

The Global Learning Resource Connection

Supporting the Next Generation of Education

The Achievement Standards Network (ASN)

A JES & Co. Program

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The Facts...

- **Large repositories of educational resources are being created**
- **Countries, states and territories have various forms of curriculum e.g., national curricula (Achievement Standards)**
- **Metadata mapping educational resources to curriculum supports teaching, learning and accountability**

ASN Goals...

- **Create a multi-national bank of curriculum in machine addressable form that**
 - **Are accurate digital representations of curriculum documents and their component statements (semantic units);**
 - **Are consistent in form; and**
 - **Are modeled in RDF and amenable to the emerging Semantic Web.**
- **Design an extensible framework to support evolving uses.**
- **Provide open access.**

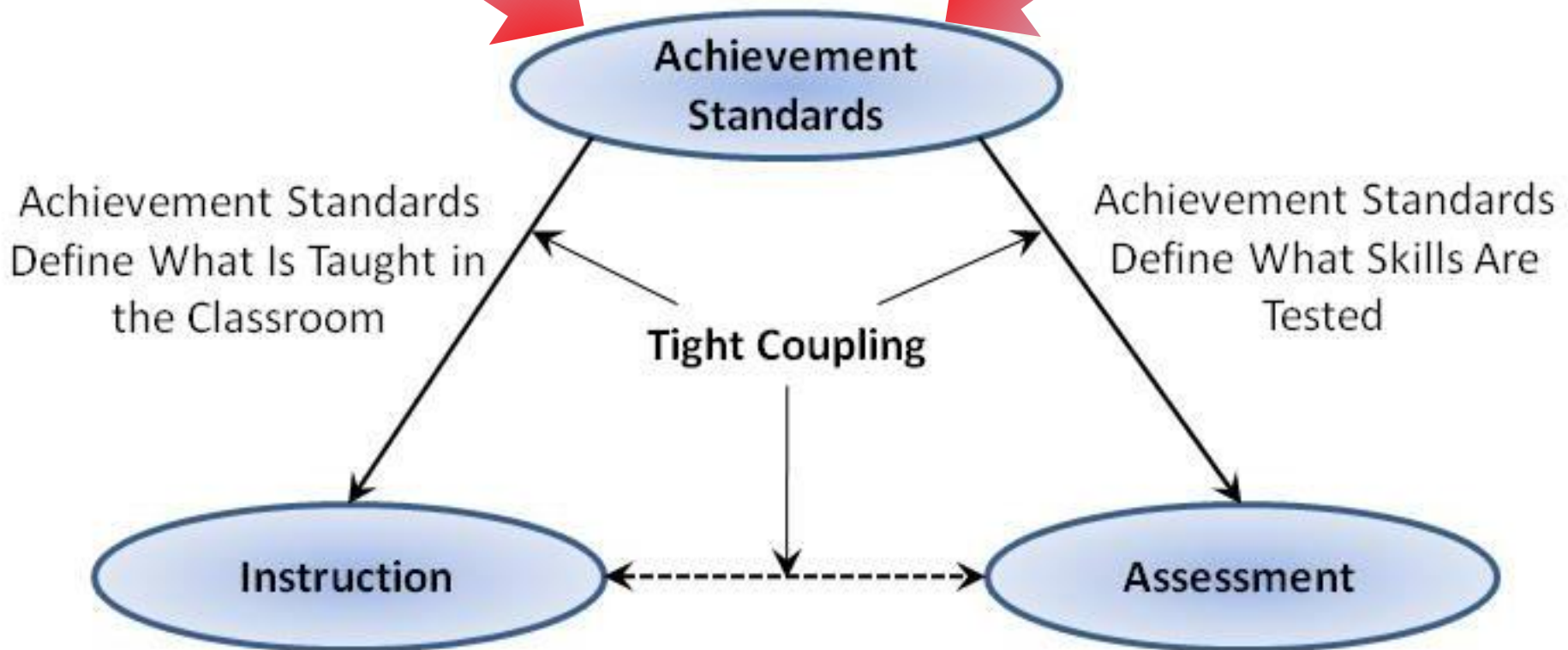


**...And Travels Well Between States
and Countries**

**Machine-
addressable
form**

**Curriculum
Repository**

**Semantic-web
amenable**



We Started with the 50 U.S. States

WISCONSIN



OKLAHOMA



KANSAS



ARKANSAS



STATE OF OREGON



1859

Process ...

- **Gathered all current and historical curriculum documents in the United States**
(In the USA, 761 documents have been decomposed (atomized) into “statements” derived from document structure and content in excess of 350,000 learning objective statements)
- **All documents and statements were assigned URIs and that are dereferencable over the Web**

Two Basic Functions

Relate



Describe



In a Machine Readable Format



Richly Describe the Curriculum ...

