Learning Difficulties Australia

Learning Difficulties Australia is an association of teachers and other professionals dedicated to assisting students with learning difficulties through effective teaching practices based on scientific research.

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Hi, I'm Erin Rollason

BSc, GradDipEd(Sec), MLI (SLD)

Learning Interventionist

LDA council member

I currently work at a very large mainstream, government secondary college in South East Melbourne. My leadership role encompasses Literacy and Numeracy interventions, with a supportive direction in positive learning for students with disabilities and SLD's.

Being neurodiverse, myself, I am passionate about providing students with disabilities and SLD's skills to ensure equity in the school context.

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Numeracy language promotion in Secondary School

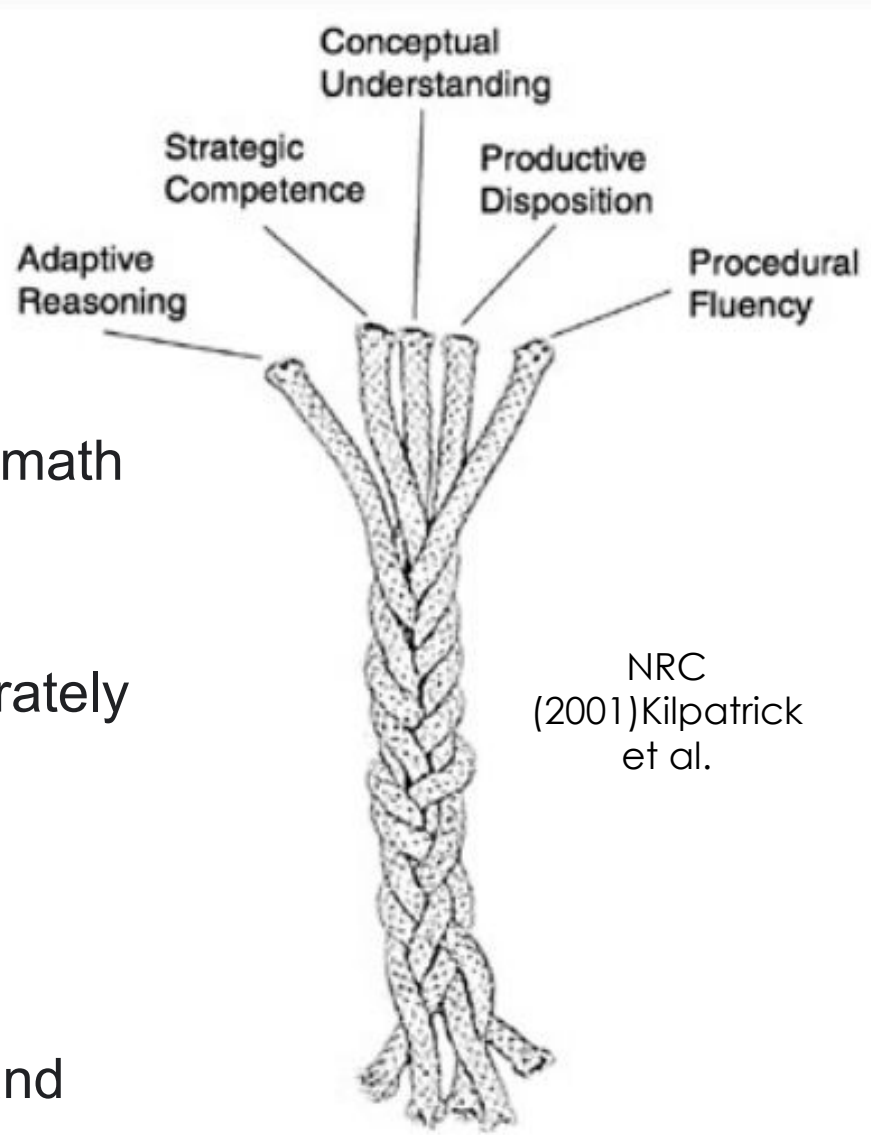
Objectives

To understand why the language supporting numeracy can be challenging in Secondary School.

To learn/revisit the language that supports numeracy knowledge promotion in secondary school students with learning difficulties.

How to support numeracy language promotion at school and home.

The 5 strands of math proficiency



NRC (2001)Kilpatrick et al.

1) **Conceptual understanding-** comprehension of mathematical concepts, operations, and relations (involves modelling maths, math vocabulary, concept mapping).

2) **Procedural fluency**- computing (carrying out procedures accurately and efficiently).

3) **Strategic competence-** represent and solve math problems.

4) **Adaptive reasoning-** capacity of logical thought, explanation and reflection.

5) **Productive disposition**- to see maths as worthwhile and useful, coupled with self efficacy.

"It's not just the vocabulary words that matter, but understanding the relationships that underlie the words--the fact that 'eight' is one more than 'seven' and one less than 'nine,'

-Goldin-Meadow (2011).

The use of language in mathematics differs from the language of ordinary speech in three important ways:

1) Unaffected by time (a slight difficulty lies in forming strong examples of logical principles using ordinary subjects) (Math discourse- It just “is”).
2) Lacks emotional content.
3) Distinguishes mathematical from ordinary language (causes enormous difficulty).

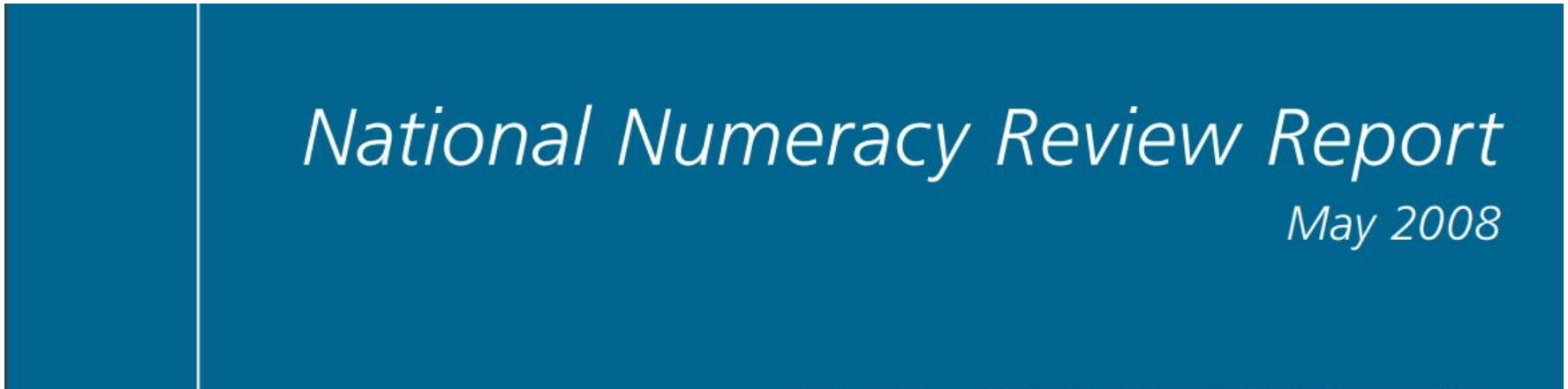
Therefore, students need to learn the different tools of language in mathematics in order to be successful.

https://wac.colostate.edu/docs/llad/v4n1/jamison.pdf

The National Numeracy Review Report, 2008 (COAG)- Research evidence about the role of language in numeracy learning.

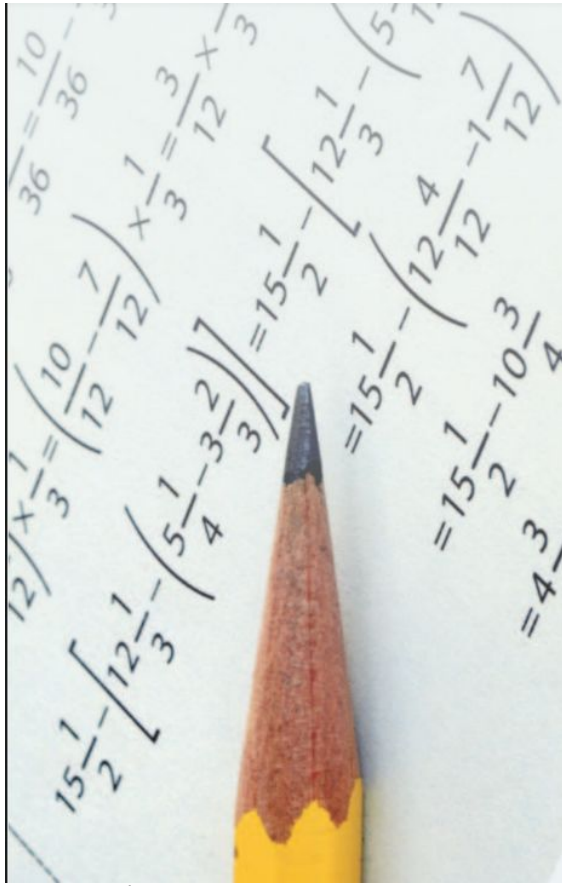
Several issues relating to language and literacy were identified:

1) The specialised symbols and expressions of mathematical language.
2) The use of everyday English terms that have different meanings in mathematics classrooms.
3) Language-based factors in solving mathematical word problems.
4) Communication in the mathematics classroom.
(COAG, 2008)



A summary of key linguistic features of the mathematics register is indicative of the different aspects of language involved.

Features in a mathematics classroom:



Multiple semiotic register

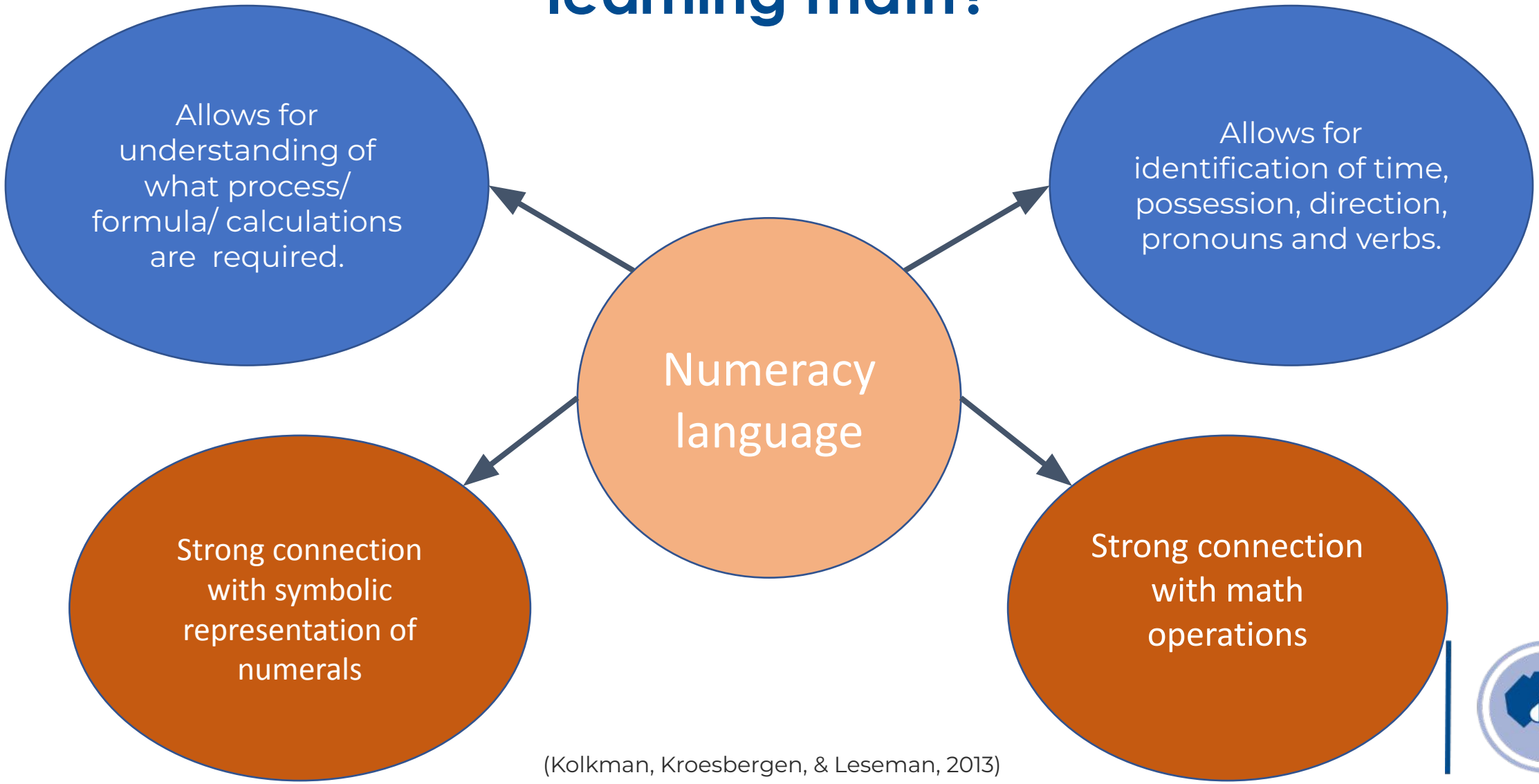
- mathematics symbolic notation
- oral language
- written language
- graphs and visual displays

Grammatical patterns

- technical vocabulary
- dense noun phrases
- being and having verbs
- conjunctions with technical meaning
- implicit logical relationships.

