This work was made possible through funding from Alberta Education

Understanding and Supporting Literacy and Numeracy Progressions

‘

Alberta Regional Consortia

Southern Alberta Professional Development Consortium

Consortium provincial francophone

Central Alberta Regional Consortium

Edmonton Regional Learning Consortium

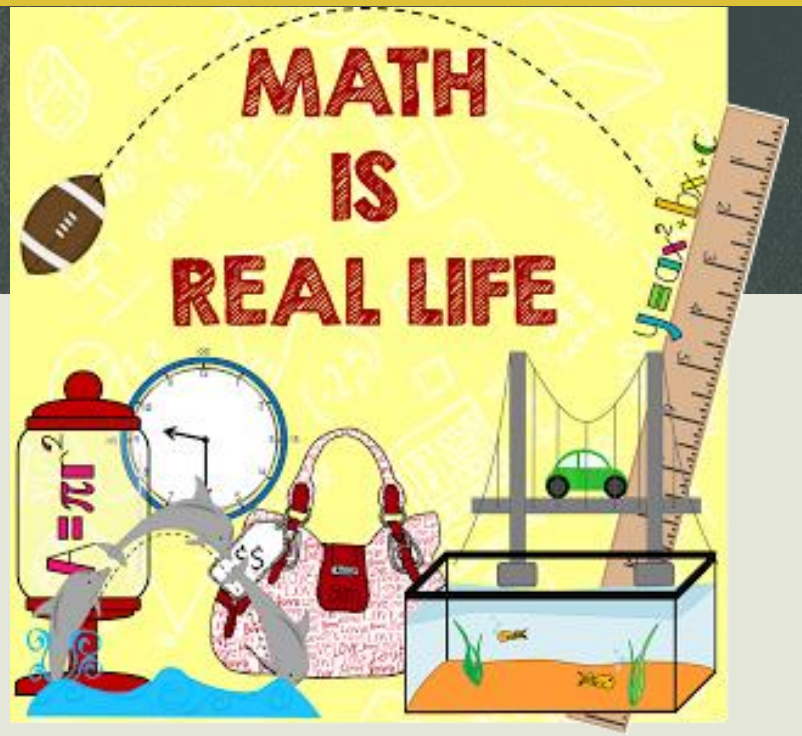
Northwest Regional Learning Consortium

Calgary Regional Consortium

Learning Network Educational Services

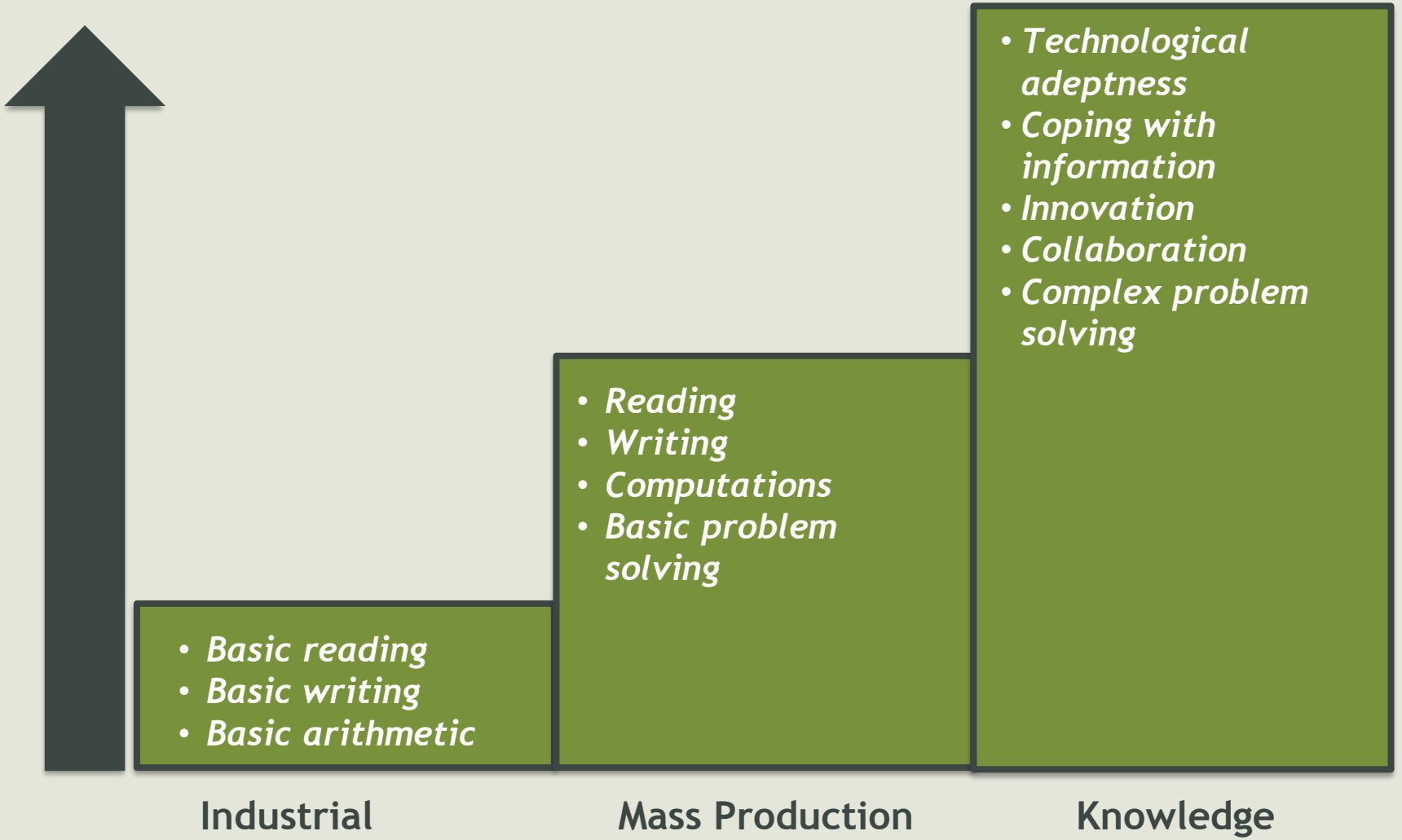

"A BUSHEL IS A UNIT OF WEIGHT EQUAL TO FOUR PECKS."
WHAT'S A PECK?
A QUICK SMOOCH.
MERCI!
YOU KNOW. I DON'T UNDERSTAND MATH AT ALL.
6·17

Goals for our Learning Today



- **Define Literacy and Numeracy**
- **Understand the purpose of the Literacy and Numeracy Progressions**
- **Work with the Progressions to develop an understanding of the connections to the curriculum**
- **Connect the Literacy and Numeracy Progressions to the current Program of Studies**

Literacy and Numeracy Must Adapt to Changing Economies



Importance of Literacy and Numeracy

GOVERNMENT OF ALBERTA
DEPARTMENT OF EDUCATION
MINISTERIAL ORDER (#001/2013)

I, Jeff Johnson, Minister of Education, pursuant to Section 39(1)(f) of the *School Act*, make the order in the attached Appendix, being an order to adopt or approve goals and standards applicable to the provision of education in Alberta.

