

# Thinking Routines Matrix

Taken from the book *Making Thinking Visible* by Ritchhart, Morrison & Church (Spring 2011)

Routine	Key Thinking Moves	Notes
<b>Routines for INTRODUCING &amp; EXPLORING IDEAS</b>		
See-Think-Wonder	Description, Interpretation & Wondering	Good with ambiguous or complex visual stimuli
Zoom In	Description, Inference, & Interpretation	Variation of STW involving using only portions of an image
Think-Puzzle-Explore	Activating prior knowledge, wondering, planning	Good at the beginning of a unit to direct personal or group inquiry and uncover current understandings as well as misconceptions
Chalk Talk	Uncovers prior knowledge and ideas, questioning	Open-ended discussion on paper. Ensures all voices are heard, gives thinking time.
321 Bridge	Activates prior knowledge, questioning, distilling, & connection making through metaphors	Works well when students have prior knowledge but instruction will move it in a new direction. Can be done over extended time like the course of a unit.
Compass Points	Decision making and planning, uncovers personal reactions	Solicits the group's ideas and reactions to a proposal, plan or possible decision.
Explanation Game	Observing details and building explanations	Variations of STW that focuses on identifying parts and explaining them in order to build up an understanding of the whole from its parts and their purposes
<b>Routines for SYNTHESISING &amp; ORGANISING IDEAS</b>		
Headlines	Summarizing, Capturing the heart	Quick summaries of the big ideas or what stands out
CSI: Color, Symbol, Image	Capturing the heart through metaphors	Non-verbal routine that forces visual connections
Generate-Sort-Connect-Elaborate: Concept Maps	Uncovering and organizing prior knowledge to identify connections	Highlights the thinking steps of making an effective concept map that both organizes and reveals one's thinking
Connect-Extend-Challenge	Connection making, identify new ideas, raising questions	Key synthesis moves for dealing with new information in whatever form it might be presented: books, lecture, movie, etc.
The 4 C's	Connection making, identifying key concept, raising questions, and considering implications	A text-based routine that helps identifies key points of complex text for discussion. Demands a rich text or book.
Micro Lab	A protocol for focused discussion	Can be combined with other routines and used to prompt reflection and discussion
I used to think	Reflection and metacognition	Used to help learners reflect on how their thinking has shifted and changed over time.
<b>Routines for DIGGING DEEPER INTO IDEAS</b>		
What makes you say that?	Reasoning with evidence	A question that teachers can weave into discussion to push students to give evidence for their assertions.
Circle Viewpoints	Perspective taking	Identification of perspectives around an issue or problem.
Step Inside	Perspective taking	Stepping into a position and talking or writing from that perspective to gain a deeper understanding of it.
Red Light, Yellow Light	Monitoring, identification of bias, raising questions	Used to identify possible errors in reasoning, over reaching by authors, or areas that need to be questioned.
Claim Support Question	Identifying generalizations and theories, reasoning with evidence, counter arguments	Can be used with text or as a basic structure for mathematical and scientific thinking.
Tug of War	Perspective taking, reasoning, identifying complexities	Identifying and building both sides of an argument or tension/dilemma
Word-Phrase-Sentence	Summarizing and distilling	Text-based protocol aimed at eliciting what a reader found important or worthwhile. Used with discussion to look at themes and implications.

Template adapted from <http://rhstdashboard.weebly.com/the-8-cultural-forces.html>

# Critical and Creative Thinking in Mathematics

Handout notes from Penny Crossland – [penny.crossland@ggs.wa.edu.au](mailto:penny.crossland@ggs.wa.edu.au)