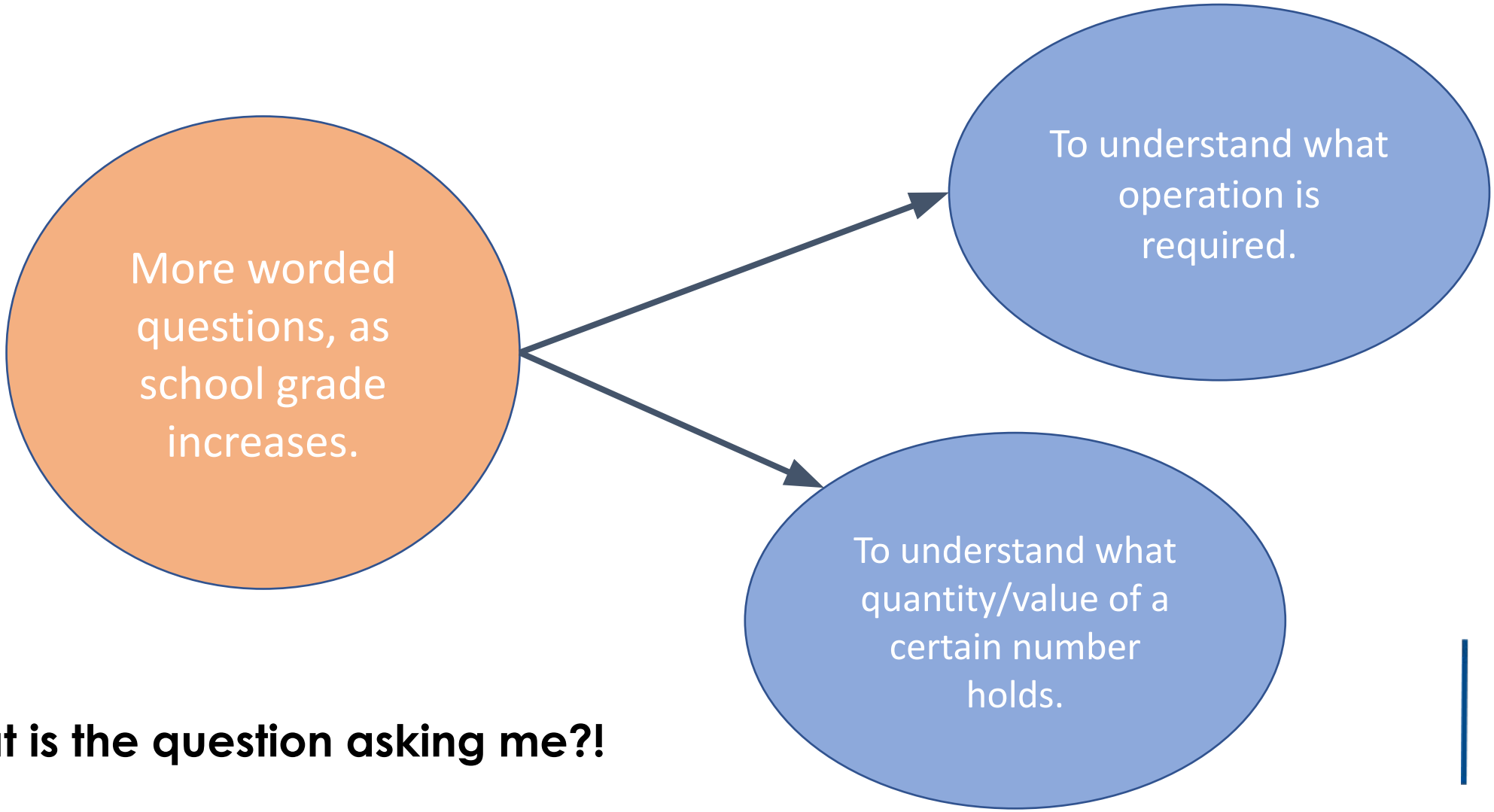
(Schleppegrell, 2007)

Why is numeracy language important when learning math?



(Kolkman, Kroesbergen, & Leseman, 2013)

Why is numeracy language important when learning math?



What is the question asking me?!

Decoding worded problems

https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/english/literacy/Pages/lim_translatingwordstosymbols.aspx


Illustrations of Practice
Proficient
Focus area 2.5
aitsl

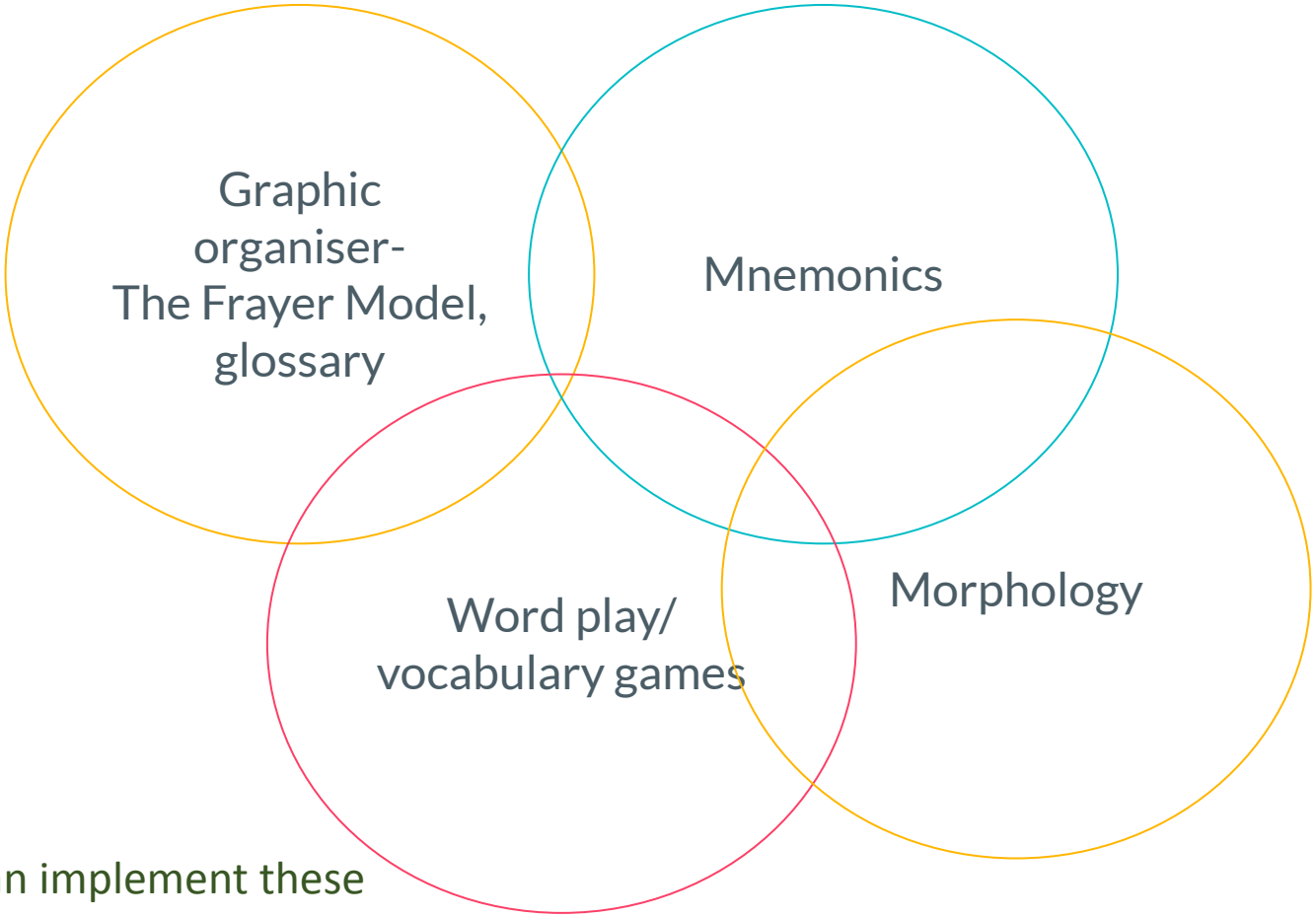
The first step in learning the formal communication of mathematics is in learning definitions (Jamison, 2000).

Di Gisi and Fleming (2005) describe three types of vocabulary that students need to be able to solve word problems:

- mathematics vocabulary
- procedural vocabulary
- descriptive vocabulary

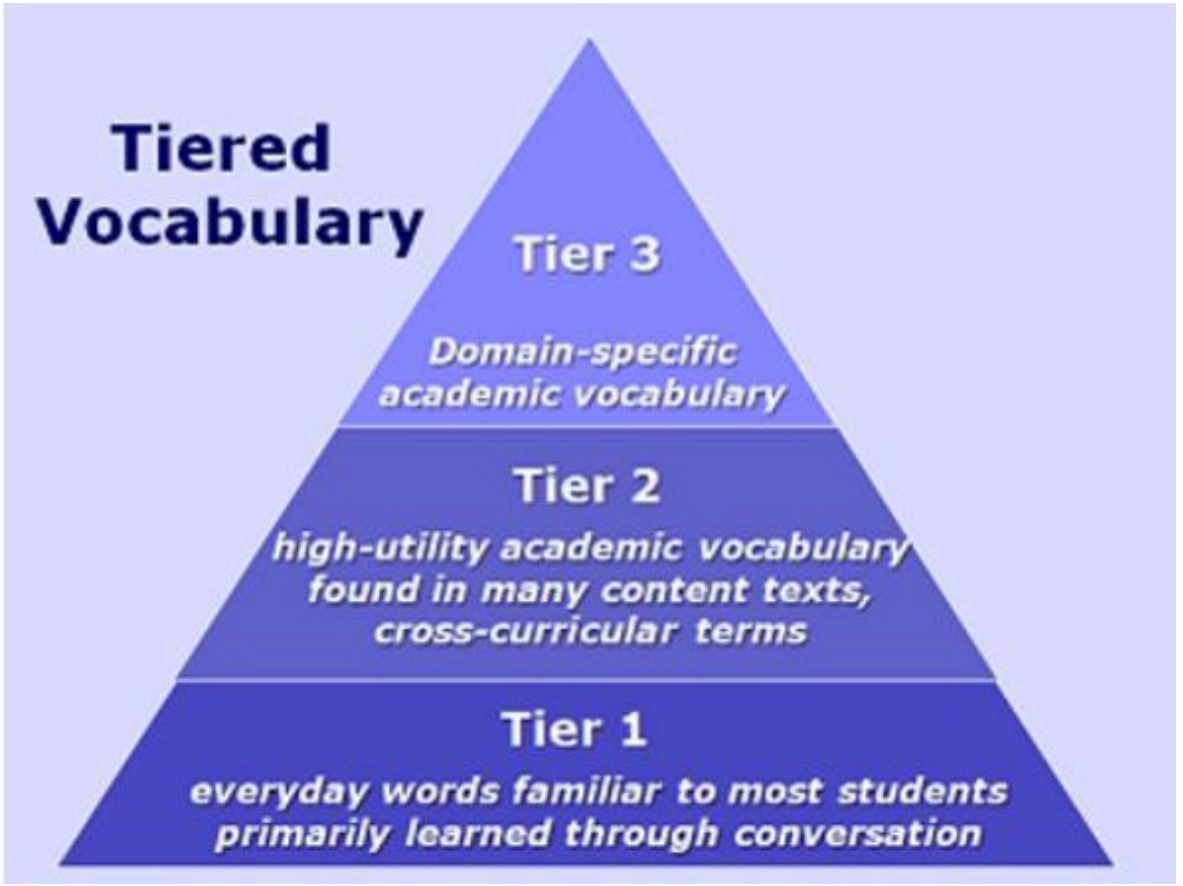
https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/english/literacy/Pages/developing_mathematical_understanding.aspx

Evidence-based Vocabulary Strategies for SLD students



Teachers, allied health and parents can implement these strategies

Language supporting the learning of mathematics.



Beck, McKeown, and Kucan (2002).

Vocabulary Selection Planner

DIRECTIONS Use this planning template to select appropriate vocabulary words for instruction. Answer the questions to arrive at a list of target words.

CENTRAL TEXT_____

TIER TWO WORDS IN THIS TEXT	TIER THREE WORDS IN THIS TEXT
Of the Tier Two words in this text, which are likely unfamiliar to my students?	**Of the Tier Three words in this text, which are likely unfamiliar to my students?**
Which Tier Two words from this text are essential for comprehension?	**Which Tier Three words from this text are essential for comprehension?**
Which Tier Two words will I target for explicit instruction?	**Which Tier Three words will I target for explicit instruction?**
Which Tier Two words will I cover through incidental instruction?	**Which Tier Three words will I cover through incidental instruction?**

FINAL LIST OF TARGET WORDS

Focus on current vocabulary (chapter/concept).

Link in resources

Math terms in the classroom:

Frequently ask the student/s:

1) Have you seen this word before?
2) What does it mean in everyday language?
3) What does this mean in the maths classroom?

