6.7 Explain the differences among observations, hypotheses, and theories. (649.01g) CL: D Content Limit: Students should be able to distinguish between observations, hypotheses, and theories.
Goal 1.7: Understand That Interpersonal Relationships Are Important in Scientific Endeavors	No objectives in Biology.						

Goal 1.8: Understand Technical Communication	9-10.B.1.8.1 Analyze technical writing, graphs, charts, and diagrams. (658.02a) CL: E Content Limit: Students should be asked to derive information from graphs, charts, and diagrams.						

Standard 2: Physical Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 2.1 Understand the Structure and Function of Matter and Molecules and Their Interactions	No objectives at this grade level.				
Goal 2.2 Understand the Concepts of Motion and Forces	8-9*.PS.2.2.1 Explain motion using Newton's Laws of Motion. (650.04 b) CL: E Content Limit: Items should cover the relationship between force, mass, and acceleration. Inertia, balanced and unbalanced forces, action and reaction should also be addressed.				
Goal 2.3: Understand the Total Energy in the Universe is Constant	8-9.PS.2.3.1* Explain that energy can be transformed but cannot be created nor destroyed. (650.05a) CL: D Content Limit: Items can address energy conversions including the impact of friction on the total amount of energy available.	8-9. PS.2.3.2* Classify energy as potential and/or kinetic and as energy contained in a field. (650.05b) CL: C Content Limit: Items should be able to distinguish between different forms of potential and kinetic energy. The relationship between magnetic fields and electrical fields can be addressed. The structure or organization of the electromagnetic spectrum can also be addressed.			

*Depends upon when content is taught.

Goal 2.4: Understand the Structure of Atoms	8-9.PS.2.4.1 Describe the properties, function, and location of protons, neutrons, and electrons. (650.01a) CL: D Content Limit: Items can address electrical charges, locations in the atom of each particle and relative mass of each particle. For an atom, students should know that the proton determines the element, the neutron determines the isotope, and the electron determines the chemical properties.	8-9 PS.2.4.2. Explain the processes of fission and fusion. (650.01b) CL: D Content Limit: Both processes release energy. Fission results in smaller particles. Fusion results in larger particles.	8-9.PS.2.4.3 Describe the characteristics of isotopes. (650.01c) CL: D Content Limit: Items should address that isotopes are atoms of the same element that have a different number of neutrons.	8-9.PS.2.4.4 State the basic electrical properties of matter. (650.01d) CL: B Content Limit: Items should address that like charges repel and opposite charges attract, and that some forms of matter are insulators and others are conductors.	8-9.PS.2.4.5 Describe the relationships between electricity and magnetism. CL: D Content Limit: Items should address how generators and motors work.
Goal 2.5: Understand Chemical Reactions	8-9.PS.2.5.1 Explain how chemical reactions may release or consume energy while the quantity of matter remains constant. (650.03a) CL: D Content Limit: Items should address the law of conservation of mass and exothermic and endothermic reactions.				

*Depends upon when content is taught.

Standard 3: Biology

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 3.1: Understand the Theory of Biological Evolution	9-10.B.3.1.1 Use the theory of evolution to explain how species change over time. (652.01a) CL: D Content Limit: Items could address isolation of sub-populations within a species.	9-10.B.3.1.2 Explain how evolution is the consequence of interactions among the potential of a species to increase its numbers, genetic variability, a finite supply of resources, and the selection by the environment of those offspring better able to survive and reproduce. (652.01a) CL: D Content Limit: Items should address genetic variability in a species, competition for environmental resources within a species, and environmental natural selection.			
Goal 3.2: Understand the Relationship between Matter and Energy in Living Systems	9-10.B.3.2.1 Explain how matter tends toward more disorganized states (entropy). (653.01a) CL: D Content Limit: Items should probe the concept of entropy.	9-10.B.3.2.2 Explain how organisms use the continuous input of energy and matter to maintain their chemical and physical organization. (653.01b) CL: E Content Limit: Food webs would be an appropriate way to probe this understanding.	9-10.B.3.2.3 Show how the energy for life is primarily derived from the Sun through photosynthesis. (653.01c) CL: D Content Limit: The basic photosynthetic reaction should be covered in depth.	9-10.B.3.2.4 Describe cellular respiration and the synthesis of macromolecules. (653.01d) CL: D Content Limit: Students should understand and be responsible for the basic reaction, the exchange/production of oxygen and carbon dioxide for respiration, and the steps involved in production of macromolecules by living cells.	9-10.B.3.2.5 Show how matter cycles and energy flows through the different levels of organization of living systems (cells, organs, organisms, communities and their environment). (653.01h) CL: D Content Limit: Energy flow through food webs can be used to assess this objective.

Goal 3.3: Understand the Cell is the Basis of Form and Function for All Living Things	9-10.B.3.3.1 Identify the particular structures that underlie the cellular functions. (651.01a) CL: D Content Limit: Items should probe the function of organelles including chloroplasts, the nucleus, and vacuoles.	9-10.B.3.3.2 Explain cell functions involving chemical reactions. (651.01b) CL: D Content Limit: Items should probe the function of organelles including chloroplasts, the nucleus, and vacuoles.	9-10.B.3.3.3 Explain how cells use DNA to store and use information for cell functions. (651.01c) CL: D Content Limit: Items should address DNA replication and mitosis as the mechanism for transferring DNA to the next generation of cells.	9-10.B.3.3.4 Explain how selective expression of genes can produce specialized cells from a single cell. (651.01e) CL: D Content Limit: Items should address the role genes play in differentiation.	

Standard 4: Earth and Space Systems

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 4.1: Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth Systems	8-9.ES.4.1.1* Explain the current scientific theory that suggests that the solar system formed from a nebular cloud of dust and gas. (654.01a) CL: B Content Limit: Items should address current theories of the formation of the solar system.	8-9.ES.4.1.2* Identify methods used to estimate geologic time. (654.01b) CL: B Content Limit: Items should include the Law of Superposition and radioactive decay.	8-9.ES.4.1.3* Show how interactions among solid earth, oceans, atmosphere, and organisms have changed the earth system over time. (650.01c) CL: D Content Limit: Items should address continental drift, ice ages, global warming , and fossil fuel formation.		
Goal 4.2: Understand the Geo-chemical Cycles and Energy in the Earth System	8-9.ES.4.2.1* Explain the internal and external energy sources of the earth. (654.02a) CL: D Content Limit: Items should address the impact of solar heating, radioactivity, and geothermal activity.				

*Depends upon when content is taught.

Standard 5: Personal and Social Perspectives; Technology

Goals:	Objective 1	Objective 2	Objective 3
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	9-10.B.5.1.1 Analyze environmental issues such as water and air quality, hazardous waste, forest health, and agricultural production. (656.01a) CL: E Content Limit: Issues relevant to Idaho should be addressed: stream degradation, logging, mining, dams, and wind turbines.		
Goal 5.2: Understand the Relationship between Science and Technology	9-10.B.5.2.1 Explain how science advances technology. (655.01a) CL: E Content Limit: Use scientists whose discoveries have significance and ramifications in today's world to frame items.	9-10.B.5.2.2 Explain how technology advances science. (655.01a) CL: E Content Limit: Use common pieces of technology (lenses, electricity, computers, etc.) as the foundation for items that lead students to see the role technology has in advancing science.	9-10.B.5.2.3 Explain how science and technology are pursued for different purposes. (656.01b) CL: E Content Limit: Items should address the role of technology in applying science to improve some aspect of human life, and the role of science in answering questions and extending knowledge.
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	9-10.B.5.3.1 Describe the difference between renewable and nonrenewable resources. (656.03a) CL: D Content Limit: Topics like oil, metallic ores, and wood products are suitable for consideration.		

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TITLE 33
EDUCATION
CHAPTER 1
STATE BOARD OF EDUCATION

33-105. RULES -- EXECUTIVE DEPARTMENT. (1) The state board shall have power to make rules for its own government and the government of its executive departments and offices; and, upon recommendations of its executive officers, to appoint to said departments and offices such specialists, clerks and other employees as the execution of duties may require, to fix their salaries and assign their duties.

(2) Statements of the state board of education and board of regents of the university of Idaho which relate to the curriculum of public educational institutions, to students attending or applicants to such institutions, or to the use and maintenance of land, equipment and buildings controlled by the respective institutions, are not rules and are not statements of general applicability for the purposes of chapter 52, title 67, Idaho Code.

(3) Notwithstanding any other provision of chapter 52, title 67, Idaho Code, the state board of education and board of regents of the university of Idaho shall be deemed to be in full compliance with the notice requirements of section 67-5221, Idaho Code, if:

(a) Notice is given by including the intended action in the official written agenda for a regularly scheduled meeting of the board, and the agenda is available for public inspection at the central office of the board not less than five (5) days prior to the meeting; and

(b) Notice of the intended action, accompanied by the full text of the rule under consideration prepared so as to indicate words added or deleted from the presently effective text, if any, is transmitted to the director of the legislative services office at the same time that notice is given under paragraph (a) of this subsection. The director of the legislative services office shall refer the material under consideration to the germane joint subcommittee created in section 67-454, Idaho Code, to afford the subcommittee opportunity to submit data, views or arguments in writing to the board prior to the time for receiving comment as provided in paragraph (d) of this subsection; and

(c) The intended action is discussed but not acted upon during the regularly scheduled meeting for which the agenda was prepared, but instead is held for final action at the next regularly scheduled or later meeting of the board; and

(d) At least fifteen (15) days prior to the scheduled date for final action, the board shall mail to all persons who have made timely request in writing to the board and shall publish in an issue of the Idaho administrative bulletin a brief description of the intended action, or a concise summary of any statement of economic impact required pursuant to section 67-5223(2), Idaho Code, and shall note the time when, the place where, and the manner in which interested persons may present their views thereon; and

(e) Upon adoption of a rule, the board, if requested in writing to do so by an interested person either prior to adoption or within twenty-eight (28) days thereafter, shall issue a concise statement of the principal reasons for and against its adoption, incorporating therein its reasons for overruling the considerations urged against its adoption.