Description

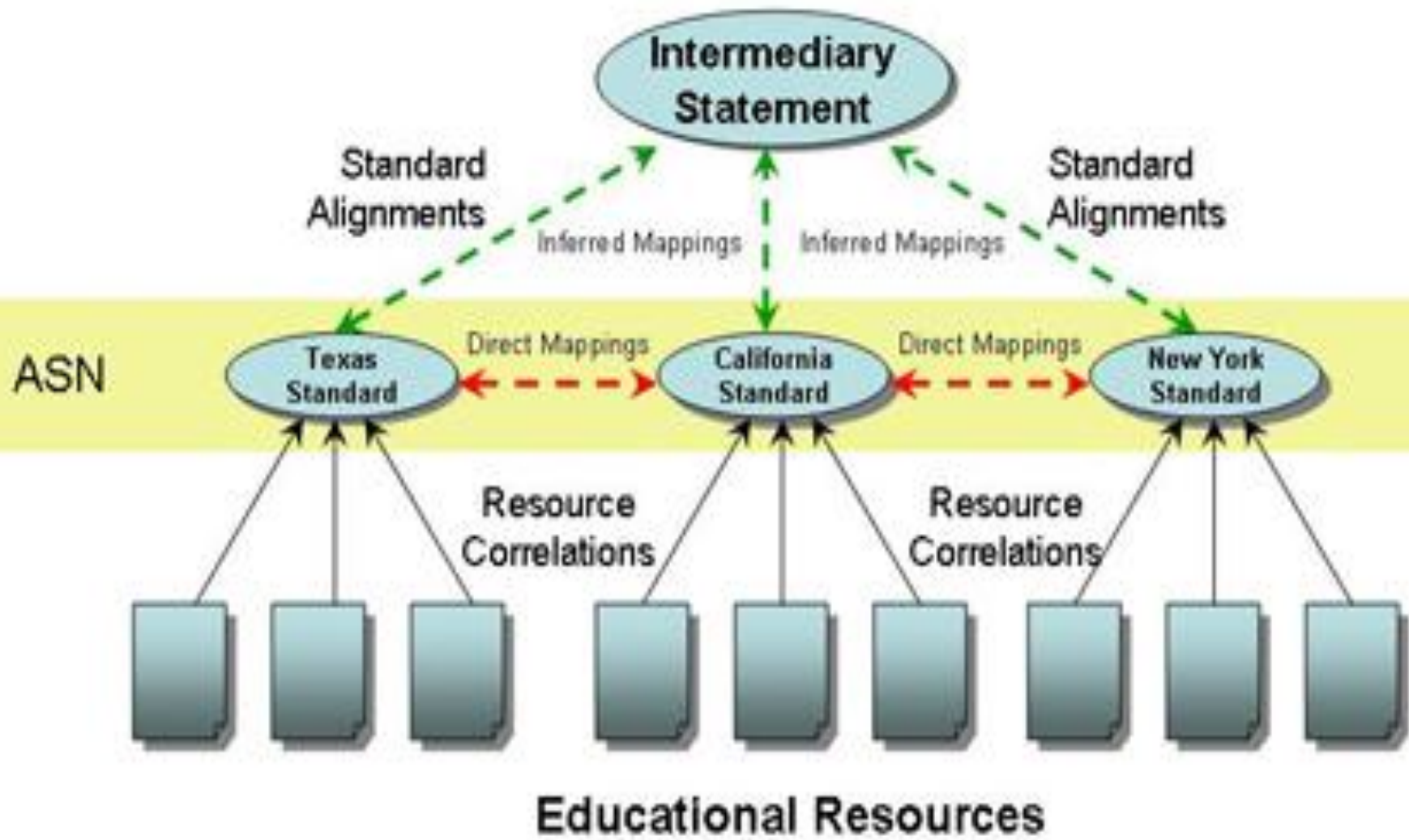
- Author
- Comment
- Concept Term
- Description
- Education Level
- Jurisdiction
- Local Subject
- Publisher
- Skill Embodied
- Spatial (aspects)
- Statement Label
- Statement Notation
- Subject
- Temporal (aspects)

Administration

- Authority Status
- Change Note
- Created
- Date Copyrighted
- Date Valid
- Editorial Note
- History Note
- Indexing Status
- License
- Publication Status
- Rights
- Rights Holder

Relationships

- Align To
- Align From
- Cross Subject Reference
- Derived From
- Has Child
- Is Child Of
- Source



Relate the statements to each other and to resources.