Vocabulary Knowledge Scale (VKS): INTEGERS Chapter 1 – Cambridge

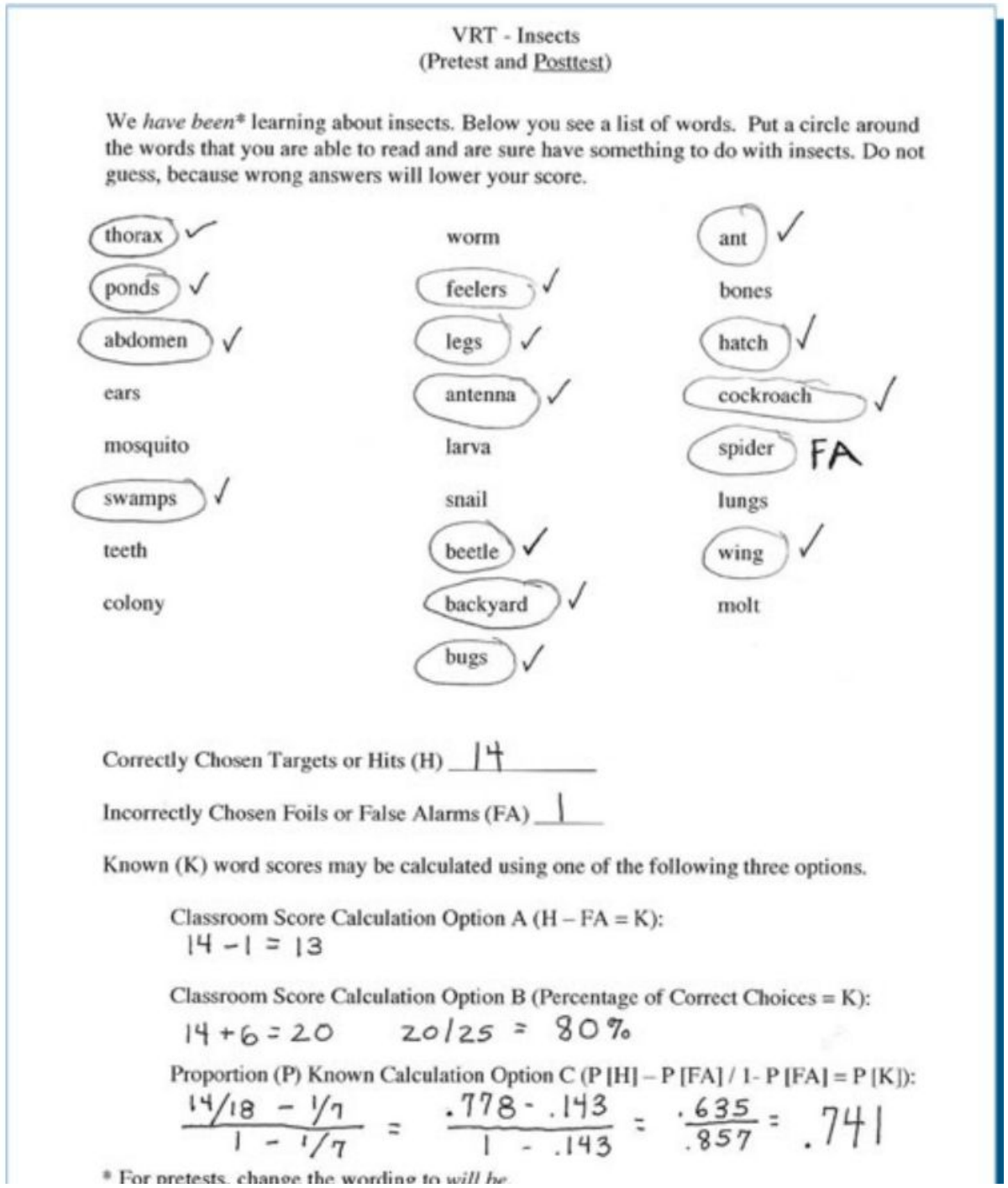
PART A. Your task is to select ONE number by circling, from (1-5) for each term. Please read it carefully as you *may be required to write some information*.

Term	How well I know this term…
1. Integer	1. I don't remember having seen this word before (1 point). 2. I have seen this word before, but I don't think I know what it means (2 points). 3. I have seen this word before, and I think it means…… ……(Synonym or translation; 3 points) 4. I know this word. It means…… …… (Synonym or translation; 4 points) 5. I can use this word in a sentence …… …… (If you do this section, please also do category 4; 5 points).
2. Quotient	1. I don't remember having seen this word before (1 point). 2. I have seen this word before, but I don't think I know what it means (2 points). 3. I have seen this word before, and I think it means …… ……(Synonym or translation; 3 points) 4. I know this word. It means…… …… (Synonym or translation; 4 points) 5. I can use this word in a sentence …… …… (If you do this section, please also do category 4; 5 points).

VKS- Vocabulary Knowledge Scale

Wesche & Paribakht (1996)

Scoring instructions are in resources



VRT - Insects
(Pretest and Posttest)

We *have been** learning about insects. Below you see a list of words. Put a circle around the words that you are able to read and are sure have something to do with insects. Do not guess, because wrong answers will lower your score.

thorax ✓	worm	ant ✓
ponds ✓	feelers ✓	bones
abdomen ✓	legs ✓	hatch ✓
ears	antenna ✓	cockroach ✓
mosquito	larva	spider FA
swamps ✓	snail	lungs
teeth	beetle ✓	wing ✓
colony	backyard ✓	molt
	bugs ✓	

Correctly Chosen Targets or Hits (H) 14

Incorrectly Chosen Foils or False Alarms (FA) 1

Known (K) word scores may be calculated using one of the following three options.

Classroom Score Calculation Option A (H – FA = K):
14 – 1 = 13

Classroom Score Calculation Option B (Percentage of Correct Choices = K):
14 + 6 = 20 20/25 = 80%

Proportion (P) Known Calculation Option C (P [H] – P [FA] / 1- P [FA] = P [K]):

$$\frac{14/18 - 1/7}{1 - 1/7} = \frac{.778 - .143}{1 - .143} = \frac{.635}{.857} = .741$$

* For pretests, change the wording to *will be*

VTR-Vocabulary Recognition Tool

Anderson and Freebody (1983)
Scoring instructions are in resources

https://www.readingrockets.org/article/classroom-vocabulary-assessment-content-areas

Glossary

Word	Everyday (dictionary)	Mathematical definition (from Mathematics Glossary)
mean	nasty	Also called the **average**. The sum of values in a data set divided by the total number of values in the data set. For example, if a data set consists of the values then the mean is defined as: For example, for the following list of five numbers {2, 3, 3, 6, 8 } the mean equals
average	ordinary or even less than ordinary	Average: Also called the mean. (see above)

In secondary school, textbooks are generally too difficult for struggling readers and require a level of content-specific prior knowledge not typical of this group (Hirsch, 2003).

https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/english/literacy/Pages/lim_everydayandtechnicalterms.aspx

MATHEMATICAL HOMONYMS & HOMOPHONES

WORD	MATHEMATICAL MEANING	This word also sounds like _____ but the spelling and meaning is different.	This word can also mean_____ in everyday use.	Dictionary link
add	**Number & Algebra** (verb) The process of finding the total of two or more numbers or quantities. 'Four add three' would be written as 4 + 3.	ad (abbreviation of advertisement)		https://www.merriam-webster.com/dictionary/add https://www.merriam-webster.com/dictionary/ad
allowed	Permitted To make possible.	aloud		https://www.merriam-webster.com/dictionary/aloud https://www.merriam-webster.com/dictionary/allowed
angle	**Measurement & Geometry** The measure of turn between two straight lines that meet. A protractor is used to measure an angle. Angles are usually measured in degrees.	ankle	a viewpoint or a standpoint	https://www.merriam-webster.com/dictionary/angle

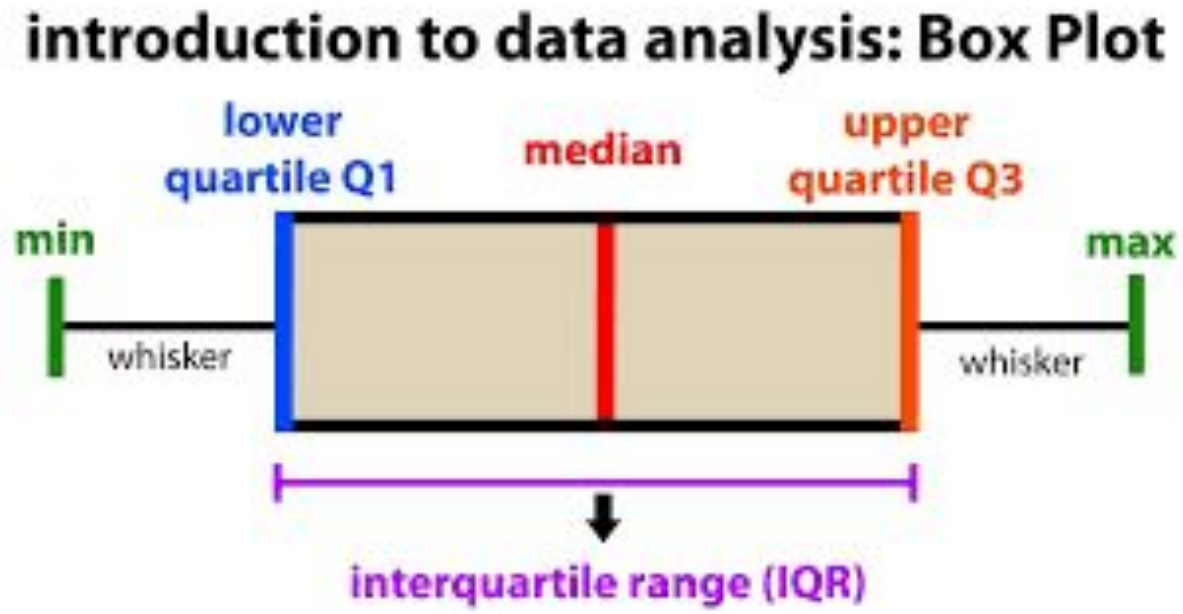
https://www.westernsydney.edu.au/mesh/mesh/support_and_resources/mathematics_terminology

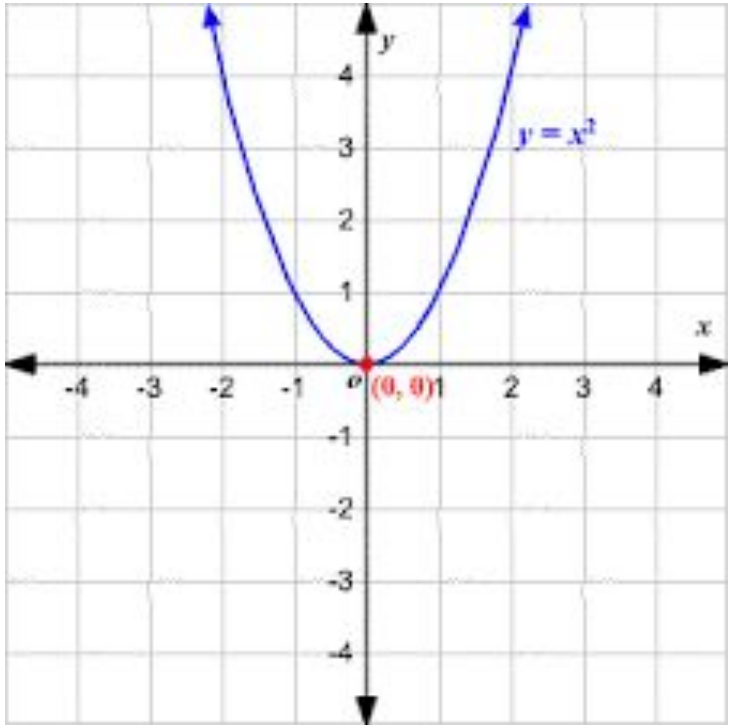
“In terms of meaning-making systems, students must move between written language, oral language, symbolic notation, and graphs and visual displays. They must also become familiar with mathematical grammatical patterns relating to technical vocabulary, use of synonymous verbs, and implicit logical relationships.”

(Schleppegrell, 2007)

Language in graphs and statistical displays.

Understanding the language surrounding graphs/statistical data is imperative in order to deconstruct meaning/interpretation.