TITLE 33
EDUCATION
CHAPTER 16
COURSES OF INSTRUCTION

33-1612. THOROUGH SYSTEM OF PUBLIC SCHOOLS. The constitution of the state of Idaho, section 1, article IX, charges the legislature with the duty to establish and maintain a general, uniform and thorough system of public, free common schools. In fulfillment of this duty, the people of the state of Idaho have long enjoyed the benefits of a public school system, supported by the legislature, which has recognized the value of education to the children of this state.

In continuing recognition of the fundamental duty established by the constitution, the legislature finds it in the public interest to define thoroughness and thereby establish the basic assumptions which govern provision of a thorough system of public schools.

A thorough system of public schools in Idaho is one in which:

1. A safe environment conducive to learning is provided;
2. Educators are empowered to maintain classroom discipline;
3. The basic values of honesty, self-discipline, unselfishness, respect for authority and the central importance of work are emphasized;
4. The skills necessary to communicate effectively are taught;
5. A basic curriculum necessary to enable students to enter academic or professional-technical postsecondary educational programs is provided;
6. The skills necessary for students to enter the work force are taught;
7. The students are introduced to current technology; and
8. The importance of students acquiring the skills to enable them to be responsible citizens of their homes, schools and communities is emphasized.

The state board shall adopt rules, pursuant to the provisions of chapter 52, title 67, Idaho Code, and section 33-105(3), Idaho Code, to establish a thorough system of public schools with uniformity as required by the constitution, but shall not otherwise impinge upon the authority of the board of trustees of the school districts. Authority to govern the school district, vested in the board of trustees of the school district, not delegated to the state board, is reserved to the board of trustees. Fulfillment of the expectations of a thorough system of public schools will continue to depend upon the vigilance of district patrons, the dedication of school trustees and educators, the responsiveness of state rules, and meaningful oversight by the legislature.

SUBJECT

Proposed Amendment to IDAPA 08.02.03.004. Rules Governing Thoroughness

APPLICABLE STATUTE, RULE, OR POLICY

Section 33-105, Idaho Code; Section 33-107, Idaho Code

REFERENCE

08/9/06	M/S (Hall/Howard): To approve the Proposed Rules Governing Thoroughness – High School Graduation Requirements, as set forth in proposal 4 (c). Amended M/S (Hall/Howard): To approve the Proposed Rules Governing Thoroughness – High School Graduation Requirements, as set forth in proposal 4 (c). And, to amend the motion to include the change in the language related to the math requirement to say, "Algebra I or a class that meets Algebra I standards, Geometry or a class that meets Geometry standards and Algebra II or a class that meets Algebra II standards as approved by the State Department of Education". Motion carried unanimously.
11/1/06	M/S (Howard/Thilo): To approve the request of the State Department of Education to approve the Idaho Content Standards and the Idaho Alternative Achievement Standards as documented to be incorporated by reference into rule. Roll call vote taken; motion carried unanimously.

BACKGROUND

The Idaho State Board of Education adopted additional math and science graduation requirements that include two credits of Algebra I, two credits of Geometry and two additional math credits taken in a student's senior year of high school. The current Idaho math standards reflect general standards for ninth and tenth grade math but do not reflect standards for the additional courses required for the graduating class of 2013. Teachers from most of Idaho's school districts participated in writing standards for Algebra I, Geometry, Algebra II, Math Analysis, Math Analysis of Personal Finance, Technical Math, Pre-calculus – Algebra, Pre-Calculus – Trigonometry AP Calculus and AP Statistics in order to meet the needs of Idaho students and school districts to address the additional requirements.

DISCUSSION

Math textbooks, curriculum and materials will be adopted in the summer of 2008 for 2008-2014 so standards for the new courses will need to be approved by the Board to ensure that school districts are prepared to meet the new requirements. In addition, districts that have increased requirements for current standards need state standards for Algebra I and beyond to align their courses.

IMPACT

Approving these standards will provide an important resource for the Idaho Board of Education, State Department of Education and local school districts in meeting the new math requirements.

ATTACHMENTS

STAFF COMMENTS AND RECOMMENDATIONS

To approve the request of the State Department of Education to approve the Idaho Mathematics Course Standards for Secondary Mathematics courses to be incorporated by reference into rule.

The State Department of Education recommends approval of the Proposed Amendment to IDAPA 08.02.03.004 Rules Governing Thoroughness as submitted.

BOARD ACTION

Motion to approve the proposed rule change to IDAPA 08.02.03.004, Rules Governing Thoroughness, Idaho Content Standards pending approval of the Division of Financial Management.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

004. INCORPORATION BY REFERENCE.
The following documents are incorporated into this rule: (3-30-07)

01. The Idaho Content Standards. The Idaho Content Standards as adopted by the State Board of Education on November 1, 2006 and Math Standards as of August 23, 2007. Copies of the document can be found on the State Board of Education website at http://www.boardofed.idaho.gov/index.asp. ~~(3-30-07)~~(8-23-07)T

02. The Idaho English Language Development Standards. The Idaho English Language Development Standards as adopted by the State Board of Education on August 10, 2006. Copies of the document can be found on the State Board of Education website at http://www.boardofed.idaho.gov/lep/index.asp.
(3-30-07)

03. The Limited English Proficiency Program Annual Measurable Achievement Objectives (AMAOs) and Accountability Procedures. The Limited English Proficiency Program Annual Measurable Achievement Objectives and Accountability Procedures as adopted by the State Board of Education on August 10, 2006. Copies of the document can be found on the State Board of Education website at http://www.boardofed.idaho.gov/lep/index.asp. (3-30-07)

04. The Idaho English Language Assessment (IELA) Achievement Standards. The Idaho English Language Assessment (IELA) Achievement Standards as adopted by the State Board of Education on August 10, 2006. Copies of the document can be found on the State Board of Education website at http://www.boardofed.idaho.gov/lep/index.asp. (3-30-07)

05. The Idaho Standards Achievement Tests (ISAT) Achievement Standards. Achievement Standards as adopted by the State Board of Education on August 10, 2006. Copies of the document can be found on the State Board of Education website at http://www.boardofed.idaho.gov/index.asp. (3-30-07)

06. The Idaho Alternative Assessment Extended Content Standards. The Idaho Alternative Assessment Extended Content Standards as adopted by the State Board of Education on April 20, 2006. Copies of the document can be found at the State Board of Education website at http://www.boardofed.idaho.gov/index.asp.
(11-1-06)T

07. The Idaho Alternative Assessment Extended Achievement Standards. Alternative Assessment Extended Achievement Standards as adopted by the State Board of Education on April 20, 2006. Copies of the document can be found on the State Board of Education website at http://www.boardofed.idaho.gov/index.asp.
(11-1-06)T

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IDAHO CONTENT STANDARDS
GEOMETRY
MATHEMATICS

Students are expected to know content and apply skills from previous grades.

Mathematical reasoning and problem solving processes should be incorporated throughout all mathematics standards. Students should use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information and to explain mathematical reasoning and concepts.

Standard 1: Number and Operation

Goal 1.1: Understand and use numbers.

No objectives at this grade level.

Goal 1.2: Understand and perform computations accurately.

No objectives at this grade level.

Goal 1.3: Estimate and judge reasonableness of results.

Objective(s): By the end of Geometry, the student will be able to:

G.1.3.1 Apply number sense to everyday situations and judge reasonableness of results (10.M.1.3.1).

Standard 2: Concepts and Principles of Measurement

Goal 2.1: Understand and use U.S. customary and metric measurements

Objective(s): By the end of Geometry, the student will be able to:

G.2.1.1 Determine the length of a segment and measure of an angle with appropriate unit labels (10.M.2.3.1).

Goal 2.2: Apply the concepts of rates, ratios, and proportions.

Objective(s): By the end of Geometry, the student will be able to:

G.2.2.1 Solve application problems involving ratios and proportions (10.M.2.2.1).

Goal 2.3: Apply dimensional analysis.

No objectives at this grade level.

Goal 2.4: Apply appropriate techniques, tools, and formulas to determine measurements.

Objective(s): By the end of Geometry, the student will be able to:

G.2.4.1 Calculate area, surface area and volume for two- and three-dimensional objects (10.M.2.1.1).
G.2.4.1 Determine circumference, area, surface area, area of a sector, arc length, and arc measure of a circle with appropriate unit labels (10.M.2.1.2).

Standard 3: Concepts and Language of Algebra and Functions

Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.

No objectives at this grade level.

Goal 3.2: Evaluate algebraic expressions.

No objectives at this grade level.

Goal 3.3: Solve algebraic equations and inequalities.

No objectives at this grade level.

Goal 3.4: Solve simple linear systems of equations.

No objectives at this grade level.

Goal 3.5: Understand the concept of functions.

No objectives at this grade level.

Goal 3.6: Apply functions to a variety of problems.

No objectives at this grade level.

Standard 4: Concepts and Principles of Geometry

Goal 4.1: Apply concepts of size, shape, and spatial relationships.

Objective(s): By the end of Geometry, the student will be able to:
G.4.1.1 Identify and apply congruency and similarity of two-dimensional figures (10.M.4.1.1).
G.4.1.2 Formally or informally prove triangles are congruent (SSS, SAS, ASA, AAS) (10.M.4.1.1).
G.4.1.2 Identify the scale factor of similar two-dimensional figures (10.M.4.1.2).
G.4.1.3 Use transformational geometry to rotate, translate, and reflect figures.
G.4.1.4 Create and use models to represent two- and three-dimensional geometric objects as a means of problem solving.

Goal 4.2: Apply the geometry of right triangles.