The Verizon Foundation

Literacy Network

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Enter Keyword: ?

Subject: ?

Grade: ?

Search All

All

Resource Type: ?

Search All

Content Partners: ?

Search All



Browse: [Subject](#) | [Keyword](#)

educator

student

parent

afterschool

Integration
Thinkfinity

Use this wealth of
FREE materials

Consortium Partners:

ARTSEDGE

ReadWriteThink

EconEdLink

Science NetLinks

EDSITEment

Smithsonian's History Explorer

Illuminations

Literacy Network

Xpeditions

Verizon Foundation



Hot Links

- ARTSEDGE lessons incorporate the [National Standards for Arts Education](#).
- EconEdLink lessons address the [Voluntary National Content Standards in Economics](#).
- EDSITEment references the following standards, accessible from its [reference shelf](#):
 - International Reading Association (IRA)/National Council of Teachers of English (NCTE) Standards for the English Language Arts
 - National Geography Standards
 - National Council for Social Studies Curriculum Standards
 - National Standards for Arts Education
 - National Standards for Foreign Language Education
 - National Standards for Civics and Government
- Illuminations lessons incorporate, or "illuminate," the [National Council of Teachers of Mathematics? \(NCTM\) Principles and Standards for School Mathematics](#).
- ReadWriteThink lessons address the [IRAN/NCTE Standards for the English Language Arts](#).
- Science NetLinks' content is organized around the [Benchmarks for Science Literacy](#).
- Smithsonian's History Explorer lessons are aligned to the [UCLA National Center for History in the Schools \(NCHS\) History Standards](#)
- Xpeditions lessons are aligned to the [National Geography Standards](#).

The following State Education Partners are working with Thinkfinity.org to review and validate the new state standards alignment project:

- [Georgia Department of Education](#)
- [Massachusetts Department of Elementary and Secondary Education](#)
- [West Virginia Department of Education](#)
- [Wisconsin Department of Public Instruction](#)

[Home](#)[Search Curriculum](#)[Browse Curriculum](#)[Browse Edu. Stds.](#)[Living Labs](#)[Why K-12 Engr?](#)[Submit Curriculum](#)[Want to Review?](#)[About Us](#)[Policies](#)[Jan 2009 Workshop](#)**Premier Curriculum Award for K-12 Engineering**

Funded by:



Academic standards provided by:



Welcome to the world of K-12 engineering education!

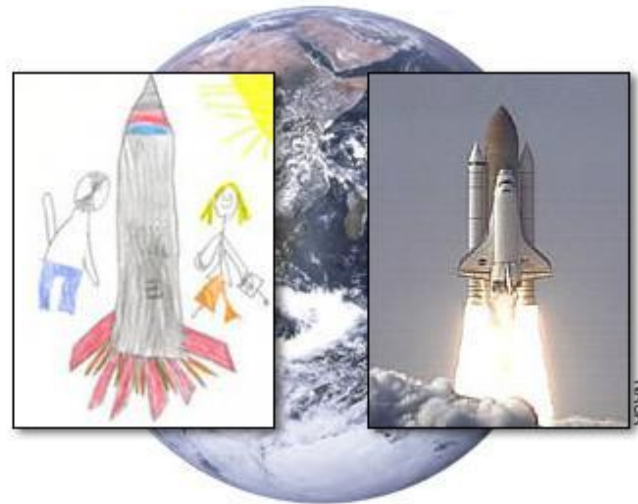


Now celebrating over 500 activities!

Engineers have a hand in designing, creating or modifying nearly everything we touch, wear, eat, see and hear. Introducing engineering into the K-12 classroom connects science and math concepts to the everyday engineering that surrounds us. This teacher resource, *TeachEngineering.org*, helps teachers enhance learning, excite students and stimulate interest in science and math through the use of hands-on engineering.

The *TeachEngineering* digital library provides teacher-tested, standards-based engineering content for K-12 teachers to use in science and math classrooms. Engineering lessons connect real world experiences with curricular content already taught in K-12 classrooms. Mapped to educational content standards, *TeachEngineering's* comprehensive curricula are hands-on, inexpensive, and relevant to children's daily lives.

Just a cute kid with a great imagination...
or an aspiring engineer who will shape our world?