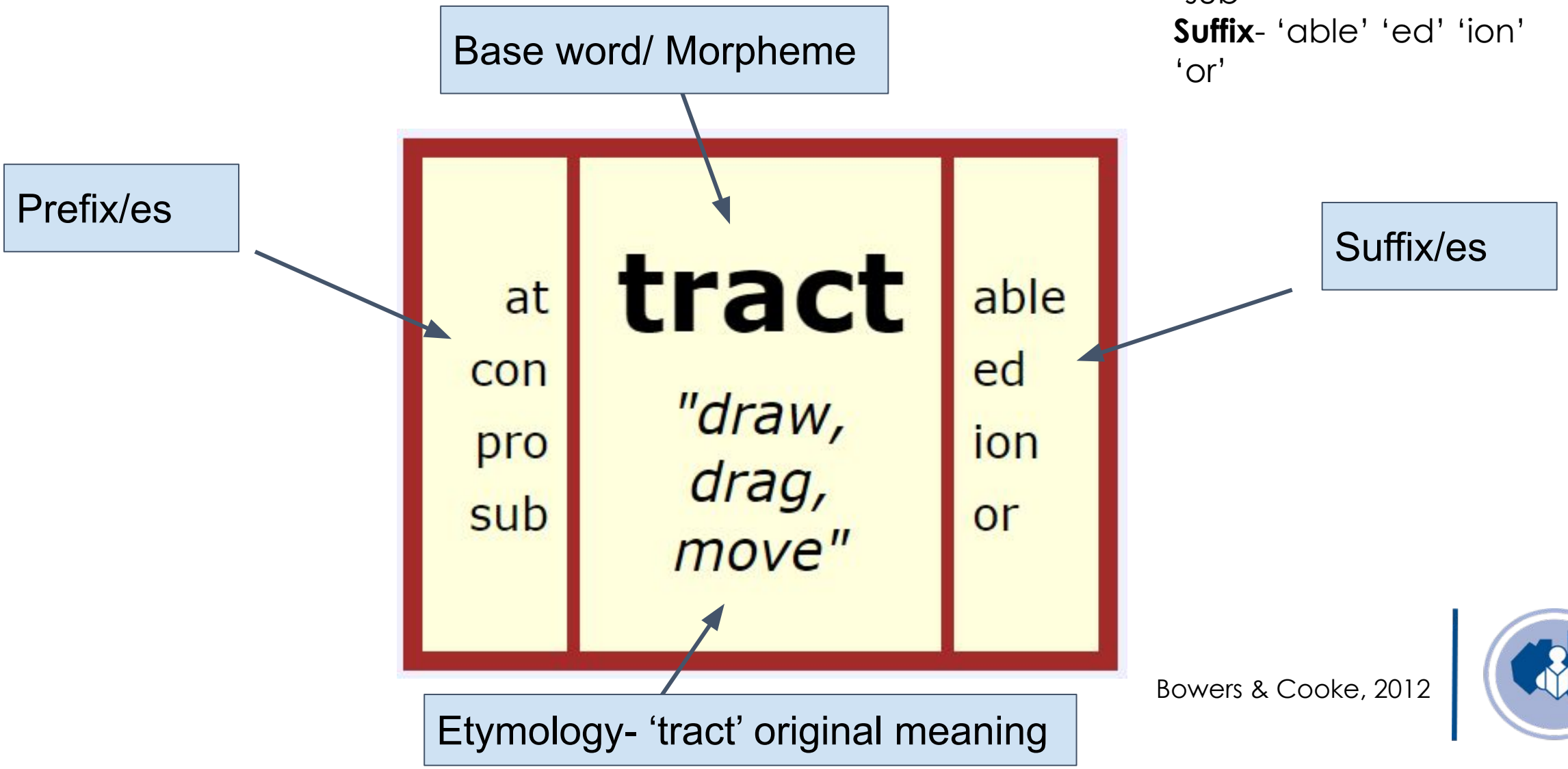


Language in graphs and statistical displays.

Graphs:	**Box and whisker:**	**General:**
Axes	Median	Mean
Axial intercept	Outlier	Mode
Axes intercepts	Range	Quantitative data
Turning point	Interquartile range	Qualitative data
Origin	Quartile range	Frequency distribution
Gradient		Population
Plot		Central tendency

Morphological matrix

Simplified version
Base word- ‘tract’
Prefix- ‘at’ ‘con’ ‘pro’ ‘sub’
Suffix- ‘able’ ‘ed’ ‘ion’ ‘or’

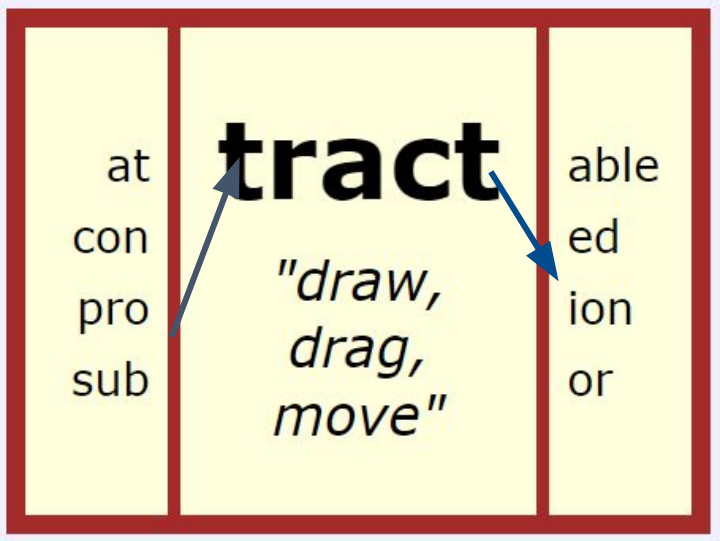


Bowers & Cooke, 2012

A WORD MATRIX USUALLY ONLY SHOWS SOME POSSIBLE WORDS.
YOU CAN OFTEN FIND MORE IF YOU TRY!

Rules for reading a word matrix:

- Read a matrix from left to right.
- Make only single, complete words from a matrix
- Only build words you can use in a sentence.
- You do not have to take an element from every column of a matrix – BUT...
- You must not 'leapfrog' over a column.
- WATCH THE JOINS! Sometimes changes happen where you add a suffix.

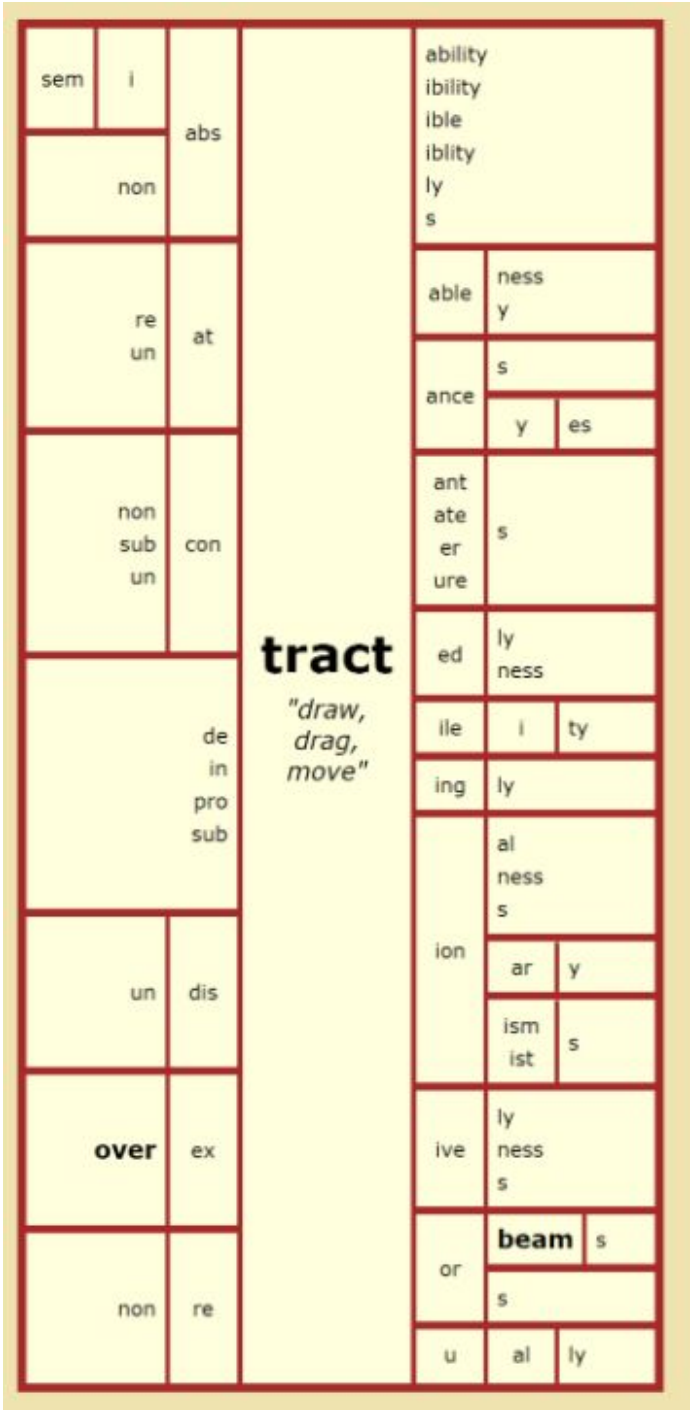


_____ + _____ + _____

Prefix(es) Base Suffix(es)

Build words with your connecting (or cut out pieces) prefixes and suffixes below. Once you have built a word, write the word sum as modelled in 1 and 2 (below):

	Word Sum	**Word**
1	Sub + tract	Subtract
2	Sub + tract +ion	Subtraction
3		



Full complex version

Math Morphemes (Ron Yoshimoto compilation)

morpheme	meaning	sample word
alt	high	altitude
circum	around	circumference
col/com/con	with/together	collinear
de	down/away	denominator
dia	across	diagonal
digit	finger	digital
equi	equal	equilateral
fer	bring/carry	circumference
fract	break	fraction
gon	angle	polygon
grade	step	centigrade
gram/graph	write	kilogram
hedron	sided object	tetrahedron
hypo	under	hypotenuse
inter	between/ among	intersect
iso	equal	isosceles
lat	side	collateral
lin	line	collinear
medi	middle	median
meter/metry	measure	symmetrical
mut	change	commutative
nom	name	denominator
numer	number	numerator
oid	resembling	trapezoid
para	beside	parabola
pend	hang	perpendicular
peri	around	perimeter
ply/plic	fold	multiply
put(e)	think	compute
radi	ray	radius
rect	right/straight	rectangle
sect	cut/divide	bisect
sphere	ball	spherical
sub	below/under	subtract
sym/syn/syl	with/together	symmetric
tang	touch	tangent
therm	heat	thermometer
tract	drag/pull	protractor
verse/vert	turn	vertex

(Morphology Matters, William Van Cleave, 2019)

Math Morphemes (Ron Yoshimoto compilation)