Objective(s): By the end of Geometry, the student will be able to:

G.4.2.1 Understand and apply the Pythagorean Theorem for problem solving (10.4.2.1).
G.4.2.2 Identify and apply special right triangle relationships (30-60-90, 45-45-90).
G.4.2.3 Identify sine, cosine, and tangent ratios in right triangles.
G.4.2.4 Use right triangle trigonometry to solve right triangles.

Goal 4.3: Apply graphing in two dimensions.

Objective(s): By the end of Geometry, the student will be able to:
G.4.3.1 Determine the length and midpoint of a segment in the coordinate plane.

Goal 4.4: Apply concepts of parallel lines.

Objective(s): By the end of Geometry, the student will be able to:
G.4.4.1 Identify the special angle pairs formed by parallel lines and a transversal.
G.4.4.2 Apply the properties of special angle pairs formed by parallel lines and a transversal.
G.4.4.3 Formally or informally prove lines are parallel using special angle properties (10.M.4.5.1).

Goal 4.5: Apply concepts of polygons

Objective(s): By the end of Geometry, the student will be able to:
G.4.5.1 Classify polygons (by sides/convex/concave).
G.4.5.2 Classify triangles and quadrilaterals based on their attributes (eg: scalene, right, isosceles, rhombus).
G.4.5.3 Find the sum of the interior and exterior angles of a polygon.
G.4.5.4 Find the measure of each interior and exterior angle of a regular polygon.
G.4.5.5 Identify and draw the median, altitude, angle bisector, and perpendicular bisector of a triangle.

Goal 4.6: Understand the concepts of a circle

Objective(s): By the end of Geometry, the student will be able to:
G.4.6.1 Identify the parts of a circle including radius, diameter, major/minor arcs, chords, secants, and tangents.
G.4.6.2 Determine the lengths of segments and the measures of angles formed by radii, chords, secants, and tangents.
G.4.6.3 Identify and find the measure of inscribed and central angles and their intercepted arcs.

Goal 4.7: Apply reasoning skills.

Objective(s): By the end of Geometry, the student will be able to:
G.4.7.1 Construct logical arguments, form conjectures, judge their validity, and give counterexamples to disprove statements (10.M.4.5.1).
G.4.7.2 Use inductive and deductive reasoning (10.M.4.5.1).

Goal 4.8: Represent and graph linear relationships.

Objective(s): By the end of Geometry, the student will be able to:

G.4.8.1 Understand and apply slope as it pertains to parallel and perpendicular lines (10.M.4.4.1).
G.4.8.2 Write the equations of parallel and perpendicular lines (10.M.4.4.1).
G.4.8.3 Graph parallel and perpendicular lines from their equations (10.M.4.4.1).

Goal 4.9: Analyze characteristics and properties of angles.

Objective(s): By the end of Geometry, the student will be able to:

G.4.9.1 Use accepted geometric notation for lines, planes, segments, rays, angles, similarity, and congruence.
G.4.9.2 Identify and determine relationships in adjacent, complementary, supplementary, vertical angles, and linear pairs.

Standard 5: Data Analysis, Probability, and Statistics

Goal 5.1: Represent data with a variety of formats.

No objectives at this grade level.

Goal 5.2: Collect, organize, and display data.

No objectives at this grade level.

Goal 5.3: Apply simple statistical measurements.

No objectives at this grade level.

Goal 5.4: Understand basic concepts of probability.

No objectives at this grade level.

Goal 5.5: Make predictions or decisions based on data.

No objectives at this grade level.

IDAHO CONTENT STANDARDS
ALGEBRA I
MATHEMATICS

Students are expected to know content and apply skills from previous grades.

Mathematical reasoning and problem solving processes should be incorporated throughout all mathematics standards. Students should use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information and to explain mathematical reasoning and concepts.

Standard 1: Number and Operation

Goal 1.1: Understand and use numbers.

Objective(s): By the end of Algebra I, the student will be able to:

- A1.1.1.1 Use integers, absolute value, fractions, decimals, percentages, and scientific notation.
- A1.1.1.2 Use squares and square roots.
- A1.1.1.3 Use the language of algebra to communicate algebraic ideas correctly.

Goal 1.2: Understand and perform computations accurately.

Objective(s): By the end of Algebra I, the student will be able to:

- A1.1.2.1 Use the order of operations to perform operations with rational numbers.
- A1.1.2.2 Apply properties of rational numbers (e.g. associative, commutative, distributive, substitution, inverses and identities).
- A1.1.2.3 Apply properties of whole number exponents.

Goal 1.3: Estimate and judge reasonableness of results.

Objective(s): By the end of Algebra I, the student will be able to:

- A1.1.3.1 Apply number sense to everyday situations and judge reasonableness of solutions.
- A1.1.3.2 Estimate square roots between consecutive integers.

Standard 2: Concepts and Principles of Measurement

Goal 2.1: Understand and use U.S. customary and metric measurements

No objectives at this grade level.

Goal 2.2: Apply the concepts of rates, ratios, and proportions.

Objective(s): By the end of Algebra I, the student will be able to:

- A1.2.2.1 Formulate and use proportions and ratios.

Goal 2.3: Apply dimensional analysis.

Objective(s): By the end of Algebra I, the student will be able to:

A1.2.3.1 Use customary and metric units and their relationship to one another and to real world applications (e.g. length, area, volume, weight, time, and temperature).

A1.2.3.2 Make conversions using equivalent units.

Goal 2.4: Apply appropriate techniques, tools, and formulas to determine measurements.

No objectives at this grade level.

<u>Standard 3</u>: Concepts and Language of Algebra and Functions

Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.

Objective(s): By the end of Algebra I, the student will be able to:

A1.3.1.1 Represent mathematical relationships using variables, expressions, linear equations and inequalities.

Goal 3.2: Manipulate algebraic expressions.

Objective(s): By the end of Algebra I, the student will be able to:

A1.3.2.1 Add, subtract, multiply, divide (by a monomial), and factor algebraic expressions involving rational numbers.

Goal 3.3: Solve algebraic equations and inequalities.

Objective(s): By the end of Algebra I, the student will be able to:

A1.3.3.1 Use algebraic procedures to solve multi-step, first-degree equations and inequalities; such as $3(2x – 5) = 5x + 7$ or $3(2x – 5) > 5x + 7$.

A1.3.3.2 Model and solve real-world phenomena using multi-step, first-degree equations and inequalities.

A1.3.3.3 Find rational solutions to quadratic equations with leading coefficient of one (1) using factoring.

Goal 3.4: Solve simple linear systems of equations and inequalities.

Objective(s): By the end of Algebra I, the student will be able to:

A1.3.4.1 Use graphing, substitution, and linear combination to solve linear systems of equations involving two variables; such as $x + y = 7$ and $2x + 3y = 21$.

A1.3.4.2 Use graphing to solve linear systems of inequalities involving two variables; such as $x + y > 7$ and $2x + 3y < 21$.

A1.3.4.3 Model and solve real world phenomena using linear systems involving one or two variables.

Goal 3.5: Understand the concept of functions.

Objective(s): By the end of Algebra I, the student will be able to:

A1.3.5.1 Determine whether a relation is a function given graphs, charts, ordered pairs, mappings, or equations.

A1.3.5.2 Evaluate functions written in function notation.
A1.3.5.3 Identify domain and range for given graphs, charts, ordered pairs, mappings, or linear functions
A1.3.5.4 Differentiate between linear and non-linear functions and graphs.

Goal 3.6: Apply functions to a variety of problems.

Objective(s): By the end of Algebra I, the student will be able to:
A1.3.6.1 Model real-world phenomena with linear functions.
A1.3.6.2 Use graphs and tables to represent and solve problems.

Standard 4: Concepts and Principles of Geometry

Goal 4.1 Apply concepts of size, shape, and spatial relationships.

No objectives at this grade level.

Goal 4.2 Apply the geometry of right triangles.

No objectives at this grade level.

Goal 4.3: Apply graphing in two dimensions.

Objective(s): By the end of Algebra I, the student will be able to:
A1.4.3.1 Identify attributes of the Cartesian Coordinate System, such as quadrants, origin, and axes.
A1.4.3.2 Graph scatter plots and informal trend lines (e.g. eyeball fit lines).
A1.4.3.3 Identify correlations (positive, negative, or none).

Goal 4.4: Represent and graph linear relationships.

Objective(s): By the end of Algebra I, the student will be able to:
A1.4.4.1 Graph linear relationships.
A1.4.4.2 Write equations and inequalities for linear relationships.
A1.4.4.3 Use multiple representations for linear relationships such as tables, graphs, mathematical symbols, and verbal or written descriptions.
A1.4.4.4 Interpret the rate of change (slope) and the intercepts given a linear relationship

Goal 4.5: Use reasoning skills.

Objective(s): By the end of Algebra I, the student will be able to:
A1.4.5.1 Use algebraic reasoning and understand logic of algebraic procedures.

Standard 5: Data Analysis, Probability, and Statistics

Goal 5.1: Represent data with a variety of formats.

Objective(s): By the end of Algebra I, the student will be able to:

A1.5.1.1 Read and interpret tables, charts, and graphs.

Goal 5.2: Collect, organize, and display data.

Objective(s): By the end of Algebra I, the student will be able to:

A1.5.2.1 Organize and display the data in tables, charts, and graphs.

Goal 5.3: Apply simple statistical measurements.

Objective(s): By the end of Algebra I, the student will be able to:

A1.5.3.1 Interpret and use basic statistical concepts including mean, median, mode, range, and distribution of data (including outliers).

A1.5.3.2 Make predictions and draw conclusions based on statistical measures.

Goal 5.4: Understand basic concepts of probability.

Objective(s): By the end of Algebra I, the student will be able to:

A1.5.4.1 Differentiate between experimental and theoretical probability.

A1.5.4.2 Find probabilities based on two independent events.

Goal 5.5: Make predictions or decisions based on data.

No objectives at this grade level.