Dated at Edmonton, Alberta May 6, 2013.

MINISTER

Strong literacy and numeracy skills are essential in today's society.

Alberta Education recognized the importance of these skills in the *Ministerial Order on Student Learning* (2013), which states that **"all students will use employ literacy and numeracy to construct and communicate meaning."**

Why Literacy and Numeracy in all Subject Areas?

- **Students' understanding of the subject content is enhanced through the use of literacy and numeracy skills.**
- **When numeracy is integrated in all subjects, students' numeracy skills are strengthened.**

How can the subject be used for a context to develop numeracy?
How does literacy contribute to deeper understanding of the subject?

Inside Outside Circle Examples

Literacy and Numeracy Progressions
A Support Resource

The progressions are a support resource that

- offers an overview of key aspects of literacy and numeracy.
- provides a deeper understanding of the literacy and numeracy that students develop through their years in school.
- organizes the key aspects into an accessible and efficient format.

Using the Progressions with the Current Curriculum

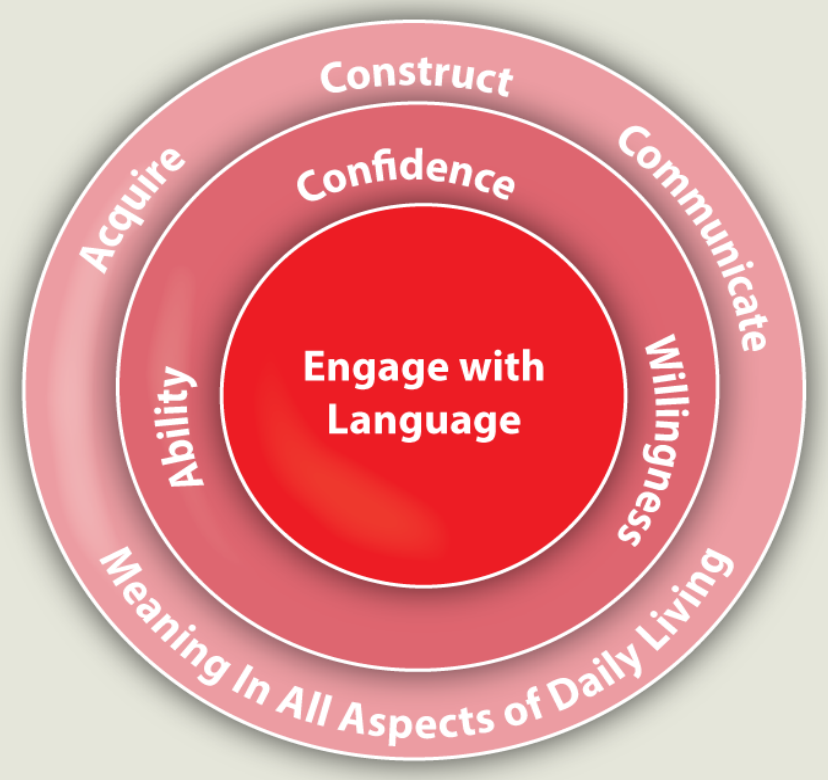
The progressions can be used to

- support the literacy and numeracy learning experiences that teachers are already incorporating into their instructional practices
- provide teachers, who may not be experts in literacy and numeracy, with insights on how to help students who are struggling with the literacy and numeracy skills they need to access subject content
- provide a common vocabulary that can be used when discussing literacy and numeracy

Definitions of Literacy and Numeracy

Definitions

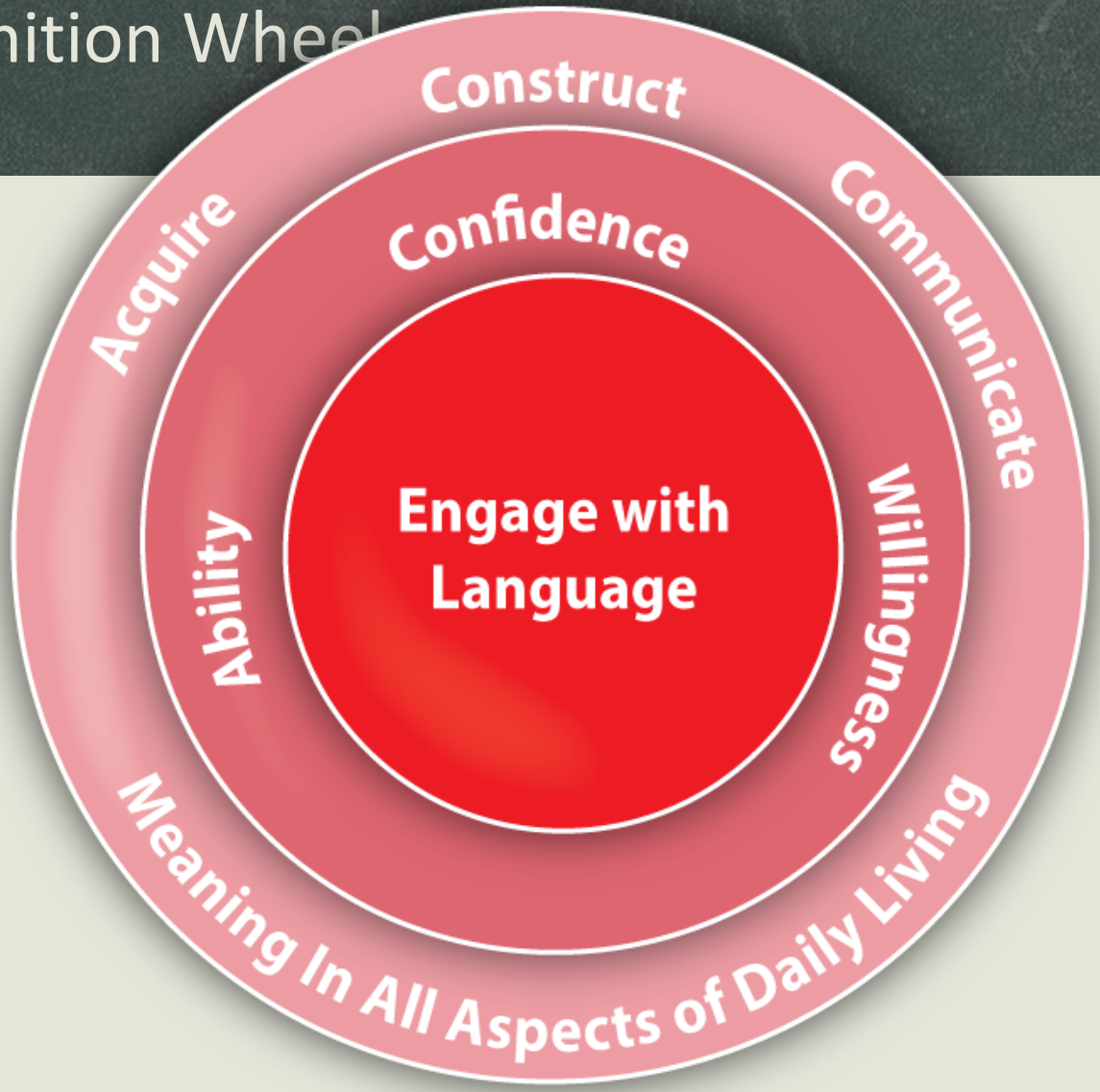
What is Literacy?