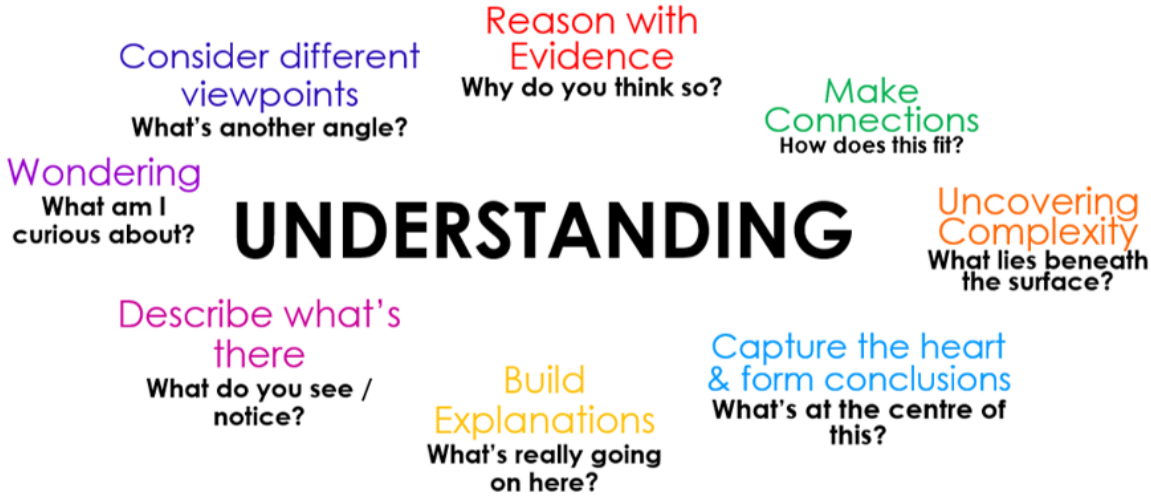
## COLOUR

## SYMBOL

## IMAGE

## MAP OF UNDERSTANDING

Use these questions to shape your students' thinking...

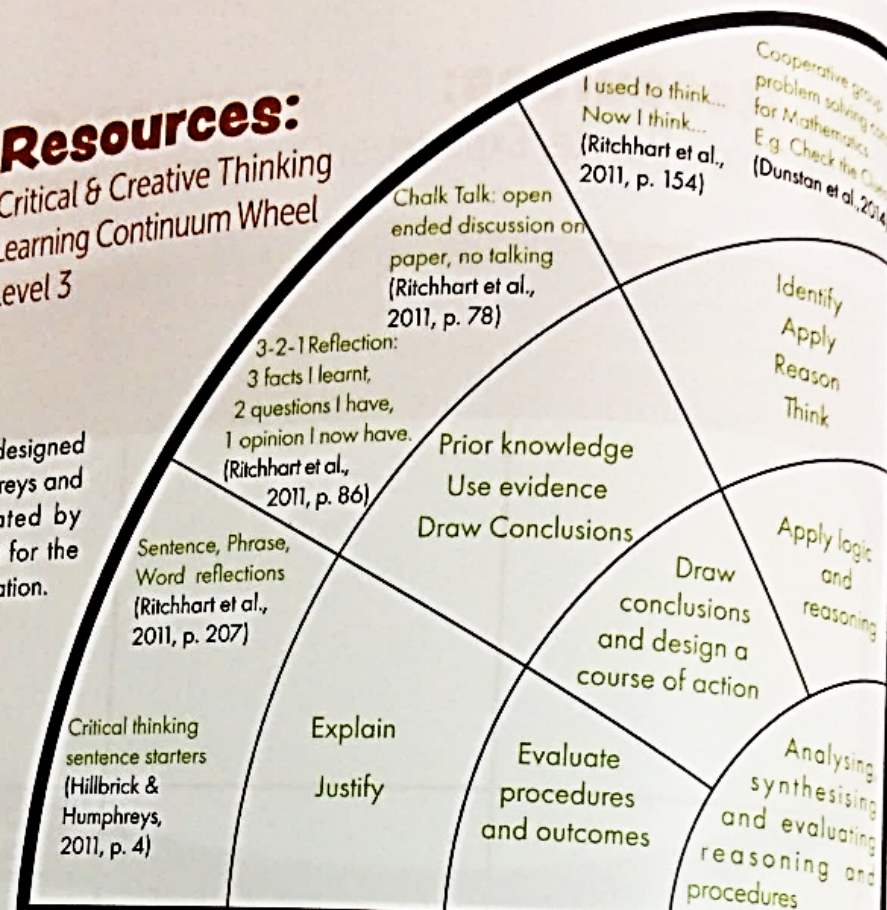






## Resources: Critical & Creative Thinking Learning Continuum Wheel Level 3

This wheel was designed by Kristin Humphreys and activities allocated by Penny Crossland for the Math Tales Publication.