IDAHO CONTENT STANDARDS
ALGEBRA II
MATHEMATICS

Students are expected to know content and apply skills from previous grades.

Mathematical reasoning and problem solving processes should be incorporated throughout all mathematics standards. Students should use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information and to explain mathematical reasoning and concepts.

Standard 1: Number and Operation

Goal 1.1: Understand and use numbers.

Objective(s): By the end of Algebra II, the student will be able to:

- A2.1.1.1 Apply properties of exponents.
- A2.1.1.2 Simplify expressions containing negative radicands.
- A2.1.1.3 Evaluate general logarithms.

Goal 1.2: Understand and perform computations accurately.

Objective(s): By the end of Algebra II, the student will be able to:

- A2.1.2.1 Simplify expressions containing radicals and rational exponents.
- A2.1.2.2 Perform operations on radical expressions and complex numbers.
- A2.1.2.3 Apply the laws of logarithms.
- A2.1.2.4 Apply the change of base formula of logarithms.

Goal 1.3: Estimate and judge reasonableness of results.

No objectives at this grade level.

Standard 2: Concepts and Principles of Measurement

Goal 2.1: Understand and use U. S. customary and metric measurements

No objectives at this grade level.

Goal 2.2: Apply the concepts of rates, ratios, and proportions.

No objectives at this grade level.

Goal 2.3: Apply dimensional analysis.

No objectives at this grade level.

Goal 2.4: Apply appropriate techniques, tools, and formulas to determine measurements.

No objectives at this grade level.

Standard 3: Concepts and Language of Algebra and Functions

Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.

Objective(s): By the end of Algebra II, the student will be able to:

- A2.3.1.1 Write equations of lines (slope-intercept, point-slope, and standard form; parallel and perpendicular lines).
- A2.3.1.2 Apply the properties of exponents.
- A2.3.1.3 Simplify and classify expressions containing polynomials.
- A2.3.1.4 Add, subtract, and multiply polynomials.
- A2.3.1.5 Factor and divide polynomials.
- A2.3.1.6 Write equations in standard form (parabola, circle).
- A2.3.1.7 Simplify rational expressions, including complex fractions.
- A2.3.1.8 Apply the laws of logarithms to expand and condense expressions.

Goal 3.2: Evaluate algebraic expressions.

Objective(s): By the end of Algebra II, the student will be able to:

- A2.3.2.1 Evaluate and simplify variable expressions.
- A2.3.2.2 Add, subtract, multiply and divide radical expressions.

Goal 3.3: Solve algebraic equations and inequalities.

Objective(s): By the end of Algebra II, the student will be able to:

- A2.3.3.1 Solve single variable equations and single variable inequalities and represent solutions on a number line.
- A2.3.3.2 Solve single variable absolute value equations and absolute value inequalities and represent solutions on a number line.
- A2.3.3.3 Solve radical and rational equations including extraneous roots.
- A2.3.3.4 Solve quadratic equations using multiple methods.
- A2.3.3.5 Solve exponential and logarithmic equations.
- A2.3.3.6 Find factors and zeros of polynomial functions.

Goal 3.4: Solve simple linear systems of equations.

Objective(s): By the end of Algebra II, the student will be able to:

- A2.3.4.1 Solve systems of equations in two and three variables.
- A2.3.4.2 Solve systems of inequalities in two variables by graphing.

Goal 3.5: Understand the concept of functions.

Objective(s): By the end of Algebra II, the student will be able to:

- A2.3.5.1 Identify the domain and range (linear, absolute value, quadratic, exponential, and rational).

Goal 3.6: Apply functions to a variety of problems.

Objective(s): By the end of Algebra II, the student will be able to:

A2.3.6.1 Apply linear programming to problem analysis.
A2.3.6.2 Predict outcomes by applying exponential growth and decay.
A2.3.6.3 Solve application problems using quadratic functions.
A2.3.6.4 Determine the outcome of function compositions.
A2.3.6.5 Determine the inverse of a given one-to-one function.

Standard 4: Concepts and Principles of Geometry

Goal 4.1 Apply concepts of size, shape, and spatial relationships.

Objective(s): By the end of Algebra II, the student will be able to:
Recognize graphs of polynomial functions (direct variation, and inverse variation, growth, decay, linear, circular, parabolic, cubic, absolute value).

Goal 4.2 Apply the geometry of right triangles.

Objective(s): By the end of Algebra II, the student will be able to:

A2.4.2.1 Solve right triangles by applying the Pythagorean Theorem and trigonometric functions.

Goal 4.3: Apply graphing in two dimensions.

Objective(s): By the end of Algebra II, the student will be able to:

A2.4.3.1 Graph circles and parabolas.
A2.4.3.2 Solve quadratic inequalities by graphing.

Goal 4.4: Represent and graph linear relationships.

Objective(s): By the end of Algebra II, the student will be able to:

A2.4.4.1 Graph equations, inequalities, and absolute value relationships on a coordinate plane.

Goal 4.5: Understand the tools of graphing.

No objectives at this grade level.

Standard 5: Data Analysis, Probability, and Statistics

Goal 5.1: Represent data with a variety of formats.

No objectives at this grade level.

Goal 5.2: Collect, organize, and display data.

No objectives at this grade level.

Goal 5.3: Apply simple statistical measurements.

No objectives at this grade level.

Goal 5.4: Understand the basic concepts of probability.

No objectives at this grade level.

Goal 5.5: Make predictions or decisions based on data.

No objectives at this grade level.

IDAHO CONTENT STANDARDS
MATH ANALYSIS
MATHEMATICS

Students are expected to know content and apply skills from previous grades.

Mathematical reasoning and problem solving processes should be incorporated throughout all mathematics standards. Students should use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information and to explain mathematical reasoning and concepts.

Standard 1: Number and Operation

Goal 1.1: Understand and Use Numbers

Objectives: By the end of Math Analysis, the student will be able to:

- MA.1.1.1 Apply matrices to systems and use them to organize and store data.
- MA.1.1.2 Apply properties of exponents and logarithms.

Goal 1.2: Understand and perform computations accurately

Objectives: By the end of Math Analysis, the student will be able to:

- MA.1.2.1 Convert rectangular coordinates to polar coordinates and back.
- MA.1.2.2 Perform operations on real and complex numbers.
- MA.1.2.3 Perform operations on matrices.

Goal 1.3: Estimate and judge reasonableness of results

Objective(s): By the end of Math Analysis, the student will be able to:

- MA.1.3.1 Estimate in which quadrant an angle lies given its radian or degree measurement.

Standard 2: Concepts and Principles of Measurement

Goal 2.1: Understand and use U.S. customary and metric measurements.

No objectives at this grade level.

Goal 2.2: Apply the concepts of rates, ratios, and proportions.

No objectives at this grade level.

Goal 2.3: Apply dimensional analysis.

Objective(s): By the end of Math Analysis, the student will be able to:

- MA.2.3.1 Draw an angle in standard position given degree or radian measure.
- MA.2.3.2 Compute its co-terminal angles and reference angle given an angle in standard position.

Goal 2.4: Apply appropriate techniques, tools, and formulas to determine measurements.

Objective(s): By the end of Pre-Calculus, the student will be able to:

MA.2.4.1 Convert radians to degrees and degrees to radians.

Standard 3: Concepts and Language of Algebra and Functions

Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.3.1.1 Manipulate and simplify the reciprocal and Pythagorean identities.
MA.3.1.2 Select and use various representations for relations and functions.
MA.3.1.3 Perform transformations such as arithmetically combining, finding the inverse, and the composition of functions.
MA.3.1.4 Use the standard and general forms of the equations of circles and parabolas.

Goal 3.2: Evaluate algebraic expressions.

No objectives at this grade level.

Goal 3.3: Solve algebraic equations and inequalities.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.3.3.1 Solve trigonometric, exponential, logarithmic, rational, and polynomial equations.
MA.3.3.2 Solve systems of linear inequalities.

Goal 3.4: Solve simple linear systems of equations.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.3.4.1 Solve systems of linear equations.

Goal 3.5: Understand the concept of functions.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.3.5.1 Identify domain and range given a sine or cosine function.
MA.3.5.2 Define, identify, and apply relations and functions.
MA.3.5.3 Use and compare the properties of classes of functions, including polynomial, rational, exponential, and logarithmic functions.

Goal 3.6: Apply functions to a variety of problems.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.3.6.1 Use the Law of Sines and Law of Cosines appropriately to solve triangles.
MA.3.6.2 Model and solve real world phenomena using trigonometric functions.

Goal 3.7: Analyze the behavior of series and sequences.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.3.7.1 Use arithmetic, geometric, and infinite notation.
MA.3.7.2 Identify and find nth terms of arithmetic and geometric sequences.
MA.3.7.3 Find sums of arithmetic, geometric, and infinite series.

Standard 4: Concepts and Principles of Geometry

Goal 4.1: Apply concepts of size, shape, and spatial relationships.

Objective(s): By the end of Math Analysis, the student will be able to:
MA.4.1.1 Find the period and amplitude of sine and cosine functions.
MA.4.1.2 Identify families of graphs.

Goal 4.2: Apply the geometry of right triangles.

Objective(s): By the end of Math Analysis, the student will be able to:
MA.4.2.1 Solve right triangles using the Pythagorean Theorem and trigonometric ratios.
MA.4.2.2 Classify and solve special 30 – 60 – 90 and 45 – 45 – 90 triangles.

Goal 4.3: Apply graphing in two dimensions.

Objective(s): By the end of Math Analysis, the student will be able to:
MA.4.3.1 Graph trigonometric functions of the form d + A sin* (Bx) and d + A cos(Bx) functions.

Goal 4.4: Represent and graph linear relationships.

No objectives at this grade level.

Goal 4.5: Understand the basic concepts of polygons.

No objectives at this grade level.

Goal 4.6: Understand basic concepts of a circle.