What is Numeracy?

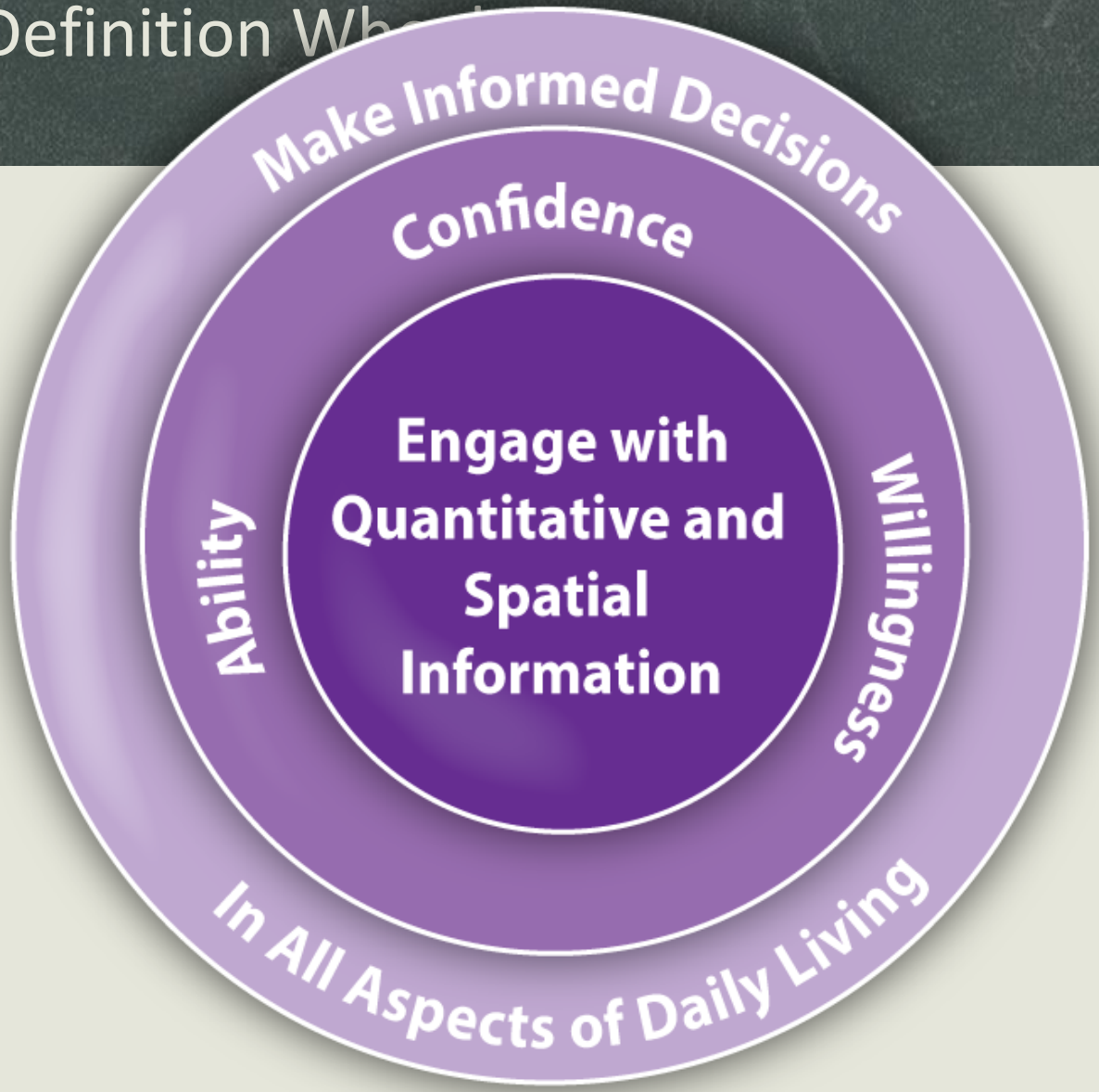
What is Literacy?