There are many ways to access the materials in this collection:

- [Search](#) the collection by specifying keywords, grade levels, educational standards, or other criteria
- [Browse](#) curricular contents by subject area, curricular units, lessons or activities
- Access your favorite items and submit reviews in your own personalized [MyTE](#) area

Integration TeachEngineering

Grade Level: 8 (6-8) Lesson #: 2 of 4
 Time Required: 15 minutes Lesson Dependency ⓘ:None
 Keywords: weather, atmosphere, air pressure, air masses, wind, storms
 Reviews: [Read Reviews](#) | [Be the First to Write a Review](#)

Related Curriculum ⓘ:

subject areas [Earth and Space](#)
[Science and Technology](#)
 curricular units [Weather and Atmosphere](#)
 activities [Building a Barometer](#)

Educational Standards ⓘ:

Colorado Science ▼

- 1 Standard 5: Students know and understand interrelationships among science, technology, and human activity and how they can affect the world. (Grades 0 - 12) [1995]
- 1 4.2 Students know and understand the general characteristics of the atmosphere and fundamental processes of weather. (Grades 0 - 12) [1995]

Does this curriculum meet my state's standards?

(Select state or national) ▼

Submit

(Select state or national) ▲

National Standards

AAAS-2061
 NAEP
 NCTM
 NCEE
 NSES

State Standards

Alabama
 Alaska
 Arizona
 Arkansas
 California
 Colorado
 Connecticut
 Delaware
 District of Columbia
 Florida
 Georgia
 Hawaii

Learning Objectives [\(Return to Contents\)](#)

After this lesson, students should be able to:

- Describe the effect of the sun on air masses in the Earth's atmosphere.
- Compare and contrast high- and low-pressure air systems.
- Explain that engineers design instrumentation, such as weather balloons, to study the Earth's atmosphere.

Introduction/Motivation [\(Return to Contents\)](#)

Have you ever blown up a balloon and let go of it without a string? It zips around in the air until the air is gone, and it is always seen from a distance. This is because there is a pressure difference between the air inside the balloon and the air outside. Although we cannot see or feel the air, it actually has a mass. It also has a temperature and pressure. What does that mean for our atmosphere? Air is a mixture of gases where all the air within that region has a similar temperature and pressure. Bodies of air with similar characteristics are called *air masses*. Air masses are large bodies of air that, on any given day, have similar characteristics. Air masses are formed in one area and move to another. On any given day, there are many different air masses in our atmosphere. Each air mass has a unique temperature and pressure. Thinking back to the balloon example, we know that air masses can move — similar to the balloon zipping around the room. The atmosphere contributes to the weather we experience every day.

We know that the sun plays a significant role in the weather we experience on Earth. But how does the sun relate to air masses? The sun heats up our atmosphere and the Earth's surface, but the heating takes place unevenly because the sun's rays hit different areas of the Earth at different angles.

Variations on the Earth's surface provide even more room for uneven heating. The air above water, for example, is typically cooler than the air above land, and the air above lighter colored surfaces is typically cooler than the air above darker ones (very simply, because dark color absorbs more heat).

Stay in the know about upcoming shows. Get email updates



Violinist Joshua Bell performs with the BSO [Live from Tanglewood](#), July 12 on WGBH 89.7

Today is **Thursday** Jul. 9

TV

Radio

Multimedia

Pledge & Renew

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Events

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Radio



Hear [Haydn's The Creation](#) in concert from Dresden, **Tuesday-Thursday**, July 7-9, at **2pm** on **WGBH 89.7**.



[All Things Considered](#) offers a mix of news, features, and commentary, **weekdays, 5pm-7pm**, WGBH 89.7.

TV



[P.O.V.](#) captures **Johnny Cash** at his peak, fresh off the success of 1968's *At Folsom Prison*, **tonight at 9pm** on **2**.



Jennifer Nettles's country/pop duo **Sugarland** performs on [Soundstage](#), **tonight at 10pm** on **44**.



[Create Boston](#) examines the region's biggest news and newsmakers, **tonight at 7pm** on **2**.



[Super Why!](#) teaches preschoolers reading fundamentals through fairy tale adventures, **weekdays** on **2** and **44**.



NEWS Today's headlines

Today's digital mural



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We'll pick it up, give you a tax receipt, and drive away.



LandVest AVAILABLE FOR SALE:

Integration WGBH

User: Diny Golder of CANYON DEL ORO HIGH SCHOOL

[My Folders](#) [My Groups](#) [My Profile](#)

[Help](#) | [Sign out](#)

Resource: Chess Wager

Recommended for: Grades 5-8



Media Type:
QuickTime Video

Length:
Size: 9.5 MB

or

Permitted use:
Download and Share



In this video segment from *Cyberchase*, Harry plays a game of chess with a young friend and suggests a wager on the game. Harry's friend uses a story to explain how putting a penny on the first square and then doubling the amount on each square of the chessboard can generate a tremendous amount of money over time.