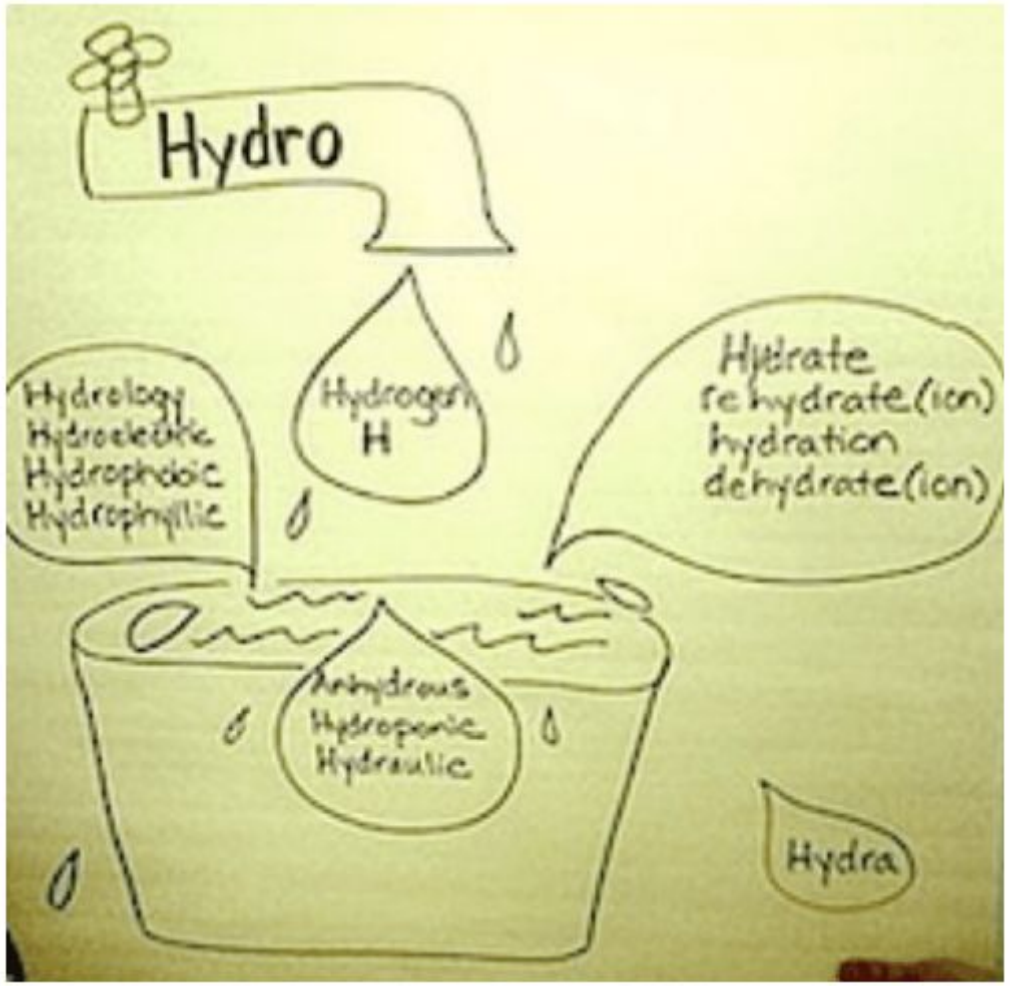
Number Prefixes

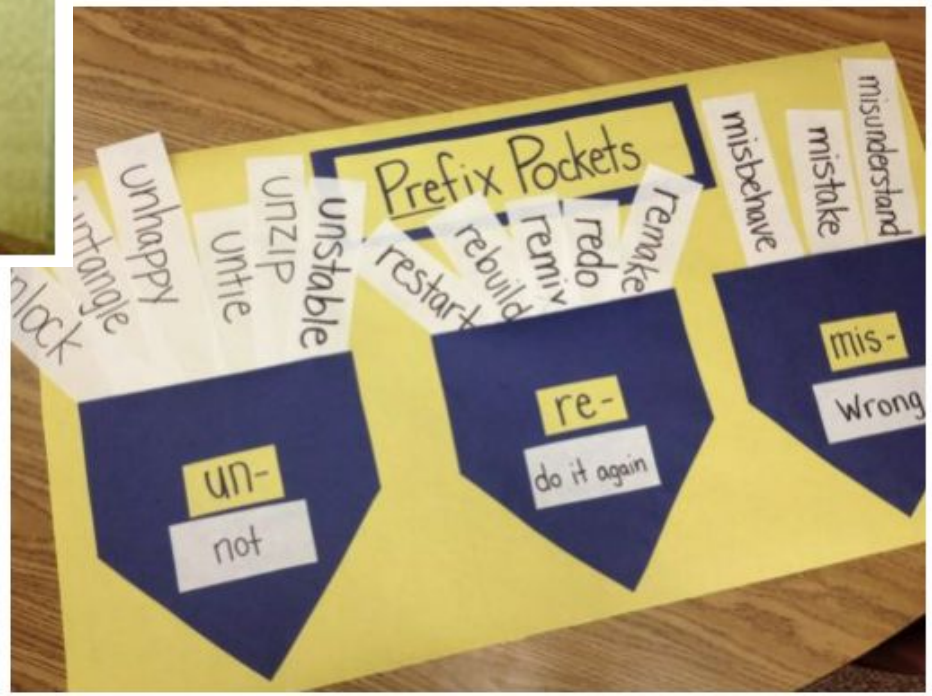
#	*Latin*	*sample word*	*Greek*	*sample word*
1	uni-	unicorn	mono	monopoly
2	bi	bicycle	di	digraph
	du(o)	dual		
3	tri	tricycle	ter	tertiary
4	quadr/quar	quarter	tetra	tetragon
5	quint	quintuplets	pent	pentagon
6	sex	sextuplets	hex	hexagon
7	sept	septuplets	hept	heptagon
8	octa/octo*		octa/octo*	octagon
9	nona/nove	November		
10	dec/deca/deci*		dec/deca/deci*	decade
100	cent	cent	hect	hectogram
1000	mille	millipede	kilo	kilometer

* same for Latin and Greek

(Morphology Matters, William Van Cleave, 2019)

Word Parts: Ceiling Spiders



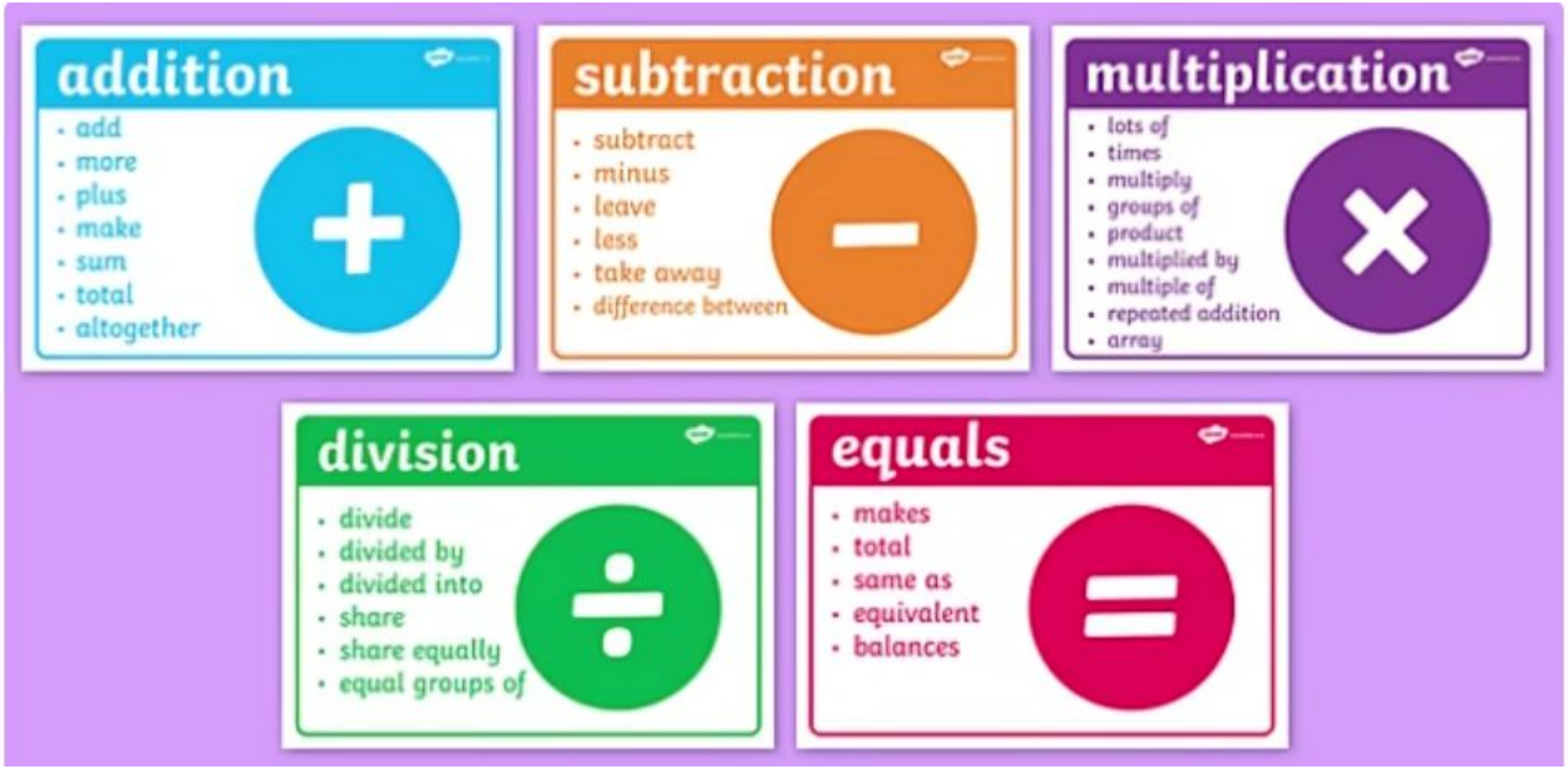


https://keystoliteracy.com/blog/using-morphology-to-teach-vocabulary/

Language continues to help students move from concrete math skills based in physical objects toward a more symbolic math ability focused on numerals.

(Kolkman, Kroesbergen, & Leseman, 2013).

Learning math symbols = knowledge of context



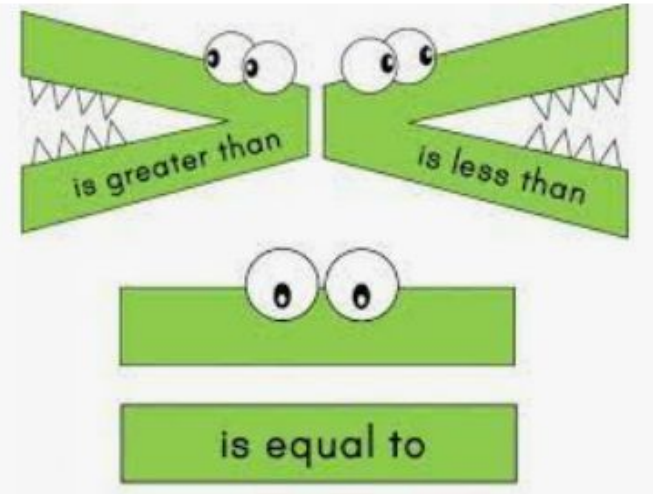
Via Twinkl.com

Symbols with no context…

+	+ 24	32 + 567	+406 567 502
−	-98	73 - 23	-7°C
×	5 x 4	5 + 5 + 5 + 5	3 x 150ml beakers
÷	$\frac{10}{5}$	8 ÷ 4	8/4

What does this all mean?

Variations on the equals sign:



$\neq$ which means 'is not equal to'

$\approx$ which means 'is approximately equal to'

$\geq$ which means 'is greater than or equal to',
e.g. $x \geq 2$ means that x can equal 2, but it might also be any value larger than 2.

$\leq$ which means 'is less than or equal to',
e.g. $y \leq 7$ means that y might equal 7 or might be any number less than 7.

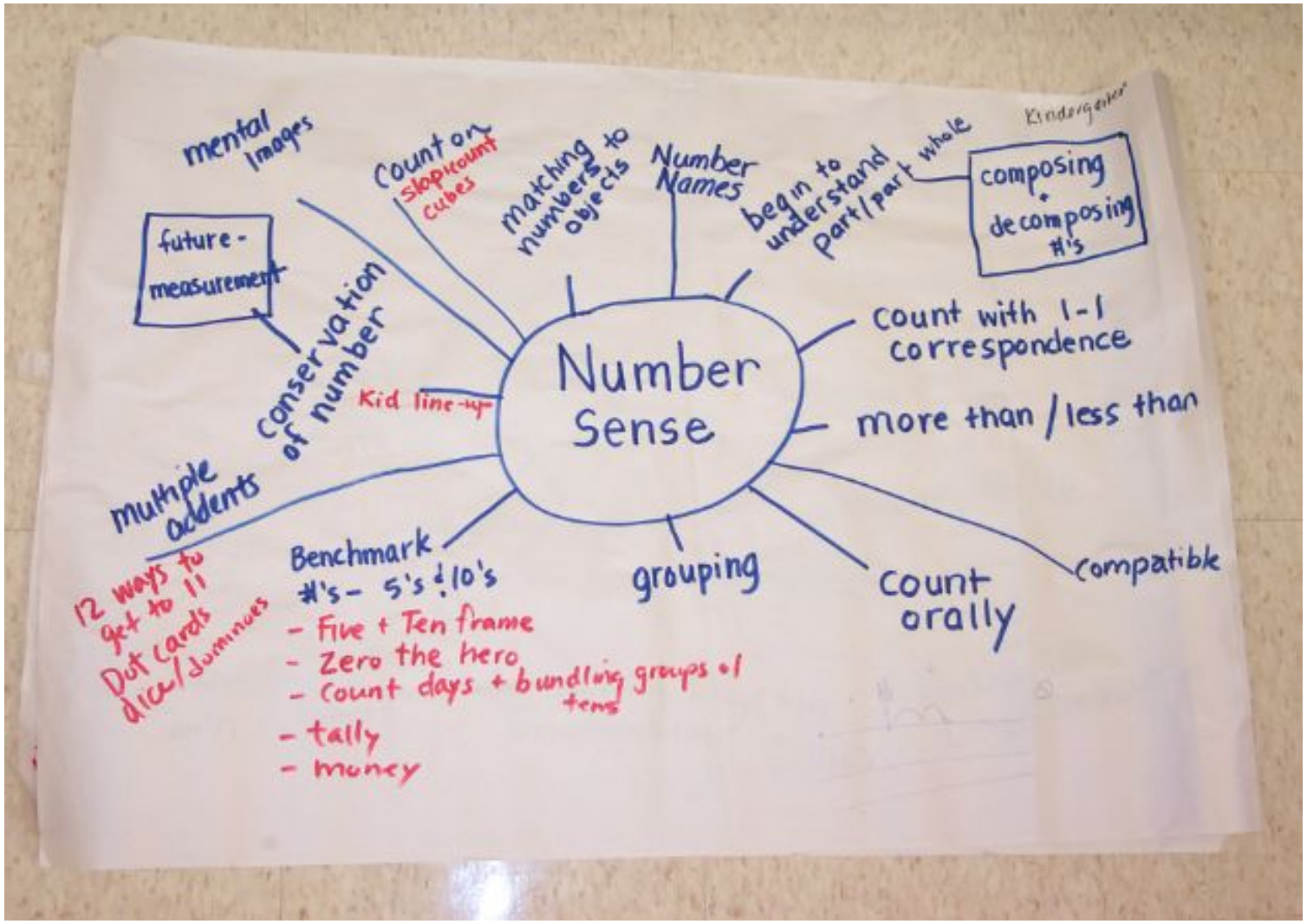
http://www.mathcentre.ac.uk/resources/uploaded/mc-ty-mathlanguage1-2009-1.pdf