Objective(s): By the end of Math Analysis, the student will be able to:
MA.4.6.1 Apply Unit Circle Trigonometry.

Standard 5: Data Analysis, Probability, and Statistics

Goal 5.1: Represent data with a variety of formats.

No objectives at this grade level.

Goal 5.2: Collect, organize, and display data.

Objective(s): By the end of Math Analysis, the student will be able to:
MA.5.2.1 Choose an experimental design or survey sampling method appropriate to collect data.
MA.5.2.2 Choose an appropriate table or graph to display data.

Goal 5.3: Apply simple statistical measurements.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.5.3.1 Choose and compute an appropriate measure of center and measure of spread for univariate data.

MA.5.3.2 Compute correlation and least squares regression line for bivariate data.

MA.5.3.3 Compute appropriate relative frequencies for categorical data.

Goal 5.4: Understand basic concepts of probability.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.5.4.1 Define an appropriate sample space or event given a random phenomenon.

MA.5.4.2 Identify events that are equally likely, independent, or mutually exclusive.

MA.5.4.3 Determine experimental probabilities given data and theoretical probabilities using the multiplication and addition rules.

Goal 5.5: Make predictions or decisions based on data.

Objective(s): By the end of Math Analysis, the student will be able to:

MA.5.5.1 Predict one variable given a value for the other using the equation of a least squares regression line.

MA.5.5.2 Decide whether two events are independent given the relative frequencies from a two way table.

IDAHO CONTENT STANDARDS
MATH ANALYSIS OF PERSONAL FINANCE
MATHEMATICS

Students are expected to know content and apply skills from previous grades.

Mathematical reasoning and problem solving processes should be incorporated throughout all mathematics standards. Students should use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information and to explain mathematical reasoning and concepts.

Standard 1: Money Management

Goal 1.1: Understanding and using effective money management

Objective(s): By the end of Math Analysis of Personal Finance, the student will be able to:

- MAPF.1.1.1 Demonstrate skill in basic financial tasks, including scheduling bill payments, writing checks, reconciling a checking/debit account statements, and monitoring account statements for accuracy
- MAPF.1.1.2 Interpret appropriate financial graphs, charts and tables
- MAPF.1.1.3 Construct a cash flow statement
- MAPF.1.1.4 Create, balance and use a personal budget including fixed and variable expenses
- MAPF.1.1.5 Calculate the necessary future income to maintain a current standards of living
- MAPF.1.1.6 Compare the total cost of reducing a credit card balance to zero with minimum payments versus above minimum payments
- MAPF.1.1.7 Explain how credit card grace periods, methods of interest calculations, and fees affect borrowing costs
- MAPF.1.1.8 Explain the most cost effective option for purchasing and automobile

Standard 2: Consumerism

Goal 2.1: Making responsible financial choices

Objective(s): By the end of Math Analysis of Personal Finance, the student will be able to:

- MAPF.2.1.1 Compare, contrast and compute interest rates and fees associated with various financial institutions
- MAPF.2.1.2 Examine critically the impact of socio-cultural norms and demographics related to money, saving, and spending.
- MAPF.2.2.3 Determine the cost of various interest rates and fees to a consumer
- MAPF.2.2.4 Create measurable short, medium, and long-term financial goals
- MAPF.2.2.5 Calculate how inflation affects financial decisions
- MAPF.2.2.6 Using a scenario, calculate the amount paid on an insurance claim after applying exclusions and deductibles
- MAPF.2.2.7 Compare the costs of auto insurance for the same vehicle, given two different deductibles and two different liability coverage limits

Standard 3: Saving and Investment

Goal 3.1: Implement a diversified saving and investment strategy

Objective(s): By the end of Math Analysis of Personal Finance, the student will be able to:

- MAPF.3.1.1 Apply strategies for creating wealth/building assets
- MAPF.3.1.2 Demonstrate ability to use decision-making processes in making financial decisions related to planning, saving, and investing
- MAPF.3.1.3 Develop and defend the best investment and/or savings options to achieve particular goals
- MAPF.3.1.4 Describe the advantages and disadvantages of saving for short, medium, and long-term goals
- MAPF.3.1.5 Compare the risk, return, and liquidity of various investment alternatives
- MAPF.3.1.6 Evaluate the effect of compounding earned interest
- MAPF.3.1.7 Create a model for comparing savings and investment results using a graphing or internet calculator
- MAPF.3.1.8 Identify and assess various means of building wealth

Standard 4: Education and Income

Goal 4.1: Understand the relationship between education, income, career, and desired lifestyle

Objective(s): By the end of Math Analysis of Personal Finance, the student will be able to:

- MAPF.4.1.1 Explain how income reflects choices made about jobs, careers, education, and skill development
- MAPF.4.1.2 Evaluate sources of income and resources available that may substitute for income
- MAPF.4.1.3 Examine how income affects lifestyle choices and spending decisions
- MAPF.4.1.4 Explain how employee benefits relate to disposable income
- MAPF.4.1.5 Analyze how payroll deductions modify an employee's disposable income
- MAPF.4.1.6 Analyze the importance of workforce skills to society and the impact the supply and demand for qualified workers has on wages/salary

Standard 5: Taxation

Goal 5.1: Understand the purposes, roles, and responsibilities related to taxation

Objective(s): By the end of Math Analysis of Personal Finance, the student will be able to:

- MAPF.5.1.1 Compare the returns of taxable investments with those that are tax-exempt and tax-deferred
- MAPF.5.1.2 Demonstrate how taxable income impacts disposable income
- MAPF.5.1.3 Contrast the benefits of traditional IRA versus a Roth IRA
- MAPF.5.1.4 Evaluate the advantages provided by employer-sponsored retirement savings plans, including 401(k), 504(b), and other related plans.
- MAPF.5.1.5 Explain how deductions, exemptions, and credits reduce taxable income
- MAPF.5.1.6 Analyze the relationship between various forms of taxation

MAPF.5.1.7 Develop personal financial planning strategies that respond to and use tax deductions and shelters

MAPF.5.1.8 Analyze the application and impact of various forms of taxation on individuals, families, and public agencies

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IDAHO CONTENT STANDARDS
TECHNICAL MATH
MATHEMATICS

Technical Math uses problem situations, physical models, and appropriate technology to extend mathematical thinking and engage student reasoning. Problem solving situations, including those related to a variety of careers and technical fields will provide all students an environment which promotes communication and fosters connections within mathematics to other disciplines and to the technological workplace. Students will use hands-on activities to model, explore, and develop abstract concepts. The use of appropriate technology will help students apply math in an increasingly technological world. Collaboration between math and professional-technical teachers is an integral part of this course.

Completion of Algebra I is strongly recommended before taking this course. If Algebra I is not taken prior to this course, Algebra I objectives will need to be taught. Otherwise, Algebra I objectives may simply be reviewed. Technical Math is intended to fulfill the requirement for a 3rd year of math, taken in the senior year. The standards include the knowledge that students need to know in order to enter a credit bearing math class at the college level.

Standard 1: Number and Operation

Goal 1.1: Understand and use numbers.

Objective(s): By the end of Technical Math, the student will be able to:

- TM.1.1.1 Apply properties of rational numbers. (eg necessary skill for applying numbers)
- TM.1.1.2 Perform operations using positive and negative numbers, fractions, absolute value, decimals, percentages, and scientific notation. (eg given the cost of a project, determine what percentage of the budget went for salaries)
- TM.1.1.3 Apply properties of exponents. (eg calculate the power dissipated by a resistor when its current and voltage drop are given in exponent form)
- TM.1.1.4 Identify perfect squares and their principal roots. (eg 4, 9, and 16 are perfect squares and their respective roots are 2, 3, and 4)
- TM.1.1.5 Solve problems using number theory concepts. (eg given initial expenses, money needed for reserve and start-up inventory, calculate the start up costs for a business by using the Starting Cost Calculator on the US Small Business Administration Web site)
- TM.1.1.6 Estimate the value of an irrational number expressed as a radical. (eg calculate the impedance of an inductive series circuit when given the circuit's total resistance and total inductive reactance)
- TM.1.1.7 Apply properties of common and natural logarithms. (eg determine medication absorption rate)
- TM.1.1.8 Use Fundamental Counting Principles. (eg calculate number of outfits from set number of separates)
- TM.1.1.9 Use combinations and permutations. (eg calculate the number of ways to order the digits for a phone number)

Goal 1.2: Understand and perform computations accurately.

Objective(s): By the end of Technical Math, the student will be able to:

TM.1.2.1 Perform fundamental rational expression and number operations that involve a variety of applications. (eg determine wage and benefits)

TM.1.2.2 Read, write, and solve problems using scientific notation. (eg determine voltage of a circuit)

TM.1.2.3 Solve problems using direct and inverse variation. (eg determine the mechanical advantage of gears)

TM.1.2.4 Perform operations on complex numbers. (eg find amperage of current, knowing voltage and impedance if the impedance includes inductors or capacitors)

TM.1.2.5 Calculate nth powers and nth roots. (eg compute interest on investments)

Goal 1.3: Estimate and judge reasonableness of results.

Objective(s): By the end of Technical Math, the student will be able to:

TM.1.3.1 Estimate square roots between consecutive integers. (eg necessary foundation information)

TM.1.3.2 Determine relative and percent of error. (eg scale drawings must be within (+,-) $1/16^{th}$ of an inch)

TM.1.3.3 Apply number sense to everyday situations. (eg approximate grocery totals)

<u>Standard 2</u>: Concepts and Principles of Measurement

Goal 2.1: Understand and use U.S. customary and metric measurements.