[Recommend to a Colleague](#)

[Frame and Focus](#)

[Follow Up](#)

[Connections](#)

[Standards](#)

Standards for Grades: 1-12 [Change grade range](#)

About standards correlation [close](#)

Academic standards correlations on Teachers' Domain use the [Achievement Standards Network](#) (ASN) database of state and national standards, provided to NSDL projects courtesy of JES & Co.



We assign reference terms to each statement within a standards document and to each media resource, and correlations are based upon matches of these terms for a given grade band. If a particular standards document of interest to you is not displayed yet, it most likely has not yet been processed by ASN or by Teachers' Domain.

Related Resources:



[Lily Pad Escape](#)
(QuickTime Video)

See Also:

K-12 Subject:
[Exponential Growth](#)

Lesson Plans Using this Resource:
[Exponential Growth Introduced](#)



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Assign/Add Content Expectations



In this global economy, it is essential that Michigan students possess personal, social, upational, civic, and quantitative literacy. Mastery of the knowledge and essential skills ned in Michigan's Grade Level Content Expectations will increase students' ability to be cessful academically, and contribute to the future businesses that employ them and the munities in which they choose to live. Reflecting best practices and current research, the de Level Content Expectations provide a set of clear and rigorous expectations for all dents, and provide teachers with clearly defined statements of what students should know be able to do as they progress through school. [D1000332 \(14419\)](#)

 [Discipline 1 Science Processes](#) [S1130075 \(14420\)](#) [Standard: Inquiry Process](#) [S1130079 \(14421\)](#) [K-7 Standard S.IP: Develop an understanding that scientific inquiry and reasoning involves observing, questioning, investigating, recording, and developing solutions to problems](#) [S113007C \(14422\)](#) [S.IP.M.1](#) [Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.](#) [S113007E \(14454\)](#) [S.IP.06.11](#) [Generate scientific questions based on observations, investigations, and research.](#) [S11300B5 \(14461\)](#) [S.IP.06.12](#) [Design and conduct scientific investigations.](#) [S11300B6 \(14462\)](#)



**Library of
Michigan**



INSTITUTE of
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Subject(s):

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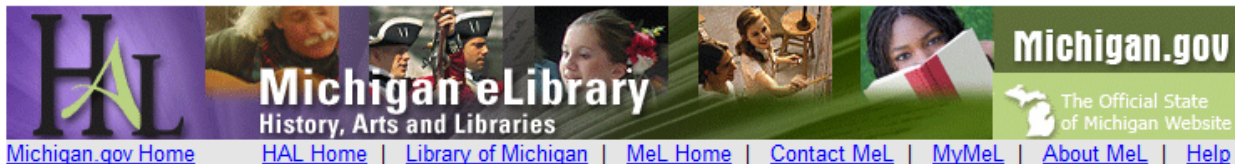
Added By Id: [bfardell](#)

Last
Modified By
Id: [bfardell](#)

ERIC
Descriptor(s):

Content
Expectation
(s):

S.IP.M.1[S113007E] Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.



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History, Arts and Libraries

Michigan.gov
The Official State of Michigan Website

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	Subject & Year Adopted	Status
View	English & Language Arts, K-8 (2004)	Active
View	English & Language Arts, 9-12 (2006)	Active
View	Health, K-8 (2007)	Active
View	Math, K-8 (2006)	Active
View	Math, 9-12 (2006)	Active
View	Science, K-8 (2007)	Active
View	Science, 9-12 (2006)	Active
View	Social Studies, K-8 (2007)	Active
View	Social Studies, 9-12 (2007)	Active
View	Technology, K-12 (2005)	Active



This service is funded in part by the State of Michigan through the [Library of Michigan](#).

Additional project support comes from the Federal Library Services and Technology Act (LSTA) via the [Institute of Museum and Library Services](#) (IMLS).

Resources

[Measure 4 Measure: Sites That Do the Work For You](#)

Here is a collection of interactive Web sites that calculate, convert, or translate a variety of things. Topics for calculation range from health risks to height and weight calculators to converting magnetic flux. Morph words, determining word frequencies, changing names to Japanese - the opportunities are endless. Sites are organized alphabetically by subtopic. Subtopics include Science/Math, Health, Finance, All 'Round the House, and A Measure of Everything Else. [full record](#)

[MendelWeb](#)

"MendelWeb is an educational resource for teachers and students interested in the origins of classical genetics, introductory data analysis, elementary plant science, and the history and literature of science." Mendel's experiments in plant research are described in great detail. Site also includes a detailed biography of Mendel and a close look at his life. [full record](#)

[Space Station Phyre](#)

In this WebQuest, students will investigate what is required to create a space station. They will research and design a cost-efficient

Math, 9-12 (2006):

Standard 1: Quantitative Literacy and Logic

Standard L1: Reasoning About Numbers, Systems and Quantitative Situations

L1.1 Number Systems and Number Sense

L1.1.1 Know the different properties that hold in different number systems, and recognize that the applicable properties change in the transition from the positive integers, to all integers, to the rational numbers, and to the real numbers

L1.1.2 Explain why the multiplicative inverse of a number has the same sign as the number, while the additive inverse of a number has the opposite sign.