Literacy Definition Wheel



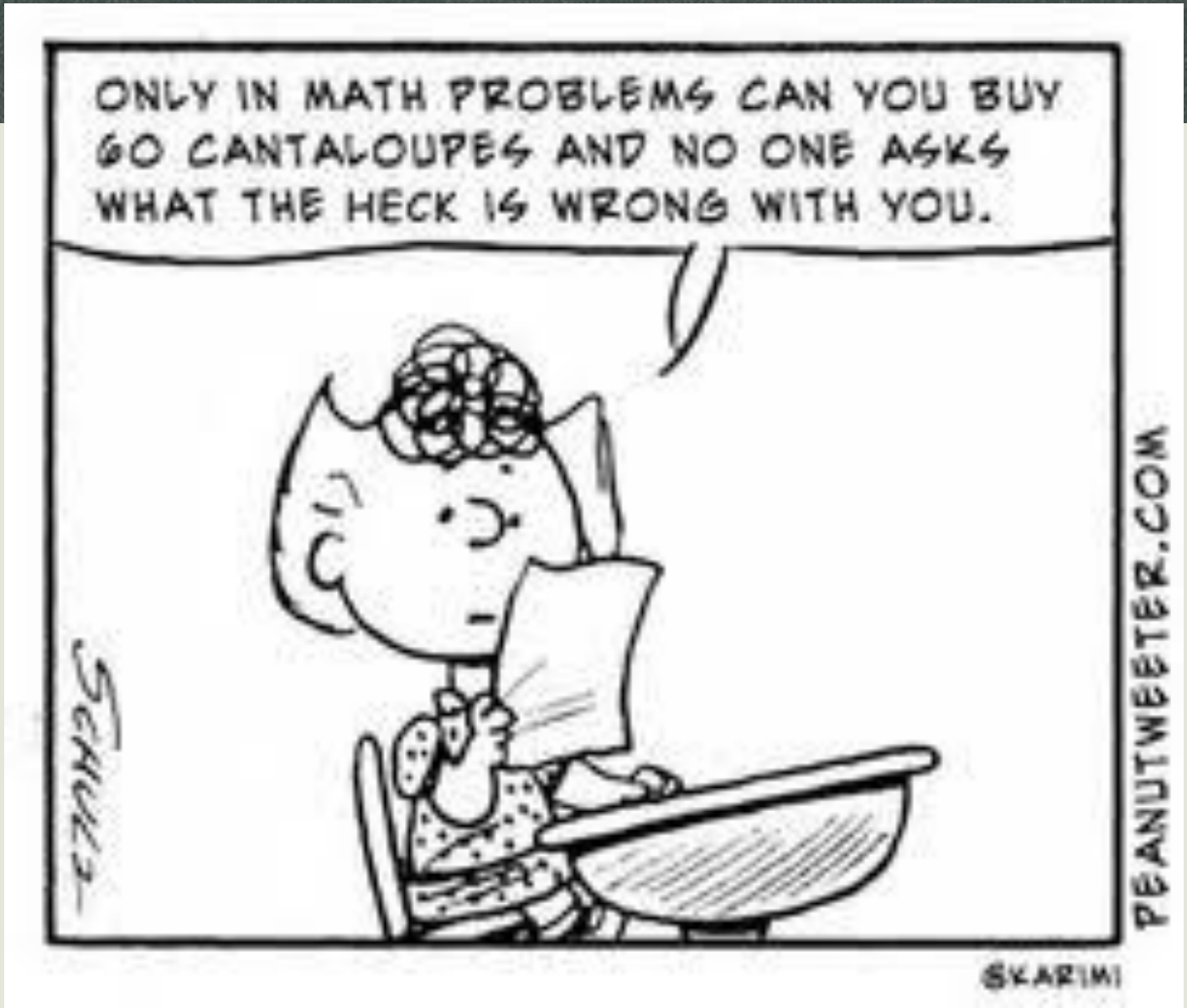
What is Numeracy?

Numeracy Definition Wh



What forms/types of literacy to you see in this video?

Ever felt like this……?



Numeracy Alberta Education Video

Write as many examples of Numeracy as you can individually

Share with elbow partner

Decide if these are Quantitative or Spatial

Decide if informed decisions are being made

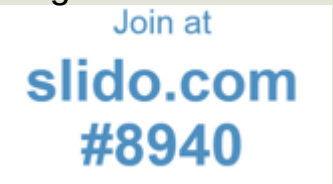
Slido

Set up Slido at slido.com-1. wordle, 2. multiple choice- reveals as -a bar chart

you will be provided with a code
this is time sensitive, so you can't do it too early
Participants go to slido.com
Enter the code
and answer the questions

Code-

e.g.



What does confidence mean to you?

- To be self-reliant
- To have optimism
- To believe you can succeed
- To be certain of the correct solution

Discuss your understanding of the definitions with someone you haven't shared with yet

Alberta Education's definition of literacy

*Literacy is the ability, confidence and willingness to engage with **language** to acquire, construct and communicate meaning in all aspects of daily living.*

Language is a socially and culturally constructed system of communication.


How many kinds of snow do you see?
How many can you name?

Alberta Education's Definition of Numeracy

Numeracy *is the ability, confidence and willingness to engage with* ***quantitative*** *or* ***spatial*** *information to make informed decisions in all aspects of daily living.*

Spatial information is the physical location of objects or people, or the relationship between objects or people.

- Shape and space,
- Measurement,
- Location and direction

Quantitative information is information that can be measured and expressed as an amount.

- Quantity,
- Patterns and relationships,
- Data and probability

How many sheep?

The Top Five Reasons to Teach Spatial Reasoning

Take a card

Find your number and stand by it

Each take a copy of your reading

Read it individually, then together write a tweet – 140 characters or fewer to explain your reason

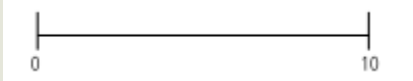
Post your Tweet – on the wall!

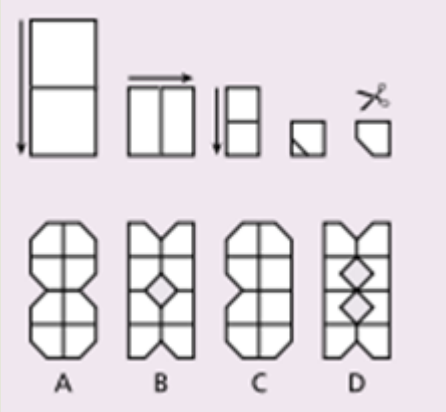
(Group 1 focus on the first paragraph and Group 6 focus on the second paragraph of the same reading)

What is Spatial Reasoning? The mind's eye!