Objective(s): By the end of Technical Math, the student will be able to:

TM.2.1.1 Perform metric conversions within the system. (eg convert medicine dosage from adult to child)

TM.2.1.2 Solve problems by converting between English and metric systems. (eg trip planning from miles to kilometers and gallons to liters)

TM.2.1.3 Determine length, distance, area, surface area, volume, and weight, with appropriate unit labels. (eg determine number of flowers needed to fill a flower bed)

TM.2.1.4 Calculate circumference, area, radius, diameter, area of sector, arc length of a circle with appropriate unit labels. (eg develop a circular watering system)

Goal 2.2: Apply the concepts of rates, ratios, and proportions.

Objective(s): By the end of Technical Math, the student will be able to:

TM.2.2.1 Determine an unknown term in a ratio. (eg comparing cost of living between cities)

Goal 2.3: Apply dimensional analysis.

Objective(s): By the end of Technical Math, the student will be able to:

TM.2.3.1 Solve English weights and measure problems using dimensional analysis. (eg feet per second to miles per hour)
TM.2.3.2 By use of estimation convey knowledge of volume versus mass. (eg determine dosage of medicine per weight)

Goal 2.4: Apply appropriate techniques, tools, and formulas to determine measurements.

Objective(s): By the end of Technical Math, the student will be able to:
TM.2.4.1 Determine and use appropriate units. (eg using an existing recipe, calculate a recipe for a larger group, simplify and label new amounts)
TM.2.4.2 Calculate area, surface area for two dimensional objects and volume for three-dimensional objects. (eg compute amount of cement needed for a sidewalk; calculate the cost of heating a building based on square footage)

Standard 3: Concepts and Language of Algebra and Functions

Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.

Objective(s): By the end of Technical Math, the student will be able to:
TM.3.1.1 Represent mathematical relationships using variables, expressions, linear equations and inequalities. (eg using spreadsheet functions, determine sale price of items)
TM.3.1.2 Perform operations on polynomial expressions. (eg compute regular and overtime gross and net earnings)
TM.3.1.3 Perform operations on radical expressions. (eg determine flow rate of water through a fire hose)
TM.3.1.4 Perform operations on rational expressions. (eg determine earnings for a given time frame)
TM.3.1.5 Factor quadratics and other polynomials expressions. (eg determine flight time of a rocket)
TM.3.1.6 Represent application problems as linear equations. (eg level of education versus pay; rate of speed versus fuel consumption; caloric intake versus expenditure)

Goal 3.2: Evaluate algebraic expressions.

Objective(s): By the end of Technical Math, the student will be able to:
TM.3.2.1 Perform fundamental operations on polynomial expressions. (eg calculate the total cost of various items within a meal)

Goal 3.3: Solve algebraic equations and inequalities.

Objective(s): By the end of Technical Math, the student will be able to:
TM.3.3.1 Find solutions to simple quadratic equations. (eg calculate water content of soil based on its weight)
TM.3.3.2 Solve exponential equations. (eg determine atmospheric pressure)

TM.3.3.3 Solve logarithmic equations. (eg determine power of a satellite needed to transmit signals)
TM.3.3.4 Solve absolute value equations. (eg stopping distance of a car)
TM.3.3.5 Solve systems of inequalities in two variables. (eg determine needed sales for a company given overhead)
TM.3.3.6 Solve basic one and two step rational equations. (eg determine amount of medication to administer based on packaging size)

Goal 3.4: Solve simple linear systems of equations.

Objective(s): By the end of Technical Math, the student will be able to:
TM.3.4.1 Solve a system of two linear equations in an application setting. (eg child care facility – sq footage to number of children; solving electrical current in a circuit with multiple paths)

Goal 3.5: Understand the concept of functions.

Objective(s): By the end of Technical Math, the student will be able to:
TM.3.5.1 Determine whether a relation is a function given graphs, charts, ordered pairs, mappings, or equations. (eg graph the distance a ballistic device travels at different angles and determine if the data is a function of the angle)
TM.3.5.2 Evaluate functions written in function notation. (eg work with the function V=I*R and solve for different I and R)
TM.3.5.3 Differentiate between linear and non-linear functions and graphs. (eg differentiate between a thrown object and the distance a car travels)
TM.3.5.4 Identify domain and range for given graphs, charts, ordered pairs, mappings, or linear functions. (eg constraints of any situation such as a budget)

Goal 3.6: Apply functions to a variety of problems.

Objective(s): By the end of Technical Math, the student will be able to:
TM.3.6.1 Model real-world phenomena with linear functions. (eg graph fuel consumption versus speed)
TM.3.6.2 Use graphs and tables to represent and solve problems. (eg stress test of cardiovascular system)
TM.3.6.3 Solve application problems by isolating a specific variable in a formula and then substituting values. (eg determining interest rate on a loan)

<u>Standard 4</u>: Concepts and Principles of Geometry

Goal 4.1: Apply concepts of size, shape, and spatial relationships.

Objective(s): By the end of Technical Math, the student will be able to:
TM.4.1.1 Identify and apply congruency and similarity of two-dimensional figures. (eg compare trusses or wall panels)
TM.4.1.2 Identify the scale factor of similar three-dimensional figures and find the ratios of their surface areas and volumes. (eg compare blueprint to actual model)

TM.4.1.3 Use transformational geometry to rotate, translate, and reflect figures in a coordinate plane. (eg flip a house plan)
TM.4.1.4 Describe and apply magnitude and direction of vectors. (eg determine resultant direction due to wind)

Goal 4.2 Apply the geometry of right triangles.

Objective(s): By the end of Technical Math, the student will be able to:
TM.4.2.1 Understand and apply the Pythagorean Theorem for problem solving. (eg checking accuracy on gate construction)
TM.4.2.2 Identify and apply special right triangle relationships. (eg isometric drawing in drafting)
TM.4.2.3 Use right triangle trigonometry to solve right triangles. (eg determine angle of elevation using sine, cosine and tangent)
TM.4.2.4 Use trigonometric ratios to solve problems. (eg angle of depression)

Goal 4.3: Apply graphing in two dimensions.

Objective(s): By the end of Technical Math, the student will be able to:
TM.4.3.1 Identify attributes of the Cartesian Coordinate System, such as quadrants, origin, and axes. (eg layout of house plans or CAD drawing)
TM.4.3.2 Graph scatter plots and informal trend lines. (eg growth of state economy)
TM.4.3.3 Identify positive and negative correlations. (eg vehicle depreciation)
TM.4.3.4 Determine the length and midpoint of a segment in the coordinate plane. (eg on-center carpentry from a blueprint would include the coordinate plane)
TM.4.3.5 Graph quadratic and absolute value functions. (eg maximize profit from revenue)
TM.4.3.6 Graph exponential functions. (eg rate of bacterial growth)
TM.4.3.7 Graph systems of equations and inequalities in two variables. (eg mixing solutions for weed control)

Goal 4.4: Apply concepts of parallel lines.

Objective(s): By the end of Technical Math, the student will be able to:
TM.4.4.1 Identify the special angle pairs formed by parallel lines and a transversal. (eg building a gate; designing a quilt)
TM.4.4.2 Apply the properties of special angle pairs formed by parallel lines and a transversal (eg building a gate; designing a quilt)

Goal 4.5: Apply concepts of polygons.

Objectives: By the end of Technical Math, the student will be able to:
TM.4.5.1 Classify triangles and quadrilaterals based on their attributes. (eg label triangles and quadrilaterals in a house plan)
TM.4.5.2 Find the sum of the interior and exterior angles of a polygon. (eg add the interior and exterior angles of a pentagonal swimming pool)

TM.4.5.3 Find the measure of each interior and exterior angle of a regular polygon. (eg find the degree of angles to create a stop sign)
TM.4.5.4 Determine whether or not a polygon is regular. (eg design a hexagon table using a circle)

Goal 4.6: Understand basic concepts of a circle.

Objectives: By the end of Technical Math, the student will be able to:
TM.4.6.1 Identify the parts of a circle including radius, diameter, major/minor arcs, chords, secants and tangents. (eg necessary foundation information)
TM.4.6.2 Determine the lengths of segments and the measures of angles formed by radii, chords, secants, and tangents. (eg calculate trim for an arched window)

Goal 4.7: Apply Reasoning Skills.

No objectives at this grade level.

Goal 4.8: Represent and graph linear relationships.

Objectives: By the end of Technical Math, the student will be able to:
TM.4.8.1 Construct graphs and write equations and inequalities for linear relationships. (eg relationship between cost and demand)
TM.4.8.2 Given a linear relationship, interpret the rate of change (slope) and the intercepts. (eg rate of feed to fill a grain truck)
TM.4.8.3 Write equations of lines given various information including parallel, perpendicular, vertical, and horizontal lines. (eg alignment of restaurant with layout of city street)
TM.4.8.4 Graph linear equations. (eg constant increase in water temperature over time; monthly changes in sales)

Goal 4.9: Analyze characteristics and properties of angles.

No objectives at this grade level.

Standard 5: Data Analysis, Probability, and Statistics

Goal 5.1: Represent data with a variety of formats.

Objective(s): By the end of Technical Math, the student will be able to:
TM.5.1.1 Analyze and interpret tables, charts and graphs. (eg interpret a body mass index (BMI) chart)

Goal 5.2: Collect, organize, and display data.

Objective(s): By the end of Technical Math, the student will be able to:
TM.5.2.1 Collect, organize, and display data in tables, charts and graphs. (eg chart change in stock values over 4 weeks)

Goal 5.3: Apply simple statistical measurements.

Objective(s): By the end of Technical Math, the student will be able to:

TM.5.3.1 Interpret and use basic statistical concepts including mean, median, mode, range, and distribution of data. (eg wages – state compared to national)

TM.5.3.2 Make predictions and draw conclusions based on statistical measures. (eg predict the number of new jobs based on growth in population; predict the number of sunny days in a given area for a given time frame)

Goal 5.4: Understand basic concepts of probability.

Objective(s): By the end of Technical Math, the student will be able to:

TM.5.4.1 Find probabilities based on independent events. (eg determine probability of specific outcomes when a coin is flipped three times)

Goal 5.5: Make predictions or decisions based on data.