Mathematical symbols- student sheet

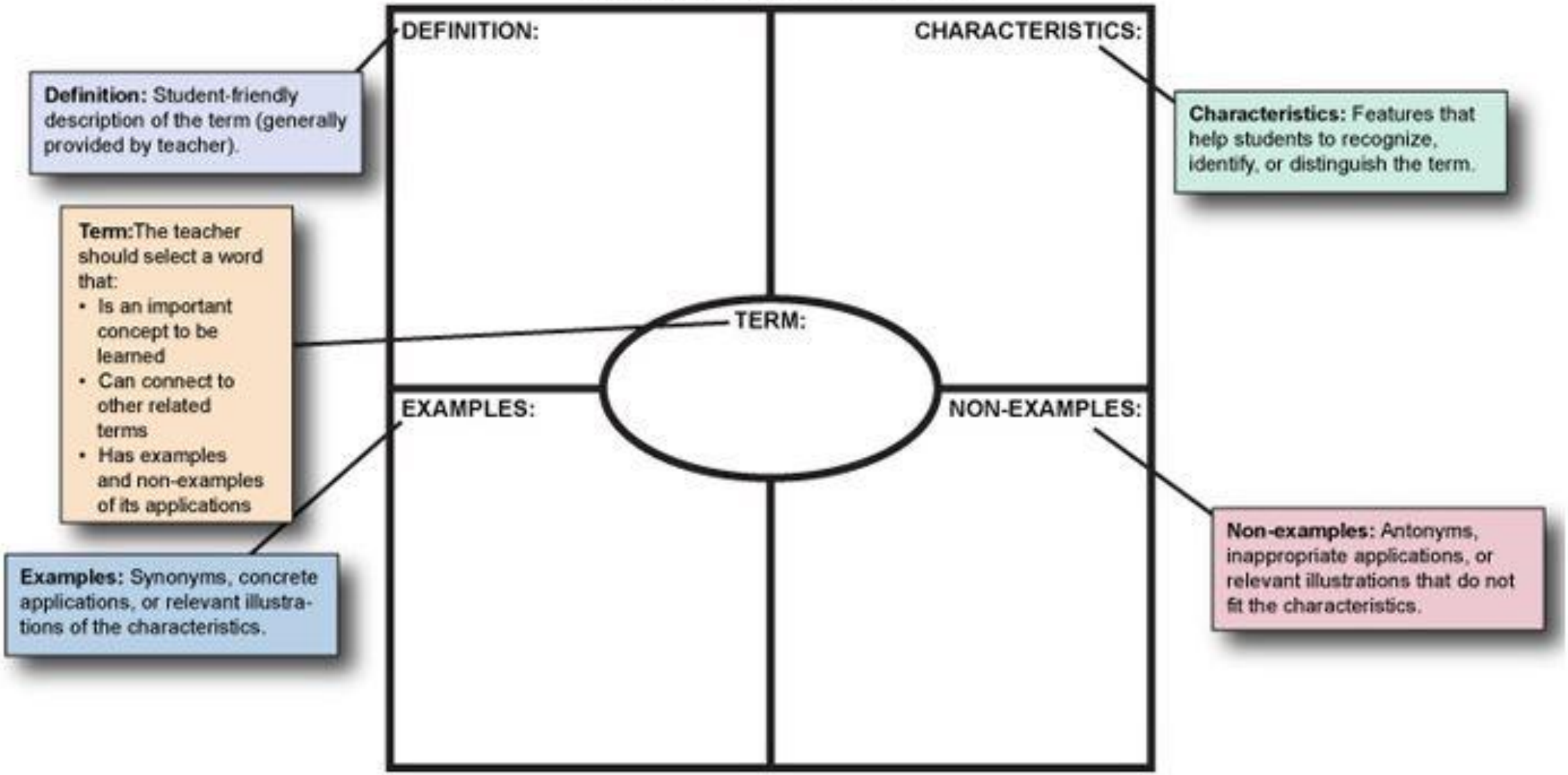
x^2	x^3	$\sqrt{x}$	$\sqrt{\ }$	^	$\sqrt[3]{x}$	≤	≥	<	>
squared	cubed	square root	radical	exponent (raise to a power)	cube root	less than or equal to	more than or equal to	less than	more than
=	≠	{ }	( )	[ ]	$\overline{x}$	≈	∴	||	|||
equal to	not equal to	brackets	brackets	brackets	mean	approximately equal to	therefore	parallel	similar
≅	/	÷	·	×	.	∞	°F	°C	θ
congruent	divide by	$\frac{\text{fraction}}{\text{bar}}$	multiply by	*	decimal point	infinity	degrees Fahrenheit	degrees Celsius	theta
°	AB	∠	∑	∫	π	+	−	±	⊥
degrees	ray AB	angle	sum of	integral	pi 3.14159...	addition or positive	subtraction or negative	plus or minus	perpendicular to
!	%	$	£	€	¢	:	△	∪	∩
factorial	percent	dollars	pounds	euros	cents	ratio	discriminant	union	intersection

Via Twinkl.com.au

Concept mapping



FRAYER MODEL



https://iris.peabody.vanderbilt.edu/module/sec-rdng/cresource/q2/p07/

Frayer model to build vocabulary

Frayer Model

Student Definition

Symbol (%)

Percent means parts per 100

Percentage formula:
Part/whole x 100 = %
Percentage difference:
Difference/original x 100= %

Picture

25%

Percent

75 is 50% of 150

Examples

Fractions 50/100

Decimals 34.78

Non_Examples

Name : _____ date: _____concept_____

Modeling Math

I can write it with numbers!	I can draw a picture of it.
I can write a story problem.	I can model it using _____math tools and explain my thinking.

Created by Jennifer Suh. Jsuh4@gmu.edu

Name : _____ date: _____ Concept: Fractions

Modeling Math Meaningfully

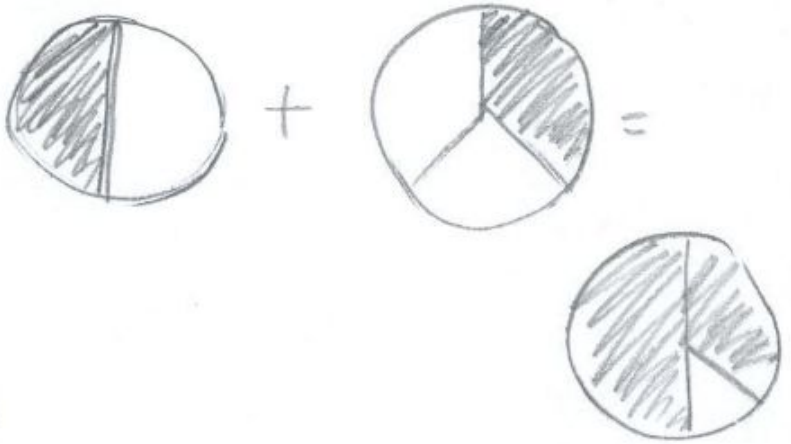
I can write it with numbers!

$\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$

$\frac{1}{2}$ can be made into $\frac{3}{6}$

$\frac{1}{3}$ can be made into $\frac{2}{6}$

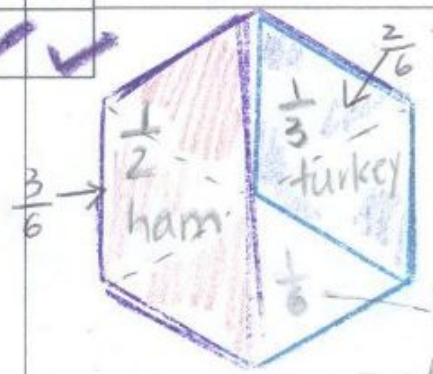
I can draw a picture of it.



I can write a story problem.

My mom bought $\frac{1}{2}$ pound of ham and $\frac{1}{3}$ pound of turkey for a huge sub. How much meat did she buy?

I can model it using pattern blocks **math tools and explain my thinking**



I put the $\frac{1}{2}$ piece red trapezoid with the $\frac{1}{3}$ rhombus and saw that one green triangle would fit. That makes the rest equal $\frac{5}{6}$.

Created by. Jennifer Suh

Lauren

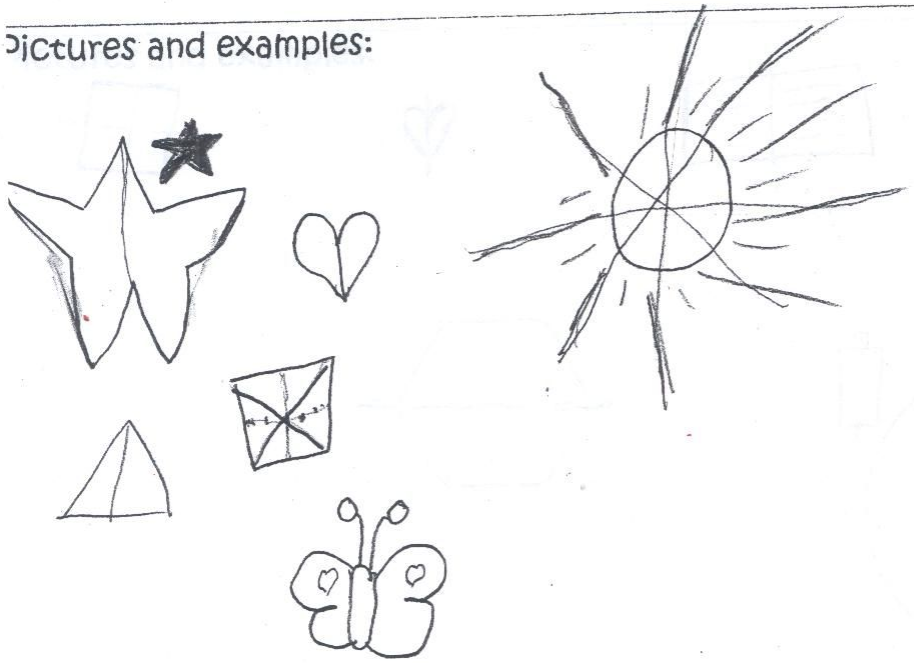
Math Vocabulary Connection

Word: Symmetry

Definition in my own words:

Simichrey mins if you cut same thing in hafe it will be the same on both sides.

Pictures and examples:



Real world connection:

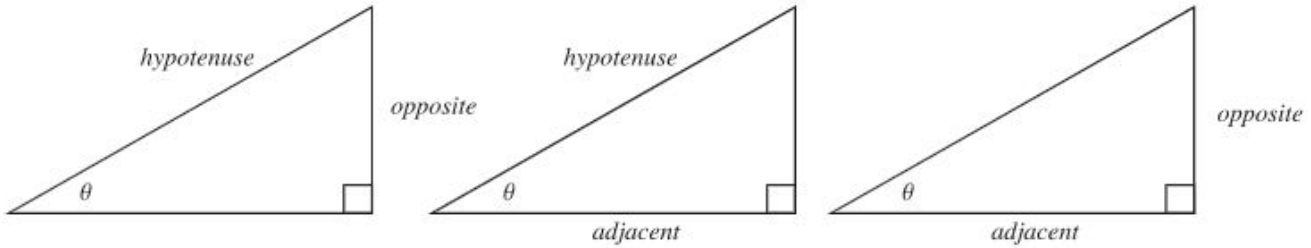
A flower

I know this word: very well.....somewhat.....need help

http://mason.gmu.edu/~jsuh4/teaching/vocab.htm

Mnemonics

SOHCAHTOA

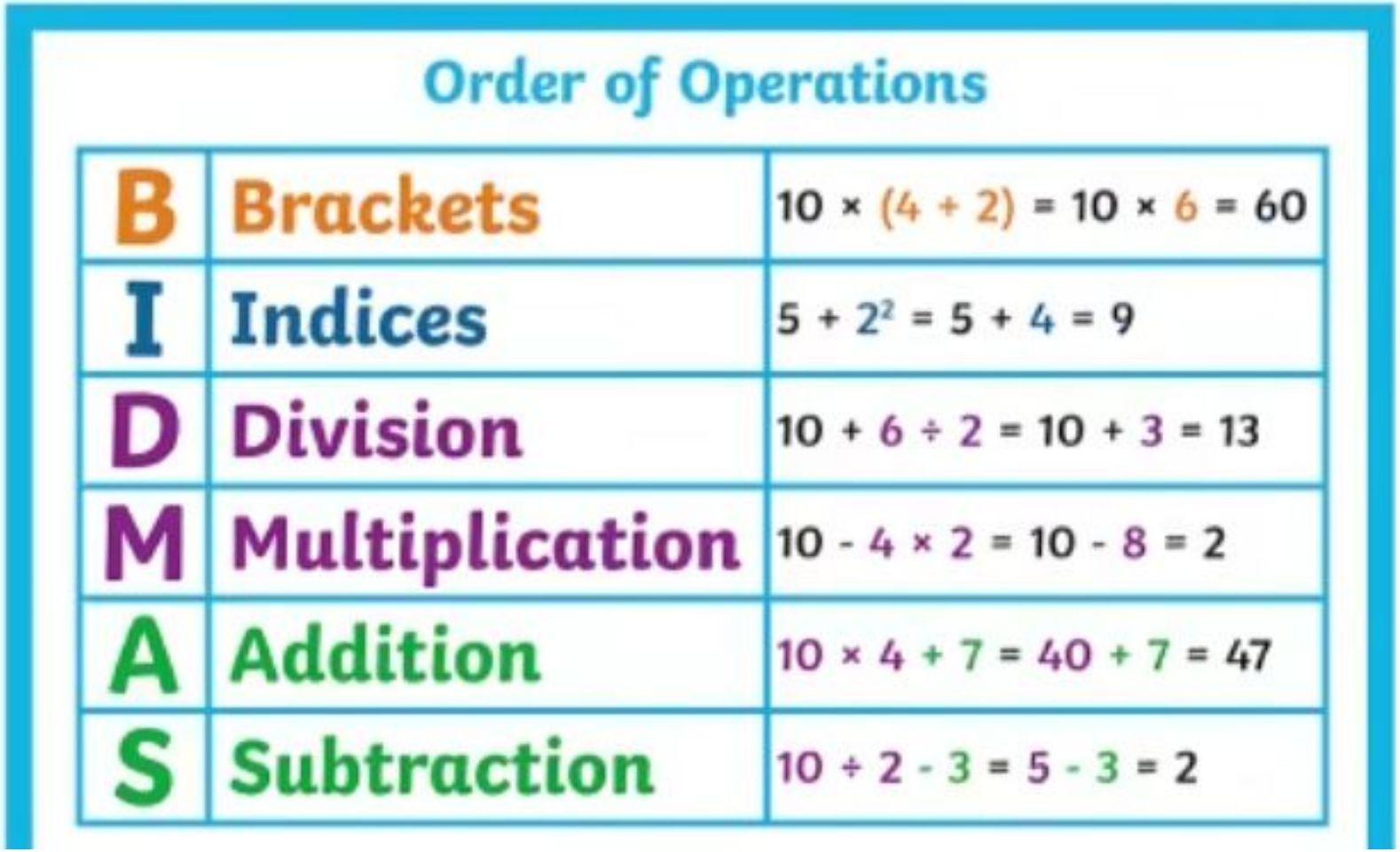


$$\sin\theta = \frac{opposite}{hypotenuse} \qquad \cos\theta = \frac{adjacent}{hypotenuse} \qquad \tan\theta = \frac{opposite}{adjacent}$$

SOH CAH TOA

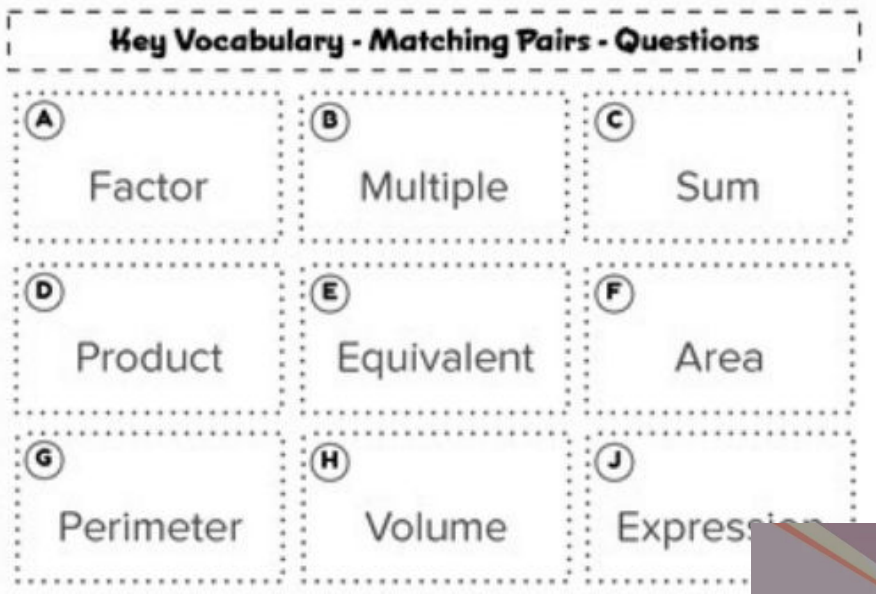
"SOHCAHTOA" is a helpful mnemonic for remembering the definitions of the trigonometric functions sine, cosine, and tangent i.e., sine equals opposite over hypotenuse, cosine equals adjacent over hypotenuse, and tangent equals opposite over adjacent,

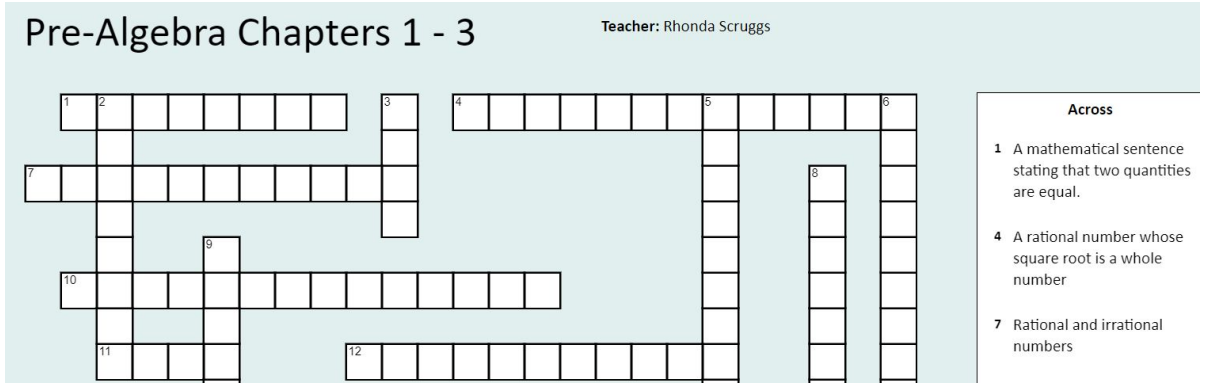
BIDMAS (acronym)



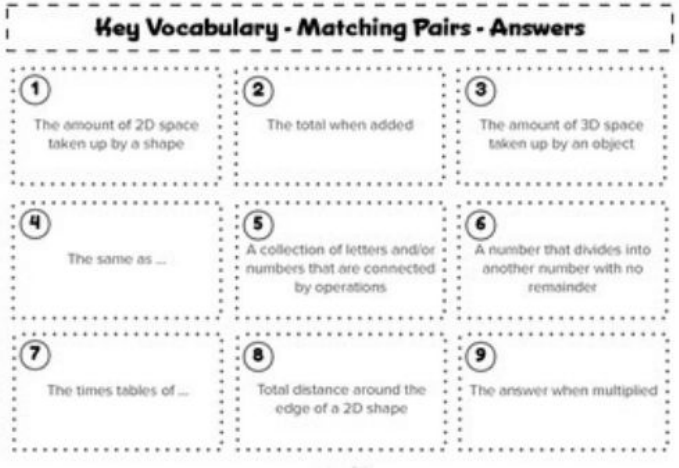
https://www.educationquizzes.com/knowledge-bank/what-are-bodmas-bidmas-and-pemdas/

Game play- supporting numeracy language

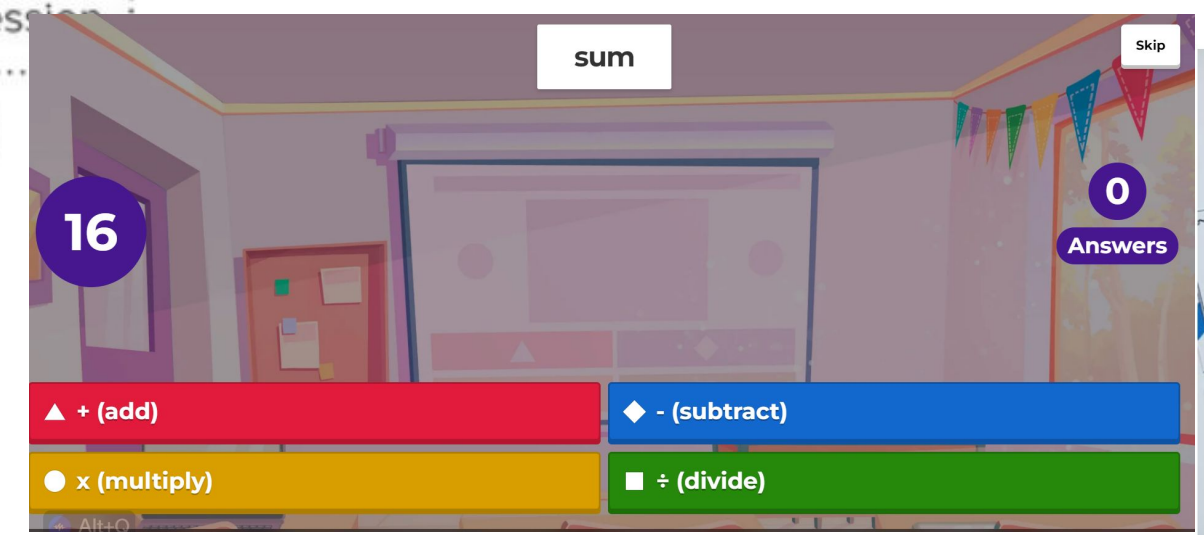




Jeopardy- define, synonym, antonym and sente



KAHOOT



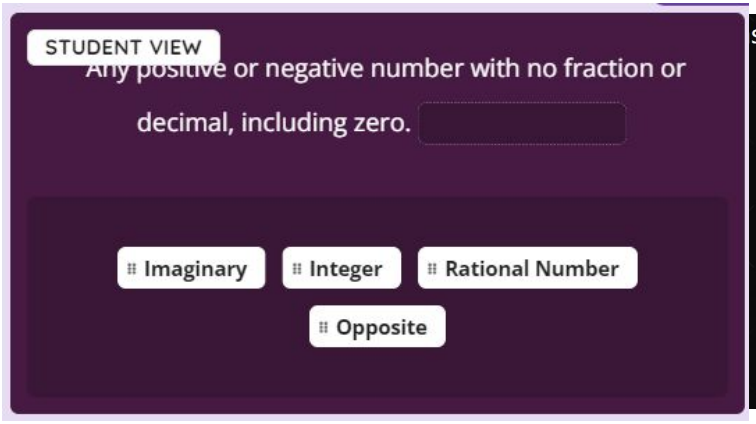
4 PICS-1 WORD

What is the word?

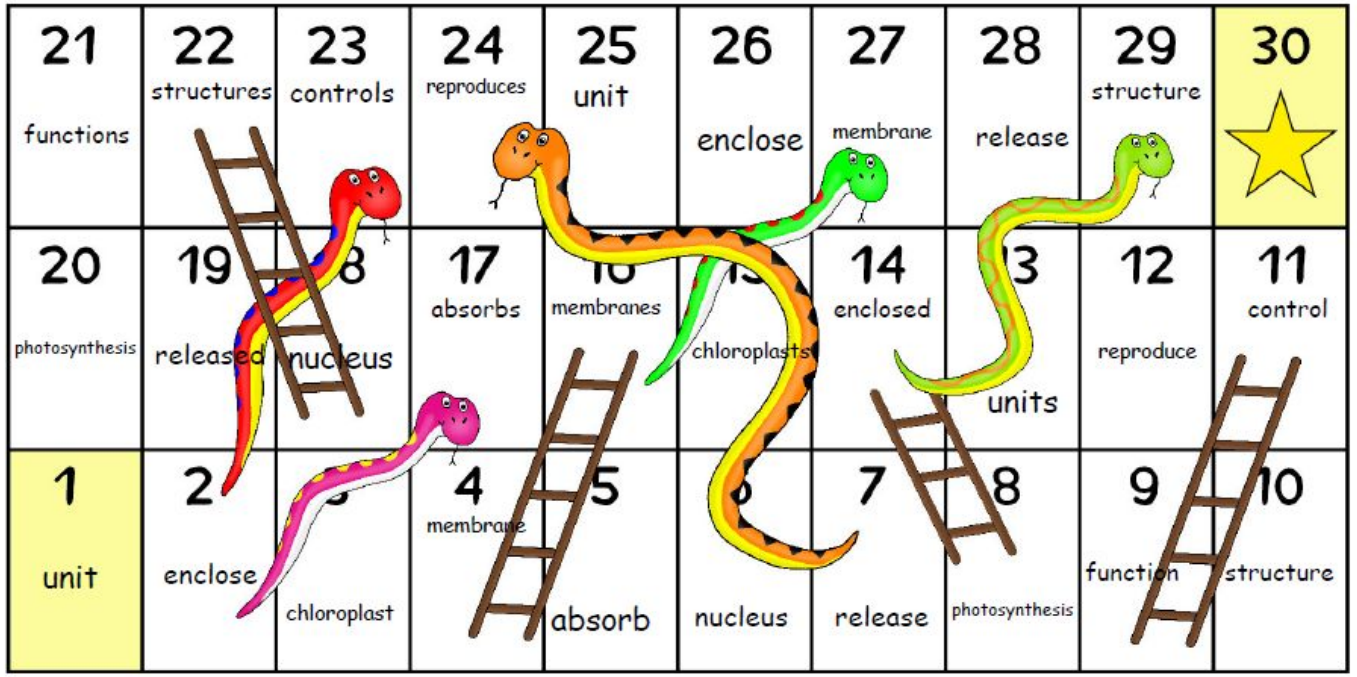
B I R D I O B

D A R N T S

Quizizz



Word Snakes and Ladders



swers. Place in a 3 × 3 grid.