- **Spatial reasoning** refers to the capacity to think about objects in three dimensions and to draw conclusions about those objects from limited information.
- Someone with good **spatial** abilities might also be good at thinking about how an object will look when rotated
- Think about the child knowing to rotate a rectangular prism so it fits in the castle she is building
- Albert Einstein visualized himself riding a beam of light ….$\mathbf{E} = mc^2$
- Stephen Hawking visualized how the universe worked

Examples





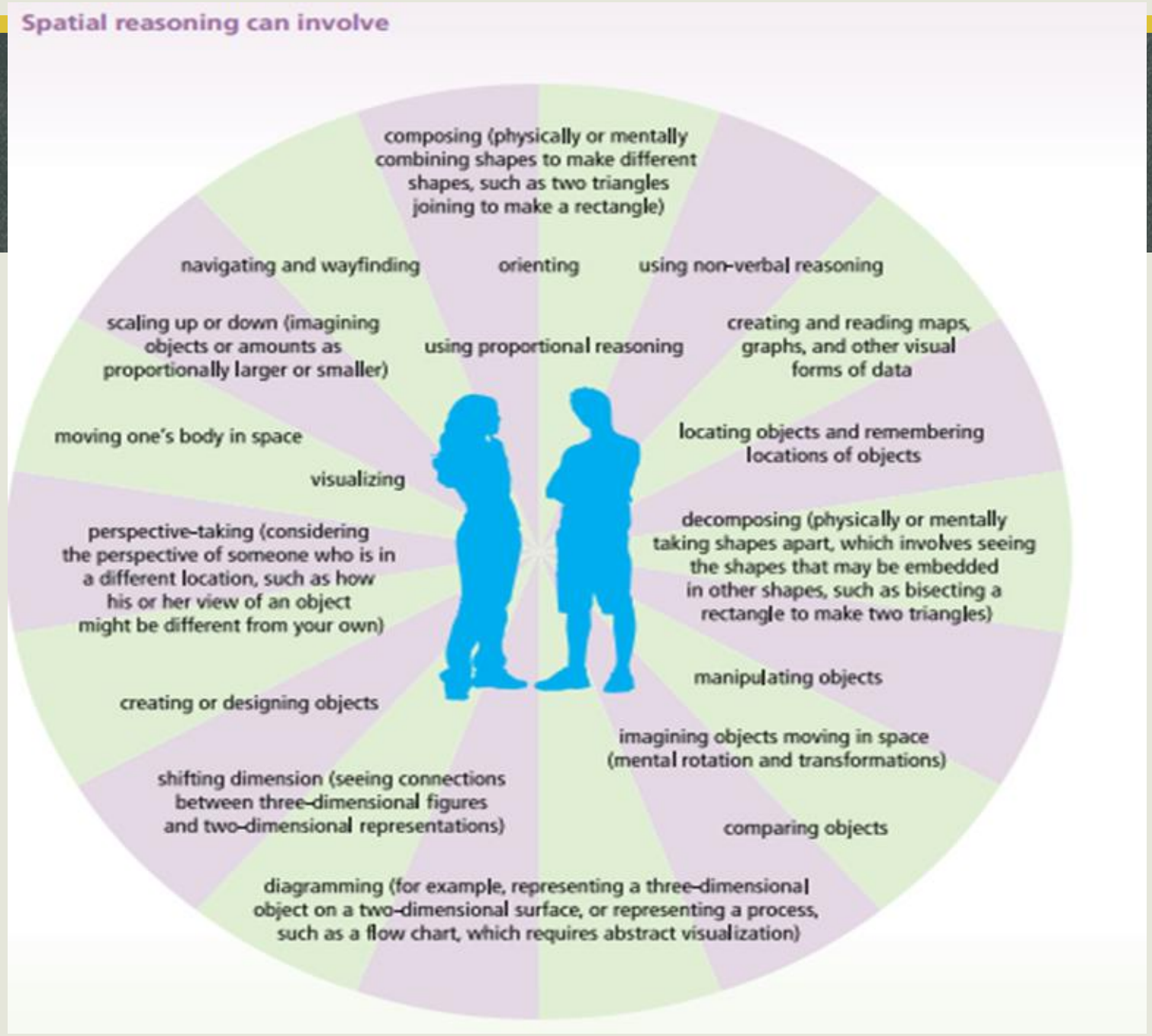
The discovery of the structure of DNA,

the theory of relativity and the

invention of the motor

were all creations borne of spatial visualization

Spatial reasoning can involve



Why Should We Include Spatial Reasoning?

Relation between spatial ability and math is well established (Cheng 2012)

-The quality of **block play** at 4 years of age is a **predictor** of **high school math** achievement (Woolfgang 2001)

-Playing with **jigsaw puzzles** and **blocks** = strong number sense and word problem solving (Nath 2014)

"Most of us have been taught to think and talk about the world using words, lists, and statistics. These are useful tools but they do not come close to telling the full story.

Thinking spatially opens the eye and mind to new connections, new questions, and new answers." (Center for Spatial Studies, UCSB, n.d.)

Literacy and Numeracy in Future Curriculum: Standard 7

"Future curriculum will provide clear evidence of support for literacy and numeracy within and across subjects."

Goal -

Conceptual knowledge + procedural knowledge + competency + progressions = Learning outcome

Planning for the Future Curriculum

- How do students' literacy and numeracy skills facilitate student engagement within the subject?
- Which aspects of literacy and numeracy are key to a better understanding of the subject content?

Why were the Literacy and Numeracy Progressions created?

To help teachers to plan effective learning experiences that foster the development of literacy/numeracy

As a reference tool to provide an overview of key aspects that apply across all grades

As a reference when gathering information about strengths and needs

To assist in determining when a student might require support

They are not to be assessed

- The literacy and numeracy progressions are not intended to be an add-on to current curriculum.
- They should not be used to teach or to formally evaluate and/or report literacy and numeracy separately from subject learning outcomes.

Literacy and Numeracy Progressions: A Support Resource

The development of strong literacy and numeracy skills are essential for students in today's society.

The progressions are a support resource that

- offers an overview of key aspects of literacy and numeracy.
- provides a deeper understanding of the literacy and numeracy that students develop through their years in school.
- organizes the key aspects of literacy and numeracy, which teachers are already familiar with, into an accessible and efficient format.