Objective(s): By the end of Technical Math, the student will be able to:

TM.5.5.1 Make predictions based on randomness, chance, equally likely events, and probability. (eg predict the likelihood of having an accident using past accident data)

TM.5.5.2 Use data to predict the chance of an event. (eg calculate the odds of a hit based on the batting average)

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Secondary Mathematics
AP Statistics

Prerequisite: Mastery of Algebra II and/or appropriate Compass Score

Course Description

A course in AP Statistics consists of a full academic year of work in statistics and related topics comparable to courses in colleges and universities. The *Advanced Placement Course Description for Statistics* for the current school year should be consulted to provide the teacher with a guide to the topics and concepts that should be included in the high school statistics course. This publication is updated by the College Board and provides a descriptive outline of the course, detailing its content and the kinds of skills students are expected to demonstrate in the corresponding introductory college-level course (see the abbreviated outline below). It also provides a description of the Advanced Placement examination, sample multiple-choice questions with an answer key, and sample free-response questions. The *Advanced Placement Course Description for Statistics* should be the guide, and the teacher is responsible for expanding the course to include applications and enrichment. The *Advanced Placement Teacher's Guide in Statistics* is another publication containing syllabi developed by high school teachers currently teaching the AP course and by college faculty who teach the equivalent course at their institutions. It also contains lesson plans, innovative teaching tips, and lists of recommended teaching resources.

Copies of the *Advanced Placement Course Description for Statistics* and the *Advanced Placement Teacher's Guide in Statistics* for the current year may be obtained by writing to:

College Board Publications
Dept. CMC0400 A B C D
Two College Way
Forrester Center, WV 25438

Materials may be purchased online at www.collegeboard.com in the College Board Online Store. Additional information regarding the course and ancillary materials may be reviewed at http://apcentral.collegeboard.com.

Below is an abbreviated version of the course outline from the College Board AP Statistics website.

I. Exploring Data: Describing patterns and departures from patterns.

- **A.** Constructing and interpreting graphical displays of distributions of univariate data (dotplot, stemplot, histogram, cumulative frequency plot)
- **B.** Summarizing distributions of univariate data
- **C.** Comparing distributions of univariate data (dotplots, back-to-back stemplots, parallel boxplots)
- **D.** Exploring bivariate data
- **E.** Exploring categorical data

II. Sampling and Experimentation: Planning and conducting a study.

- **A.** Overview of methods of data collection
- **B.** Planning and conducting surveys
- **C.** Planning and conducting experiments
- **D.** Generalizability of results and types of conclusions that can be drawn from observational studies, experiments, and surveys

III. Anticipating Patterns: Exploring random phenomena using probability and simulation.

- **A.** Probability
- **B.** Combining independent random variables
- **C.** The normal distribution
- **D.** Sampling distributions

IV. Statistical Inference: Estimating population parameters and testing hypotheses.

- **A.** Estimation (point estimators and confidence intervals)
- **B.** Tests of significance

Secondary Mathematics
AP Calculus

*Prerequisite: Pre-Calculus Course **or** Teacher Recommendation*

Course Description:

An Idaho Course in AP Calculus consists of a full year of academic work in calculus and related topics. This should be equivalent to a one semester entry-level calculus course in most colleges or universities. The topics and concepts that should be included in any calculus course, whether AB or BC, can be found in the *Advanced Placement Course Description for Calculus.* Updated annually, this publication provides a descriptive outline for the course while detailing the content and skills students need to demonstrate. This publication also provides a description of the Advanced Placement examination, sample multiple-choice questions with an answer key, and sample free-response questions. Using the *Advanced Placement Course Description for Calculus* as a guide, the teacher is responsible for expanding the course to include enrichment, applications and special projects. The *Advanced Placement Teacher's Guide in Calculus* is a publication that teachers may find very helpful. It contains syllabi developed by high school teachers currently teaching AP Calculus, lesson plans, current teaching techniques, and lists of recommended teaching resources.

Copies of the *Advanced Placement Course Description for Calculus* and the *Advanced Placement Teacher's Guide in Calculus* for the current year may be obtained by writing to:

College Board Publications
Dept. CMC0400 A B C D
Two College Way
Forrester Center, WV 25438

Materials may be purchased online at www.collegeboard.com in the College Board Online Store. Additional information about the course, previous AP Tests and review problems, and any supplemental materials may be reviewed at http://apcentral.collegeboard.com.

Below is an abbreviated version of the course outline from the College Board AP Calculus website.

I. Functions, Graphs, and Limits

- Analysis of graphs
- Limits of functions (including one-sided limits)
- Asymptotic and unbounded behavior
- Continuity as a property of functions
- * Parametric, polar, and vector functions

II. Derivatives

- Concept of the derivative
- Derivative at a point
- Derivative as a function
- Second derivatives
- Applications of derivatives
- Computation of Derivatives

III. Integrals

- Interpretations and properties of definite integrals
- Applications of integrals
- Fundamental Theorem of Calculus
- Techniques of antidifferentiation
- Applications of antidifferentiation
- Numerical approximations to definite integrals

*IV. Polynomial

- * Concept of series
- * Series of constants
- * Taylor series

Note: The topic outline for Calculus BC includes all of the topics for Calculus AB. Additional topics are indicated with an asterisk (*).

IDAHO CONTENT STANDARDS
PRE-CALCULUS/TRIGONOMETRY
MATHEMATICS

This set of standards combined with "Pre-Calculus/Algebra" forms the content standard for Pre-Calculus. This set alone forms the content for Trigonometry.

Students are expected to know content and apply skills from previous grades.

Mathematical reasoning and problem solving processes should be incorporated throughout all mathematics standards. Students should use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information and to explain mathematical reasoning and concepts.

Standard 1: Number and Operation

Goal 1.1: Understand and Use Numbers

No objectives at this grade level.

Goal 1.2: Understand and perform computations accurately

Objectives: By the end of Trigonometry, the student will be able to:

PC.T.1.2.1 Convert rectangular coordinates to polar coordinates and back.
PC.T.1.2.2 Perform vector operations.
PC.T.1.2.3 Use appropriate technology to complete applied problems.
PC.T.1.2.4 Use appropriate vocabulary to communicate solutions.

Goal 1.3: Estimate and judge reasonableness of results

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.1.3.1 Estimate in which quadrant an angle lies given its radian or degree measurement.

Mathematical Language and Symbols Students Should Use
Polar coordinates, radian measure, amplitude, magnitude, Cartesian plane, vector, trigonometric ratios, Pythagorean Theorem

Standard 2: Concepts and Principles of Measurement

Goal 2.1: Understand and use U.S. customary and metric measurements.

No objectives at this grade level.

Goal 2.2: Apply the concepts of rates, ratios, and proportions.

No objectives at this grade level.

Goal 2.3: Apply dimensional analysis.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.T.2.3.1 Draw an angle in standard position given degree or radian measure.
PC.T.2.3.2 Compute its co-terminal angles and reference angle given an angle in standard position.
PC.T.2.3.3 Use appropriate vocabulary to communicate solutions.

Goal 2.4: Apply appropriate techniques, tools, and formulas to determine measurements.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.T.2.4.1 Convert radians to degrees and degrees to radians.
PC.T.2.4.2 Find measure of the arc length and area of the sector.
PC.T.2.4.3 Use appropriate vocabulary to communicate solutions.

Mathematical Language and Symbols Students Should Use
Initial side, terminal side, radians, reference angle, terminal angle, standard position, sector, arc, Greek variables

Standard 3: Concepts and Language of Algebra and Functions

Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.3.1.1 Manipulate, simplify, and verify trigonometric identities.

Goal 3.2: Evaluate algebraic expressions.

No objectives at this grade level.

Goal 3.3: Solve algebraic equations and inequalities.

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.3.3.1 Solve trigonometric equations.
PC.T.3.3.2 Use appropriate vocabulary to communicate solutions.

Goal 3.4: Solve simple linear systems of equations.

No objectives at this grade level.

Goal 3.5: Understand the concept of functions.

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.3.5.1 Identify domain and range given a trigonometric function.
PC.T.3.5.2 Use appropriate vocabulary to communicate solutions.

Goal 3.6: Apply functions to a variety of problems.

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.3.6.1 Use the Law of Sines and Law of Cosines appropriately to solve triangles.
PC.T.3.6.2 Model and solve real world phenomena using trigonometric functions and vectors.
PC.T.3.6.3 Use appropriate vocabulary to communicate solutions.

Mathematical Language and Symbols Students Should Use

Fundamental identities, sum and difference identities, half-angle and double angle identities, law of Sines, law of Cosines, sine, cosine, tangent, domain, range, bearing

Standard 4: Concepts and Principles of Geometry

Goal 4.1: Apply concepts of size, shape, and spatial relationships.

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.4.1.1 Find the period, amplitude, phase shift of trigonometric functions.

Goal 4.2: Apply the geometry of right triangles.

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.4.2.1 Solve right triangles using the Pythagorean Theorem and trigonometric ratios.
PC.T.4.2.2 Classify and solve special 30 – 60 – 90 and 45 – 45 – 90 triangles.
PC.T.4.2.3 Use appropriate vocabulary to communicate solutions.

Goal 4.3: Apply graphing in two dimensions.

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.4.3.1 Graph trigonometric functions of the form d + A sin* (Bx + C) and inverse trigonometric functions. Sin* implies any trig function.
PC.T.4.3.2 Place vectors appropriately on a graph.
PC.T.4.3.3 Use appropriate vocabulary to communicate solutions.

Goal 4.4: Represent and graph linear relationships.

No objectives at this grade level.

Goal 4.5: Understand the basic concepts of polygons.

No objectives at this grade level.

Goal 4.6: Understand basic concepts of a circle.