$30ay$	$6bz$	$45ay$	$20xy$
$32yz$	$6z^2$	$45c^2$	$14cz$
$15bx$	$63z^2$	$24bx$	$36az$
$18bc$	$8ab$	$30z^2$	$72ay$

Bingo

Environment- supporting numeracy language for SLD students

- Glossary poster with definitions and accompanied pictures/diagrams.
- Quick reference cards.
- Repetition of important terms or concepts over an extended period of time.
- Incorporate Interleaved practice.
- Explicit instructions.
- Ongoing planned revision, and purposeful use of key mathematical vocabulary(e.g. talking, listening, writing), is key for ensuring all students retain use of language.
- Giving mathematical concepts relevance to everyday life.
- Promoting numeracy language throughout all subjects in secondary school (i.e., Goos, Geiger, and Dole (2014) model).
- Highlight/underline key vocabulary terms in a question and unpack the meaning.
- Hosting Numeracy nights with parents/students- playing games.

Lastly, supporting math reasoning…

In the classroom to assist with math reasoning skills of students who struggle with Math (who have specific learning difficulties) use:

1) Explicit instruction.
2) Student verbalization of their reasoning.
3) Visual representations to solve word problems.
4) Heuristics.
5) Range and sequence of examples.
6) Peer-assisted learning.

Kiuhara et al., 2014

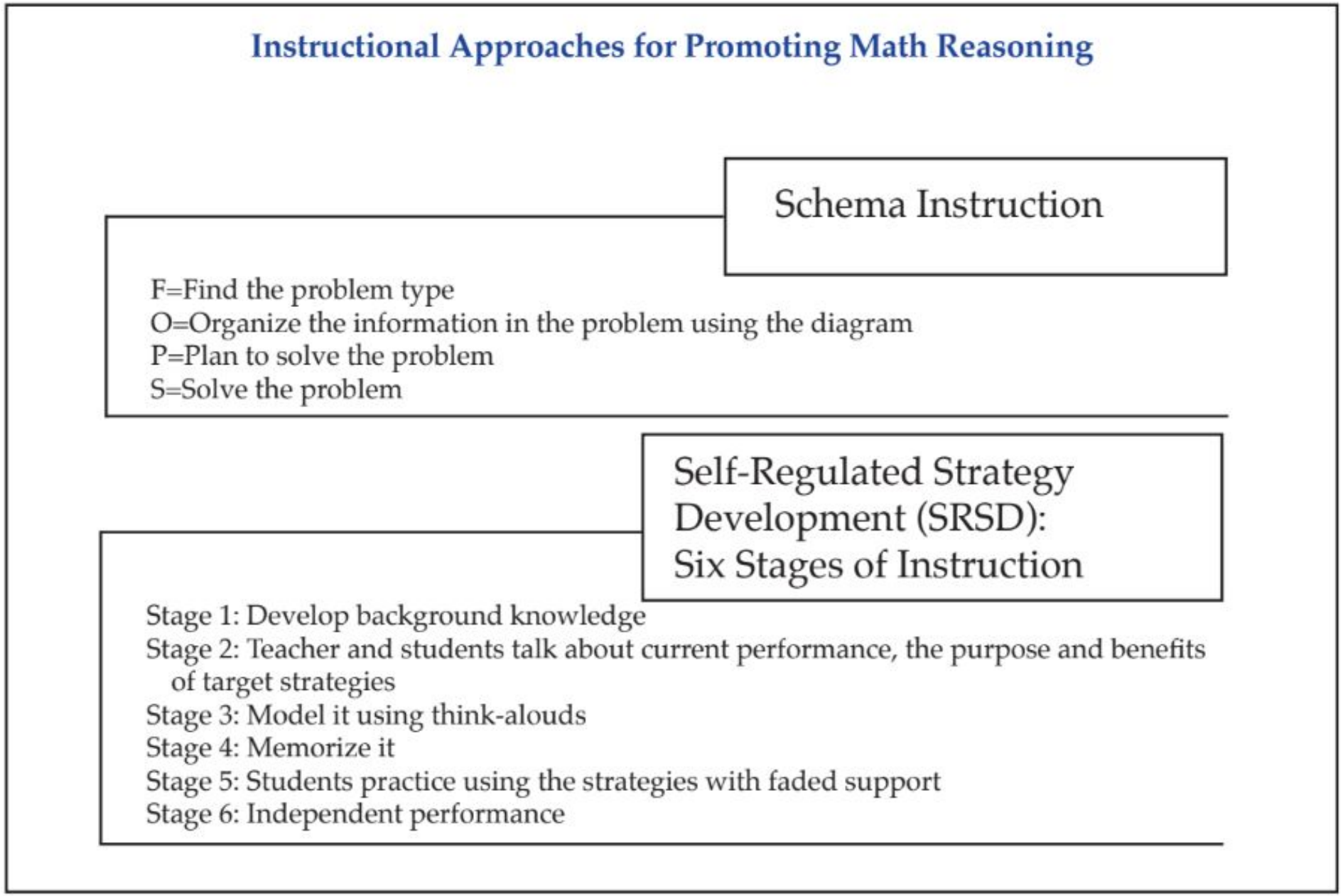


Figure 3
From Montague and Jitendra (2012) and Graham and Harris (2003).

Review

Language supporting numeracy is extremely complicated due to terms having mixed meanings, different contexts, pre existing vocabulary knowledge, and having evidence-based tools to assist with vocabulary promotion.

Numeracy language is important when learning math, as it promotes word knowledge, reasoning, executive functioning/lessening cognitive load and comprehension in long worded mathematical problems.

Supporting numeracy language at school and home can be supported in many different way:
Vocabulary- Frayer models-graphic organisers, glossaries, Mnemonics, Morphological matrix, game play, visuals and concrete materials and Goos et al., 2014, model.

Thank you

Questions?

www.ldaustralia.org

enquiries@ldaustralia.org

@LearningDifficultiesAustralia

@LD_Australia

Helpful Resources

Victorian Curriculum
Foundation–10

VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

Mathematics Glossary

A

Acute angle
See: angle.

Addition (sum)
Addition is one of the basic operations of arithmetic and algebra and involves the combination of two or more quantities using the $+$ operator. Simple examples could include $3 + 4 = 7$ or $x + y = 10$. The inverse operation of addition is **subtraction**.

Addition may be defined more formally depending on the context. For example:

- For natural numbers, addition may be defined in terms of counting.
- Addition of real numbers may be modelled using lengths of joined, distinct line segments on a number line.
- For sets, if $n(A)$ represents the number of elements of a set A, and sets A and B are disjoint sets (that is, they have no elements in common), then: $n(A \cup B) = n(A) + n(B)$.
- The addition of two fractions is defined by using a common denominator, for

https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/english/literacy/Pages/lim_everydayandtechnicalterms.aspx

Helpful Resources- glossaries:

Statistical terms and concepts (ABS):
https://www.abs.gov.au/statistics/understanding-statistics/statistical-terms-and-concepts

Homonyms and homophones mathematical glossary:
https://www.westernsydney.edu.au/__data/assets/pdf_file/0009/1628244/Mathematical_homonyms_and_homophones.pdf

Etymology assist with base word origins):
https://www.etymonline.com/

Mathwords (An interactive math dictionary with enoughmath words, math terms,math formulas, pictures, diagrams, tables, and examples)
http://www.mathwords.com/

MathCentre (gives information on the appropriate use of symbols)
http://www.mathcentre.ac.uk/resources/uploaded/mc-ty-mathlanguage1-2009-1.pdf

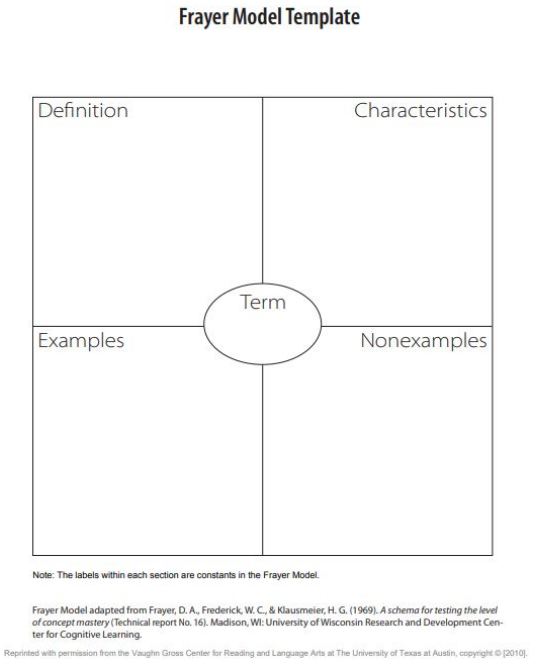
Helpful Resources- graphic organisers:

Frayer model template
https://iris.peabody.vanderbilt.edu/wp-content/uploads/modules/sec-rdng/pdfs/sec_rdng_07_link_Frayer.pdf#content

Vocabulary Selection Planner
https://www.learningforjustice.org/sites/default/files/2017-07/6-12WW_Vocabulary%20Selection%20Planner.pdf

Morphology Matrix- maker
http://www.neilramsden.co.uk/spelling/matrix/

Modeling maths graphic organiser
http://mason.gmu.edu/~jsuh4/teaching/Modeling%20Math.pdf



Helpful Resources- game links

Crossword maker- maths (make or print FREE math crosswords- hundreds to choose from)
https://mycrosswordmaker.com/Browse/Math

Word Search- maths (make or print FREE math word searches)
https://mywordsearch.com/Browse/Math

Mathstaters BINGO
https://mathsstarters.net/bingo

Kahoot
https://kahoot.com/schools-u/

Quizizz
https://quizizz.com/admin

Helpful resources- VKS Scoring

Scoring:

1= 1 point, 2= 2 points, 3 (Synonym or translation) = 3 points, 4 (Synonym or translation)= 4 points & 5 = 5 points per word.

Incorrect response:

- Incorrect response in category 3 = **2 points** for the total item even if the student attempted category 4 and category 5 unsuccessfully.
- If the sentence in category 5 demonstrates the correct meaning but the word is not used appropriately in the sentence context= **3 points**.
- **4 points** are given if the wrong grammatical form of the target word is used in the correct context.
- A score of 5 reflects semantically and grammatically correct use of the *target* word.

Helpful resources- VKS Scoring

Scoring:

Any incorrect response:

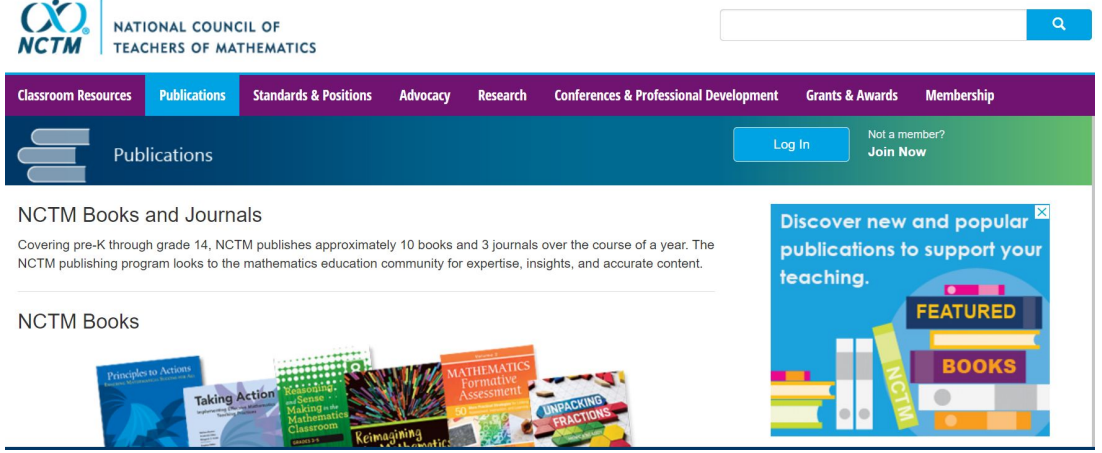
- In category 3 yields a score of 2 points for the total item even if the student attempted category 4 and category 5 unsuccessfully.
- If the sentence in category 5 demonstrates the correct meaning but the word is not used appropriately in the sentence context, a score of 3 is given.
- In category 5, a score of 4 is given if the wrong grammatical form of the target word is used in the correct context.
- A score of 5 reflects semantically and grammatically correct use of the *target* word.

Helpful resources- VRT Scoring

Scoring:

- A correction formula was applied to obtain a score that adjusts for possible guessing.
- A student scored a "hit" (H) when the word was circled correctly
- A student scored a "false alarm" (FA) if an unrelated word was incorrectly circled.
- The proportion of words truly known, P(K), was determined with the following formula: P(K) = P(H) - P(FA) / 1 - P(FA)

Further reading



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- Evans, David. (2017). Examining the Literacy within Numeracy to Provide Access to the Curriculum for All. 10.1108/S1479-36362017000011003.

- Extensive collection of published writings on many aspects of mathematical language https://www.nctm.org/Publications/Publications-Main-Page/

- Mathematics Instruction for Students with Learning Disabilities or Difficulty Learning Mathematics https://files.eric.ed.gov/fulltext/ED521890.pdf

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