Go to the Alberta Education website

In the search button type literacy and numeracy

Alberta Education Links

Alberta Education https://education.alberta.ca/

Literacy and Numeracy https://education.alberta.ca/literacy-and-numeracy/about-literacy-and-numeracy/

Learn Alberta

http://www.learnalberta.ca/Home.aspx?lang=en

On-line Reference Centre http://www.learnalberta.ca/OnlineReferenceCentre.aspx?lang=en

Glossary http://www.learnalberta.ca/Search.aspx?

Additional Numeracy Link- Peter Liljedahl- Professor, Faculty of Education, SFU

http://www.peterliljedahl.com/teachers/numeracy-tasks

Organization of the Progressions
Components, Elements and Descriptors (end of division)

Numeracy Progressions (end of division)

The progressions are organized by two **components**—Awareness, and Knowledge and Understanding.

Component: NUMERACY KNOWLEDGE AND UNDERSTANDING (NKU)

Numeracy Knowledge and Understanding Descriptors

The descriptors identify what students are typically able to demonstrate as their numeracy knowledge and understanding increases. This is a cumulative process. It is expected that learning experiences, while developmentally appropriate, will become increasingly complex.

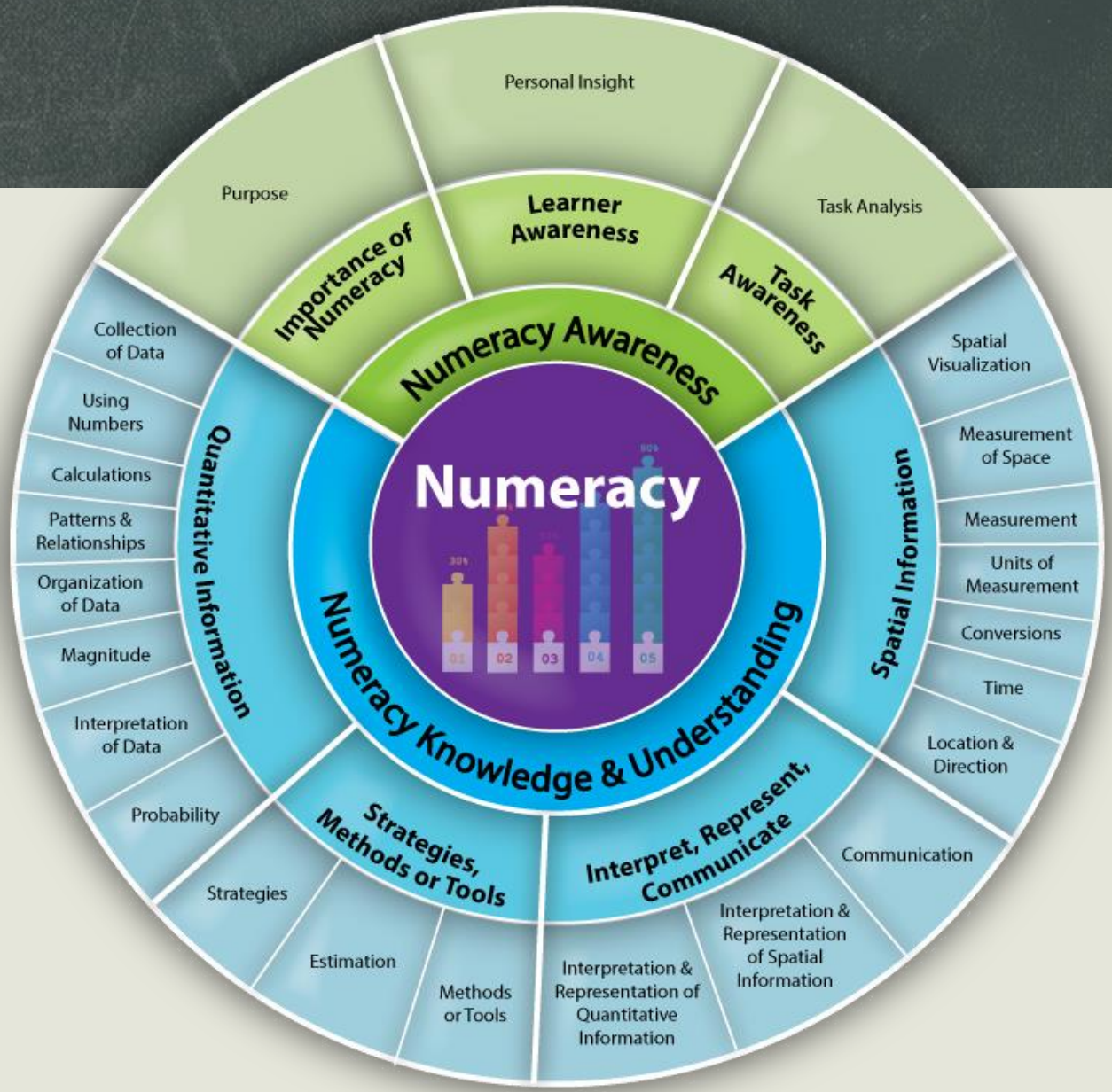
	Kindergarten (typically ages 4–5)	Division I (typically ages 6–8)	Division II (typically ages 9–11)	Division III (typically ages 12–14)	Division IV (typically ages 15–18+)
NKU2 SPATIAL INFORMATION ***Students apply knowledge of spatial* information to make an informed decision.*** ***Spatial information** refers to the physical location of objects or people, or the relationship between objects or people.	**Measurement** Children compare two familiar objects according to measurement attributes to complete a task (e.g., taller, shorter, heavier, smaller).	**Measurement** Students select and use basic measuring instruments to complete a task (e.g., ruler, calendar, stopwatch, thermometer).	**Measurement** Students identify and use appropriate measuring instruments and read simple meters, dials and weigh scales in their environment.	**Measurement** Students identify, select and use suitable instruments to take measurements at an appropriate level of precision.	**Measurement** Students identify, select and use precise instruments or methods to take accurate measurements.

Elements assist in exploring the breadth and depth of each literacy or numeracy component.

The **descriptors** explain what students can typically demonstrate by the end of their particular age/division grouping.