Objective(s): By the end of Trigonometry, the student will be able to:

PC.T.4.6.1 Apply Unit Circle Trigonometry.
PC.T.4.6.2 Use appropriate vocabulary to communicate solutions.

Mathematical Language and Symbols Students Should Use

Period, phase shift, amplitude, Cartesian plane, Pythagorean Theorem, vectors, unit circle, special triangles

Standard 5: Data Analysis, Probability, and Statistics

Goal 5.1: Represent data with a variety of formats.

No objectives at this grade level.

Goal 5.2: Collect, organize, and display data.

No objectives at this grade level.

Goal 5.3: Apply simple statistical measurements.

No objectives at this grade level.

Goal 5.4: Understand basic concepts of probability.

No objectives at this grade level.

Goal 5.5: Make predictions or decisions based on data.

No objectives at this grade level.

IDAHO CONTENT STANDARDS
PRECALCULUS/ALGEBRA
MATHEMATICS

This set of standards, combined with "Pre-Calculus/Trigonometry" forms the content standards for Pre-Calculus. This set alone forms the content for Algebra III.

Students are expected to know content and apply skills from previous grades.

Mathematical reasoning and problem solving processes should be incorporated throughout all mathematics standards. Students should use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information and to explain mathematical reasoning and concepts.

Standard 1: Number and Operation

Goal 1.1: Understand and use numbers.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.A.1.1.1 Apply matrices to systems and use them to organize and store data.
PC.A.1.1.2 Apply properties of exponents and logarithms.

Goal 1.2: Perform computations accurately.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.A.1.2.1 Perform operations on real and complex numbers.
PC.A.1.2.2 Perform operations on matrices.

Goal 1.3: Estimate and judge reasonableness of results.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.A.1.3.1 Apply number sense to mathematical models and judge the reasonableness of results.
PC.A.1.3.2 Use the appropriate technology (computers, graphing calculators, calculators, paper-pencil, mental estimates) to model and solve complex problems.

Standard 2: Concepts and Principles of Measurement

Goal 2.1: Understand and use U.S. customary and metric measurements.

No objectives at this grade level.

Goal 2.2: Apply the concepts of rates, ratios and proportions.

No objectives at this grade level.

Goal 2.3: Apply dimensional analysis.

No objectives at this grade level.

Goal 2.4: Apply appropriate techniques, tools, and formulas to determine measurements.

No objectives at this grade level.

Standard 3: Concepts and Language of Algebra and Functions

Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.A.3.1.1 Select and use various representations for relations and functions.
PC.A.3.1.2 Perform transformations such as arithmetically combining, finding the inverse, and the composition of functions.
PC.A.3.1.3 When appropriate, use technology to perform algebraic transformations on more complicated symbolic expressions.
PC.A.3.1.4 Use the standard and general forms of the equations of circles, parabolas, ellipses and hyperbolas.

Goal 3.2: Evaluate algebraic expressions.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.A.3.2.1 Judge the meaning, usefulness, and reasonableness of the results of symbol manipulation, including those carried out by technology.

Goal 3.3: Solve algebraic equations and inequalities.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.A.3.3.1 Solve exponential, logarithmic, rational, and polynomial equations.
PC.A.3.3.2 Solve systems of equations using algebra, graphing and/or matrices.
PC.A.3.3.3 Solve systems of inequalities.

Goal 3.4: Solve simple linear systems of equations.

No objectives at this grade level.

Goal 3.5: Understand the concept of functions.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.A.3.5.1 Define, identify, and apply relations and functions.
PC.A.3.5.2 Use and compare the properties of classes of functions, including polynomial, rational, exponential, logarithmic and multi-variable functions.

Goal 3.6: Apply functions to a variety of problems.

Objective(s): By the end of Pre-Calculus, the student will be able to:

PC.A.3.6.1 Identify essential quantitative relationships in a situation and determine the class or classes of functions that might model the relationships.

PC.A.3.6.2 Communicate reasonable conclusions about a situation being modeled by a function.

Goal 3.7: Analyze the behavior of series and sequences.

Objective(s): By the end of Pre-Calculus, the student will be able to:
PC.A.3.7.1 Use arithmetic, geometric, and infinite notation including sigma notation.
PC.A.3.7.2 Identify and find nth terms of arithmetic, geometric and infinite sequences.
PC.A.3.7.3 Find sums of arithmetic, geometric and infinite series.

Standard 4: Concepts and Principles of Geometry

Goal 4.1 Apply concepts of size, shape, and spatial relationships.

Objective(s): By the end of Pre-Calculus, the student will be able to:
PC.A.4.1.1 Transform and analyze families of graphs from a parent graph.

Goal 4.2 Apply the geometry of right triangles.

No objectives at this grade level.

Goal 4.3: Apply graphing in two dimensions.

Objective(s): By the end of Pre-Calculus, the student will be able to:
PC.A.4.3.1 Graph rational, exponential, logarithmic, and polynomial functions.
PC.A.4.3.2 Graph circles, parabolas, ellipses and hyperbolas given their equations.

Goal 4.4: Represent and graph linear relationships.

Objective(s): By the end of Precalculus, the student will be able to:
PC.A.4.4.1 Develop and analyze mathematical models.

Standard 5: Data Analysis, Probability, and Statistics

Goal 5.1: Represent data with a variety of formats.

No objectives at this grade level.

Goal 5.2: Collect, organize, and display data.

No objectives at this grade level.

Goal 5.3: Apply simple statistical measurements.

No objectives at this grade level.

Goal 5.4: Understand basic concepts of probability.

No objectives at this grade level.

Goal 5.5: Make predictions or decisions based on data.

No objectives at this grade level.

REFERENCE: APPLICABLE STATUTE, RULE, OR POLICY

TITLE 33
EDUCATION
CHAPTER 1
STATE BOARD OF EDUCATION

33-105. RULES -- EXECUTIVE DEPARTMENT. (1) The state board shall have power to make rules for its own government and the government of its executive departments and offices; and, upon recommendations of its executive officers, to appoint to said departments and offices such specialists, clerks and other employees as the execution of duties may require, to fix their salaries and assign their duties.

(2) Statements of the state board of education and board of regents of the university of Idaho which relate to the curriculum of public educational institutions, to students attending or applicants to such institutions, or to the use and maintenance of land, equipment and buildings controlled by the respective institutions, are not rules and are not statements of general applicability for the purposes of chapter 52, title 67, Idaho Code.

(3) Notwithstanding any other provision of chapter 52, title 67, Idaho Code, the state board of education and board of regents of the university of Idaho shall be deemed to be in full compliance with the notice requirements of section 67-5221, Idaho Code, if:

(a) Notice is given by including the intended action in the official written agenda for a regularly scheduled meeting of the board, and the agenda is available for public inspection at the central office of the board not less than five (5) days prior to the meeting; and

(b) Notice of the intended action, accompanied by the full text of the rule under consideration prepared so as to indicate words added or deleted from the presently effective text, if any, is transmitted to the director of the legislative services office at the same time that notice is given under paragraph (a) of this subsection. The director of the legislative services office shall refer the material under consideration to the germane joint subcommittee created in section 67-454, Idaho Code, to afford the subcommittee opportunity to submit data, views or arguments in writing to the board prior to the time for receiving comment as provided in paragraph (d) of this subsection; and

(c) The intended action is discussed but not acted upon during the regularly scheduled meeting for which the agenda was prepared, but instead is held for final action at the next regularly scheduled or later meeting of the board; and

(d) At least fifteen (15) days prior to the scheduled date for final action, the board shall mail to all persons who have made timely request in writing to the board and shall publish in an issue of the Idaho administrative bulletin a brief description of the intended action, or a concise summary of any statement of economic impact required pursuant to section 67-5223(2), Idaho Code, and shall note the time when, the place where, and the manner in which interested persons may present their views thereon; and

(e) Upon adoption of a rule, the board, if requested in writing to do so by an interested person either prior to adoption or within twenty-eight (28) days thereafter, shall issue a concise statement of the principal reasons for and against its adoption,

incorporating therein its reasons for overruling the considerations urged against its adoption.

TITLE 33
EDUCATION
CHAPTER 1
STATE BOARD OF EDUCATION

33-107. GENERAL POWERS AND DUTIES OF THE STATE BOARD. The state board shall have power to:

(1) Perform all duties prescribed for it by the school laws of the state;

(2) Acquire, hold and dispose of title, rights and interests in real and personal property;

(3) Have general supervision, through its executive departments and offices, of all entities of public education supported in whole or in part by state funds;

(4) Delegate to its executive secretary, to its executive officer, or to such other administrators as the board may appoint, such powers as said officers require to carry out the policies, orders and directives of the board;

(5) Through its executive departments and offices:

(a) Enforce the school laws of the state,

(b) Study the educational conditions and needs of the state and recommend to the legislature needed changes in existing laws or additional legislation;

(6) In addition to the powers conferred by chapter 24, title 33, Idaho Code:

(a) Maintain a register of postsecondary educational institutions approved to provide programs and courses that lead to a degree or which provide, offer and sell degrees in accordance with the procedures established in chapter 24, title 33, Idaho Code,

(b) Determine whether to accept academic credit at public postsecondary educational institutions in Idaho. Academic credit shall not be transferred into any Idaho public postsecondary institution from a postsecondary educational institution or other entity that is not accredited by an organization recognized by the board,

(c) Maintain a register of proprietary schools approved to conduct, provide, offer or sell a course or courses of study in accordance with the procedures established in chapter 24, title 33, Idaho Code;

(7) Prescribe the courses and programs of study to be offered at the public institutions of higher education, after consultation with the presidents of the affected institutions;

(8) Approve new courses and programs of study to be offered at community colleges organized pursuant to chapter 21, title 33, Idaho Code, when the courses or programs of study are academic in nature and the credits derived there from are intended to be transferable to other state institutions of higher education for credit toward a baccalaureate degree, and when the courses or programs of study have been authorized by the board of trustees of the community college.