L1.1.3 Explain how the properties of associativity, commutativity, and distributivity, as well as identity and inverse elements, are used in arithmetic and algebraic calculations.

L1.1.4 Describe the reasons for the different effects of multiplication by, or exponentiation of, a positive number by a number less than 0, a number between 0 and 1, and a number greater than 1.

L1.1.5 Justify numerical relationships (e.g., show that the sum of even integers is even; that every integer can be written as $3m+k$, where k is 0, 1, or 2, and m is an integer; or that the sum of the first n positive integers is $n(n+1)/2$).

L1.1.6 Explain the importance of the irrational numbers $\sqrt{2}$ and $\sqrt{3}$ in basic right triangle trigonometry; the importance of p because of its role in circle relationships; and the role of e in applications such as

Choose Grade:

All Grades

Kindergarten

Grade 1

Grade 2

Grade 3

Grade 4

Grade 5

Grade 6

Grade 7

Grade 8

Grade 9-12

Competency Example

Course Home Content Discussions Dropbox Quizzes Surveys Competencies

By Hierarchy

- Alaska Content Standards Mathematics
 - A. A student should understand mathematical facts, concepts, principles, and theories.
 - 1) understand and use numeration, including a. numbers, number systems, counting numbers, whole numbers, integers, fractions, decimals, and percents; and b. irrationals and complex numbers;
 - Addition Quiz 1
 - 2) select and use appropriate systems, units, and tools of measurement, inc estimation;
 - 3) perform basic arithmetic functions, make

Edit Competency

[Competency Home](#) [Edit Competency](#) [Competency Structure](#) [Competency Results](#)

General Information

Type: Competency

* Name: Alaska Content Standards Mathematics

Description: The State Board of Education & Early Development adopted into regulation Content Standards listed on the following pages. Content Standards are broad statements of what students should know and be able to do as a result of their public school experience.

Grades: Pre-K K 1 2 3 4 5 6 7 8 9 10 11 12

Subject: math

Data from ASN (www.achievementstandards.org)

Status: ?

Make Competency and its children visible to users ?