Literacy Progressions

Numeracy Progressions

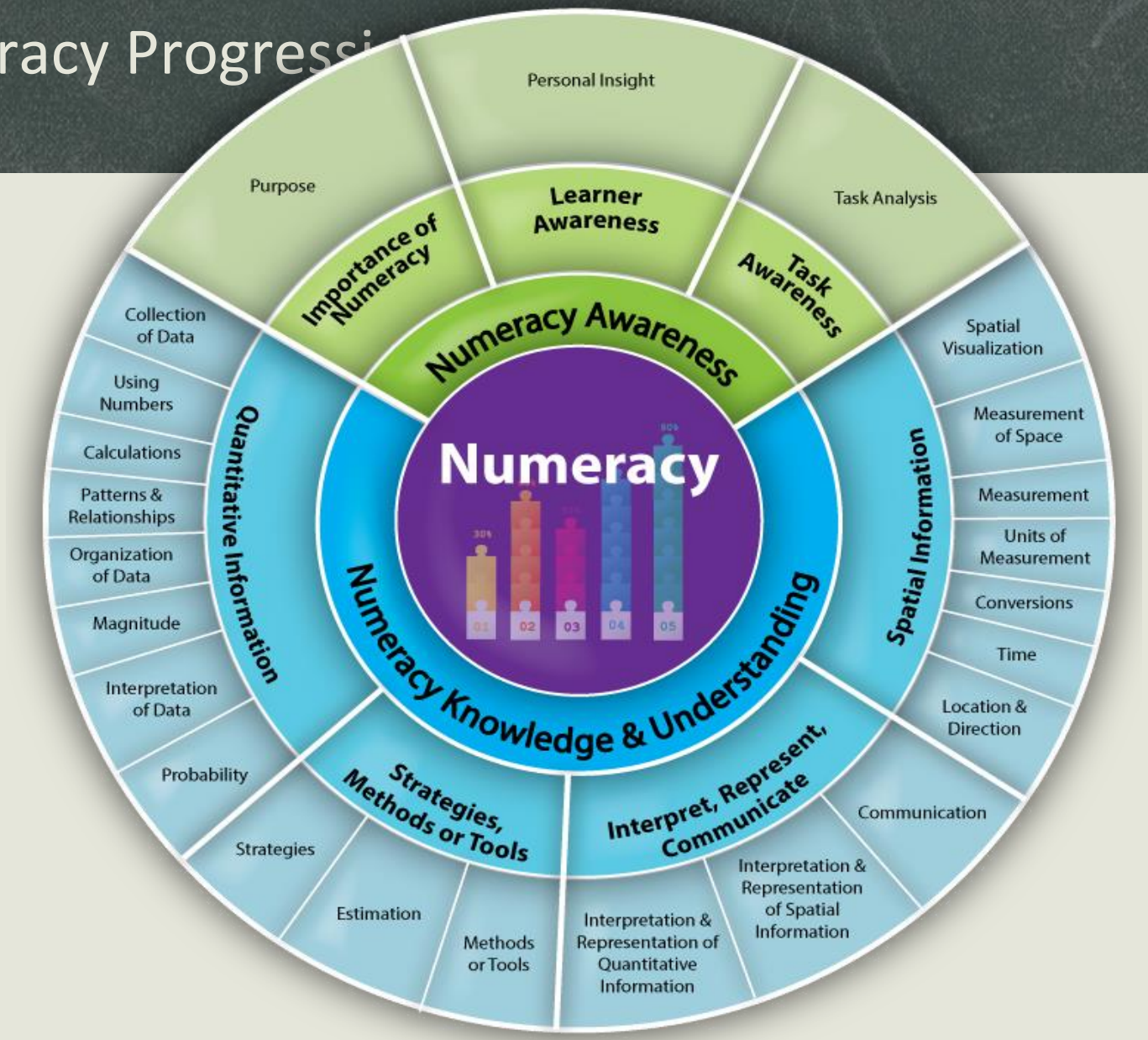


Literacy Progressions

Literacy Progressions

Numeracy Progressions

Numeracy Progressi



Using the Progressions Scenario: A Grade 7 Science Class

Issue

- Some students find it challenging to understand key information (text, data and graphics) in the sources they are using to research an issue.

Related Skill Outcomes

Students will:

- Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data
- Analyze qualitative and quantitative data, and develop and assess possible explanations

Scenario: A Grade 7 Science Class (cont'd)

How can the progressions support these students?

- They can be used as a reference tool to identify relevant aspects of literacy and numeracy that may be affecting students' understanding.
- **Literacy**: text organization; comprehension strategies
- **Numeracy**: data, risk, and uncertainty; interpret and represent spatial information

Selection of Supports

- The aspects of literacy and numeracy that may be affecting students' understanding can be used together with the teacher's observations and subject expertise to inform the selection of effective strategies to support these students.

eg Teaching background vocabulary

Graphing- Math Glossary link

"Neat! Now zoom in and show us where our house is."

Social Studies
Grade 8

- *Historical Worldviews Examined*
- 8.3.4 assess, critically, how the Aztecs were affected by the Spanish worldview by exploring and reflecting upon the following questions and issues:
- In what ways did factors such as technology and disease contribute to the dominance of the Spanish over the Aztec civilization?

Your Turn

You each have an outcome from the curriculum. We all have different grades and subjects

Open your progressions and look for the division level that matches your outcome

Can you find one or more descriptors that could be addressed when teaching that outcome?

When you have completed this, write that descriptor on the flag note and attach to the outcome, e.g. LKU3 Vocabulary

Give One To Get One

When the Music stops -Turn and Talk
When it starts - move again

Take outcome progressions and flag note

Move about the room until the music stops, then find someone to share that learning objective and progression link – read and explain your findings to your partner.

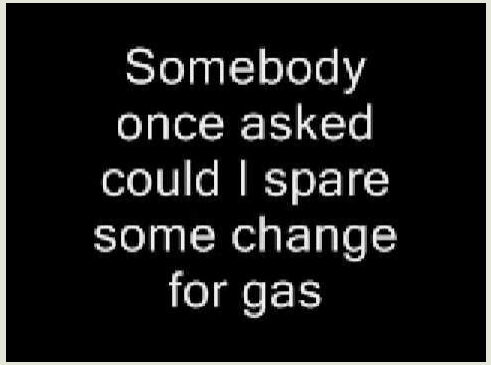
The partner asks any questions so that they can now understand your progression link.(Make sure you understand as you will be explaining it in round 2)

Now it is the second partner's turn to share their information, first partner then asks questions

At the signal – **exchange outcome and flag note**. Move to music again!