**CLASSROOM THINKING ACTIVITIES** **SKILLS** **SUB-ELEMENTS** **ELEMENTS**

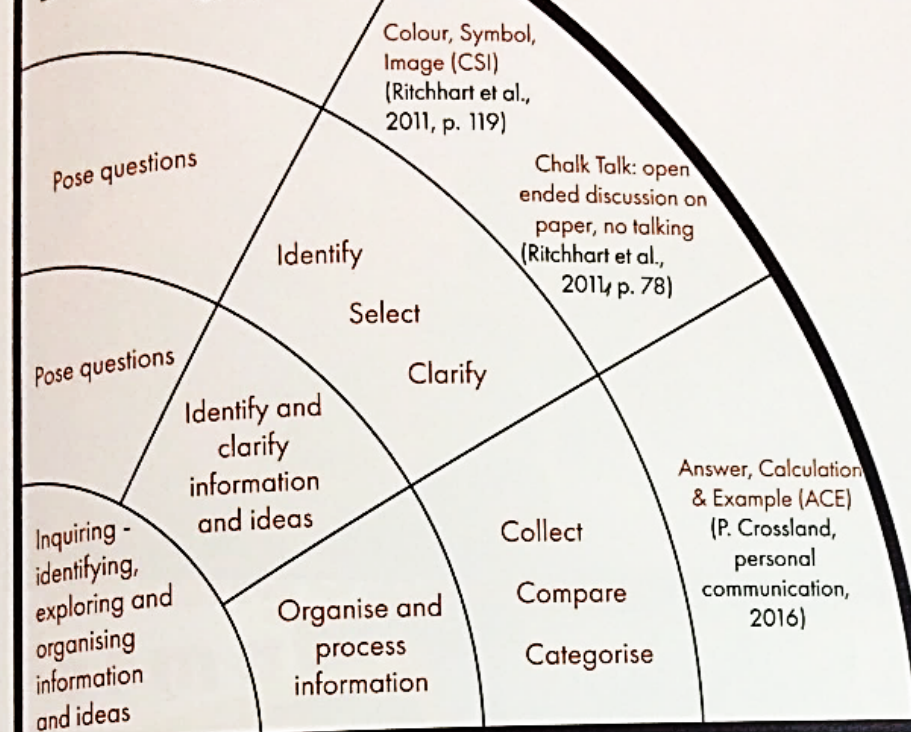


### HOW TO USE THE WHEEL:

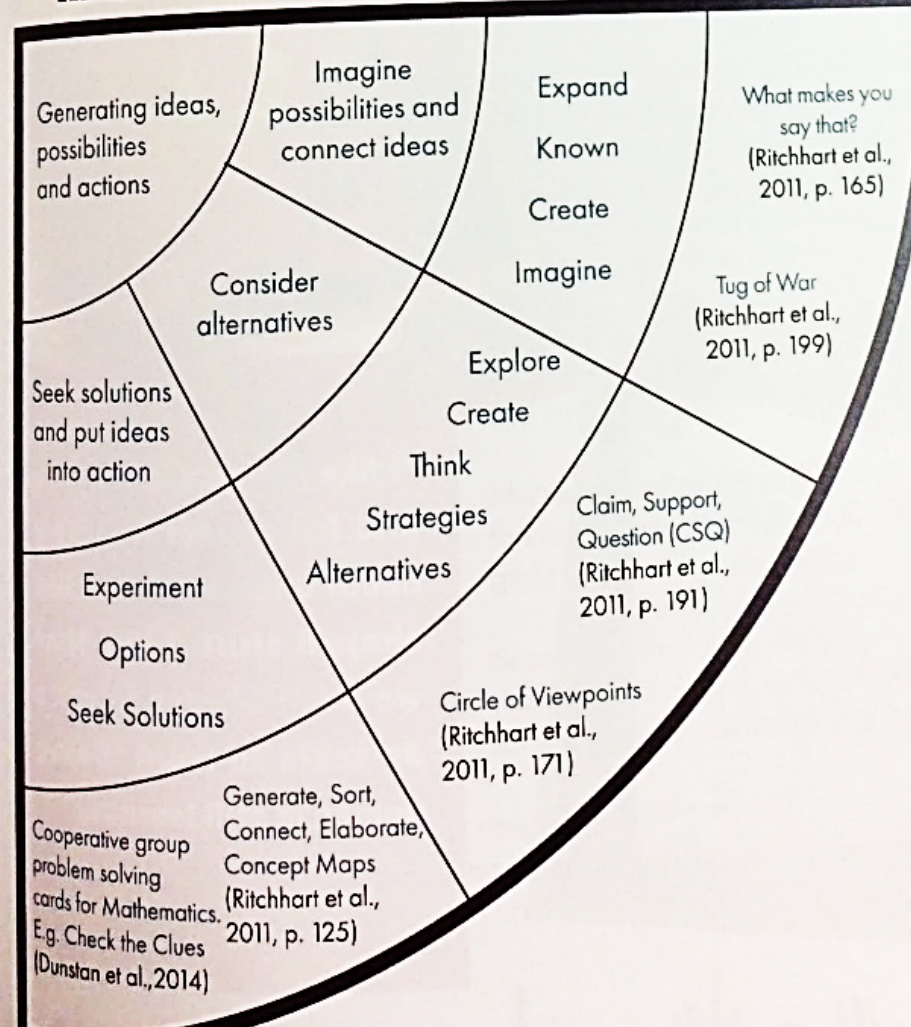
- Choose an **Element** to focus on
- Pick the **Sub-element** you want to focus on
- Look at the **Skills**, follow outwardly to find matching **Classroom Thinking Activities**

Zoom in, Zoom out on image/shape. (Ritchhart et al., 2011, p. 67)

See, Think, Wonder (Ritchhart et al., 2011, p. 55)



**ELEMENTS** **SUB-ELEMENTS** **SKILLS** **CLASSROOM THINKING ACTIVITIES**



### REFERENCES

Australian Curriculum, Assessment and Reporting Authority (ACARA). (2010 to present). General Capabilities - CCT learning Continuum [Fact Sheet]. Retrieved from [http://www.acara.edu.au/\\_resources/General\\_capabilities\\_-CCT\\_-learning\\_continuum.pdf](http://www.acara.edu.au/_resources/General_capabilities_-CCT_-learning_continuum.pdf)

Dunstan, D., Farmer, P., Humphreys, K., & Swan, P. (2014). Check the Clues. Australia: A-Z Type.

Hillbrick, A., & Humphreys, K. (2011). Ten Minutes Tops: Re-flection tools for your classroom. Australia: Hillbrick & Humphreys.

Project Zero. (n.d.). Visible Thinking, Explanation Game. Retrieved from [http://www.visiblethinkingpz.org/VisibleThinking\\_html\\_files/03\\_ThinkingRoutines/03d\\_UnderstandingRoutines/ExplanationGame/ExplanationGame\\_Routine.html](http://www.visiblethinkingpz.org/VisibleThinking_html_files/03_ThinkingRoutines/03d_UnderstandingRoutines/ExplanationGame/ExplanationGame_Routine.html)

Ritchhart, R., Church, M., & Morrison, K. (2011). Making Thinking Visible: How to Pro-mote engagement, understanding and independence for all learners. San Francisco, CA: Jossey-Bass.

Stroud, G. J. (2016). The Think Board. Retrieved from <http://gjstroud.com/the-think-board/>