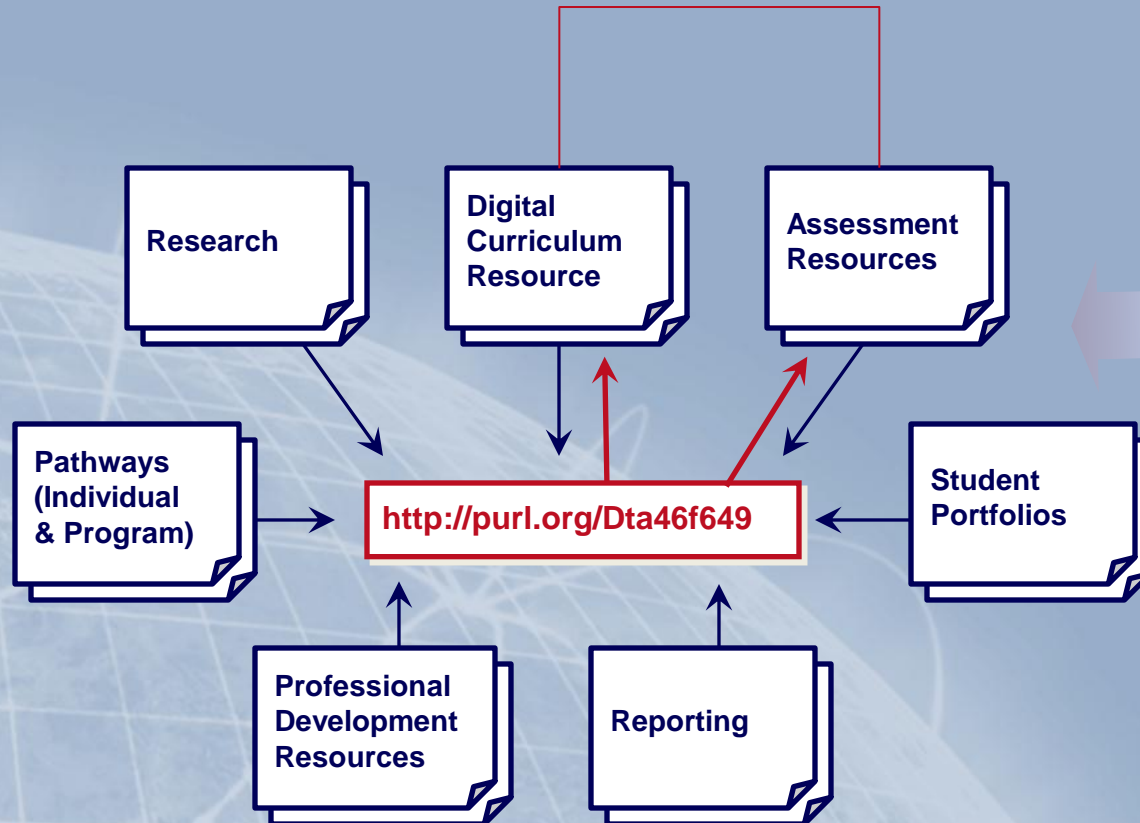
Evaluation Settings

Allow re-evaluation of users who have achieved this Competency ?

We expanded the Work to Include Australia and the UK.



National Curriculum*



VELS Level 3 Mathematics

Number

At Level 3, students use place value (as the idea that 'ten of these is one of those') to determine the size and order of whole numbers to tens of thousands, and decimals to hundredths.

Learning Area: Mathematics

Year Level: 3

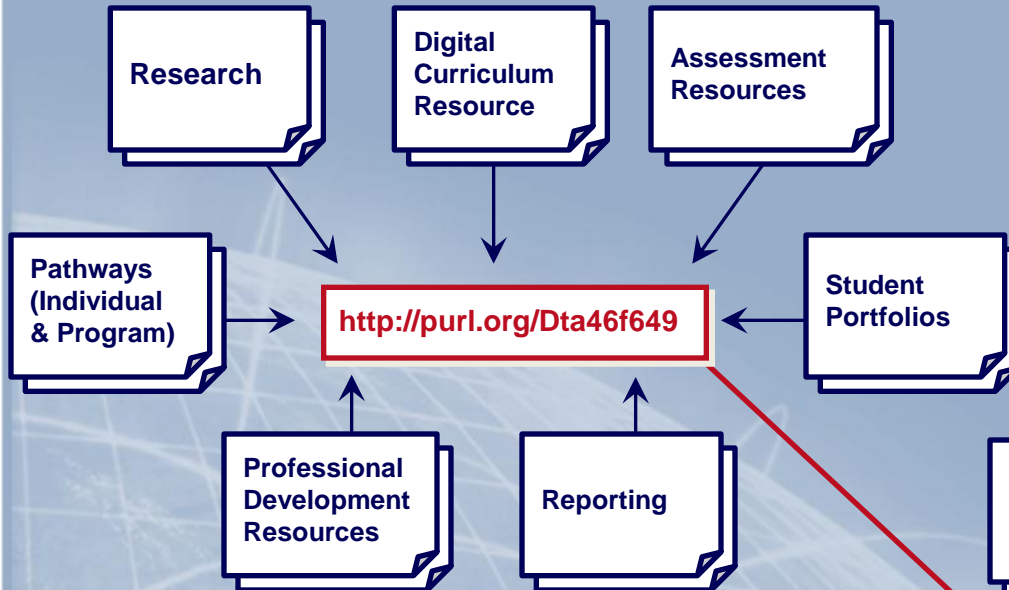
Strand: Number ...