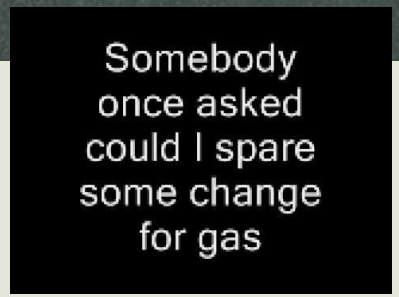
Locate a new partner and share the information you acquired on that card

At the signal, return to your table groups.



Your Turn To Make Connections

When the Music stops -Turn and Talk
When it starts - move again



Science Grade 8

▪*Unit D: Mechanical Systems*
(Science and Technology Emphasis)

▪2. Analyze machines by describing the structures and functions of the overall system, the subsystems and the component parts

• analyze a mechanical device, by:

▪ describing the overall function of the device

Drama Grade 8

▪develop the ability to interact effectively and constructively in a group process

Physical Education Grade 8

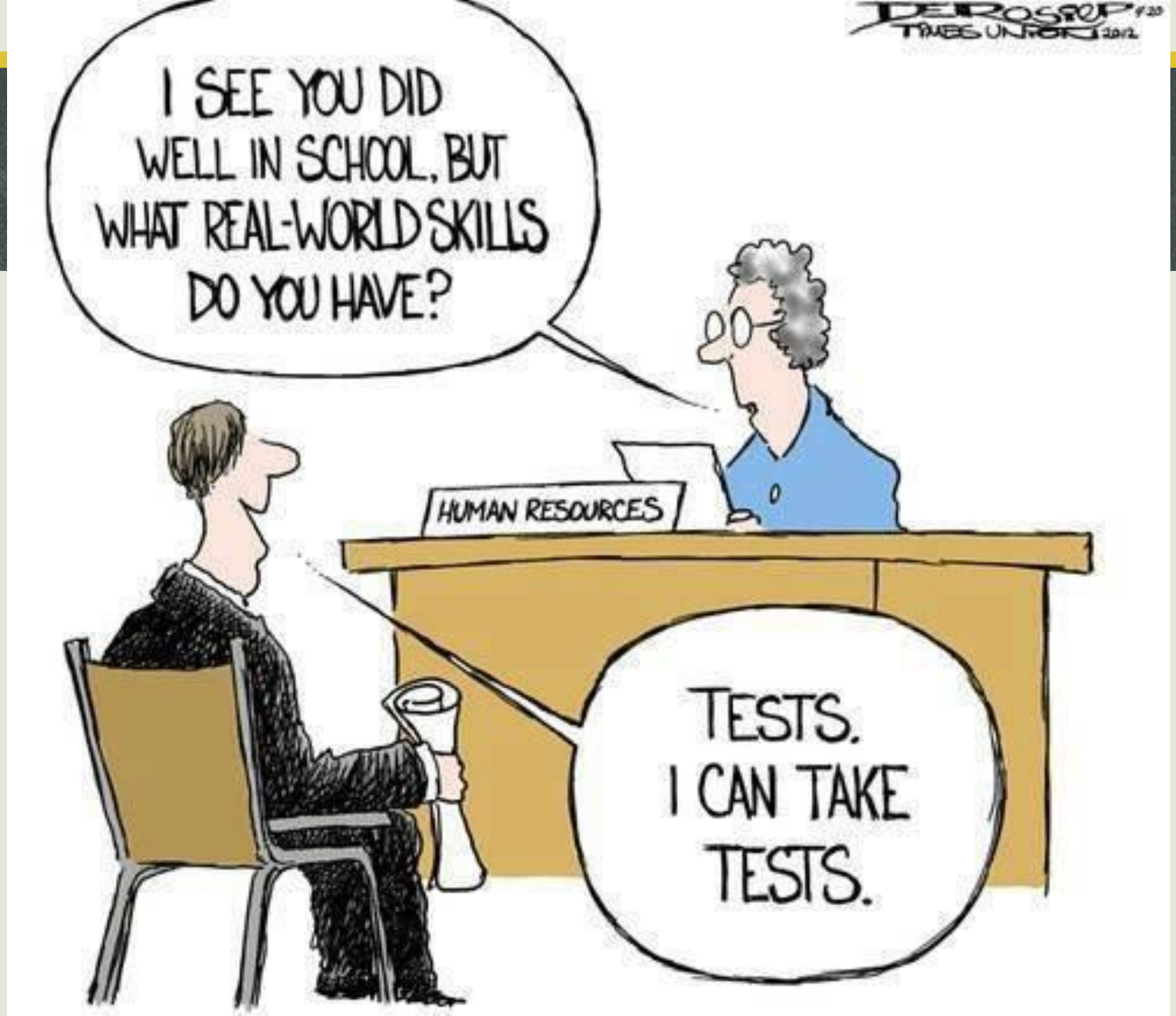
▪*Cooperation*

▪C8–5 recommend practices that contribute to teamwork

Social Studies Grade 8 *Historical Worldviews Examined*

▪8.3.4 assess, critically, how the Aztecs were affected by the Spanish worldview by exploring and reflecting upon the following questions and issues:

▪In what ways did factors such as technology and disease contribute to the dominance of the Spanish over the Aztec civilization?


I SEE YOU DID WELL IN SCHOOL, BUT WHAT REAL-WORLD SKILLS DO YOU HAVE?
HUMAN RESOURCES
TESTS. I CAN TAKE TESTS.

Personalize

As you think about an upcoming unit/project in a specific subject area

Think of a Learner Outcome

Find one or more progressions that you are currently (or plan to use) when developing a learning experience

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ARPDC Supports

Elementary Math Professional Learning
http://learning.arpdc.ab.ca/course/view.php?id=351&username=guest

ARPDC First Nations, Metis and Inuit Resources
http://learning.arpdc.ab.ca/course/index.php?categoryid=7

Now that you are more familiar with the Literacy and Numeracy Progressions

- What are you doing now that supports numeracy/literacy?

- What is one thing you will tweak, add or be more intentional about in your classroom tomorrow?

- Think - Pair - Share

Moving Forward

- Thank-you Please complete an exit card
  - 1 thing you learned or affirmed today
  - 1 additional support would you like
  - You will receive an **ARPDC** survey in your e-mail

Alberta Regional Consortia

Southern Alberta Professional Development Consortium

"A partnership to nurture continuing educational excellence"

www.sapdc.ca