<http://purl.org/Dta46f649>

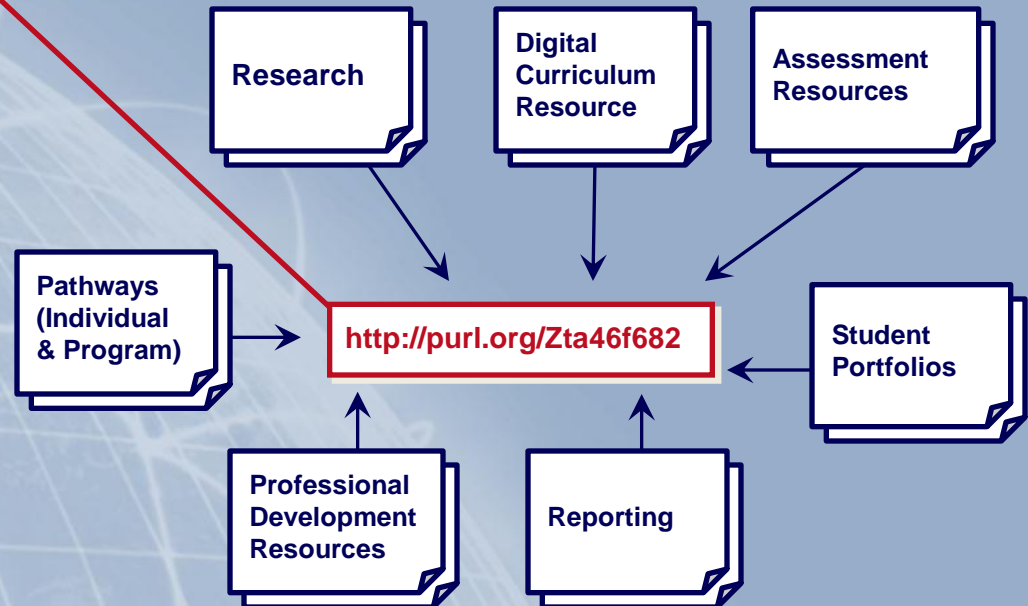
**This slide was created in a working session with state and federal education leaders in May 2009, Melbourne, Australia, while consulting to them regarding Australia's National standards efforts.*

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National curriculum*



State/Territory curriculum



Math 6 - Act. 22: The Dice Game

Group Size:
Small Groups

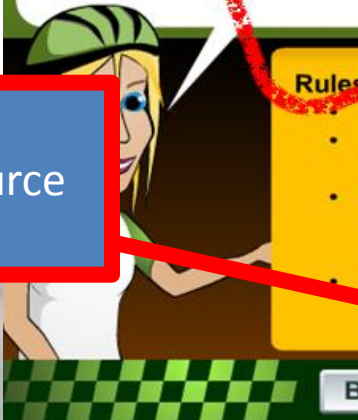


AU Resource

US Resource

Are you ready to race?
Check out the Rules, then get started.
Remember to keep racing until you have a winner.

Rules



UK Resource

play your cards right!

1 2 3 4 5 6 7 8 9

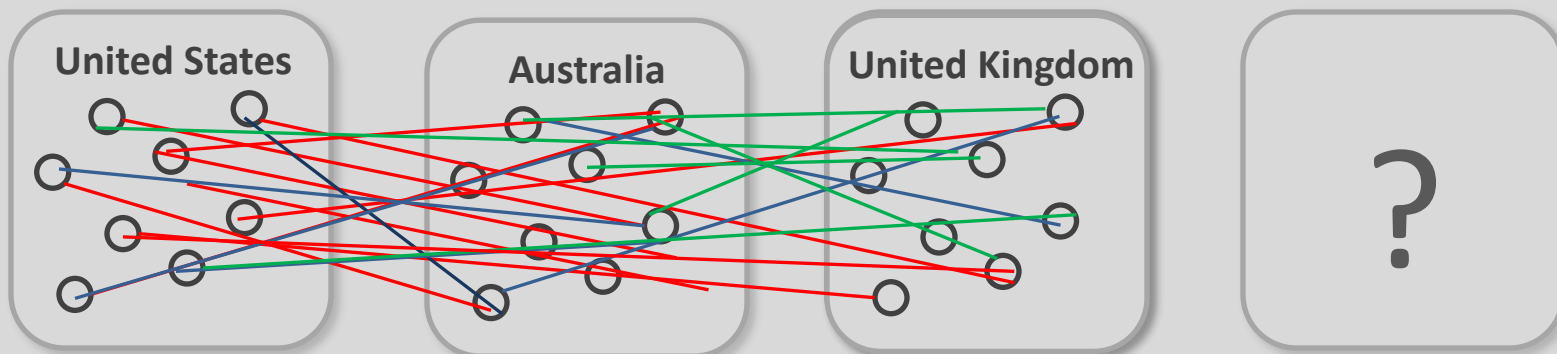
1 2 3 4 5 6 7 8 9

Spydrax has nine cards numbered 1 to 9. He will show you a card, and you must predict whether the next card he shows you will be higher or lower. Try to win six chips!

start →

London Grid Learning

Teachers & Learners



Applications, Services & Agents

Linked Australia, the United States and the United Kingdom using Linked Data principles

Expand the Work to Include European Countries



Global interoperability

- **Open source achievement standards data with globally unique, Web-resolvable identifiers (URI) support:**
 - **Efficient integration of data from disparate resource providers**
 - **Resource sharing and linking related resources**
- **Support of curriculum that is language independent**

The Achievement Standards Network is part of the
Global Learning Resource Connection;
collaborating to *connect the dots* between education systems that
support teaching and learning.

Questions ?

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