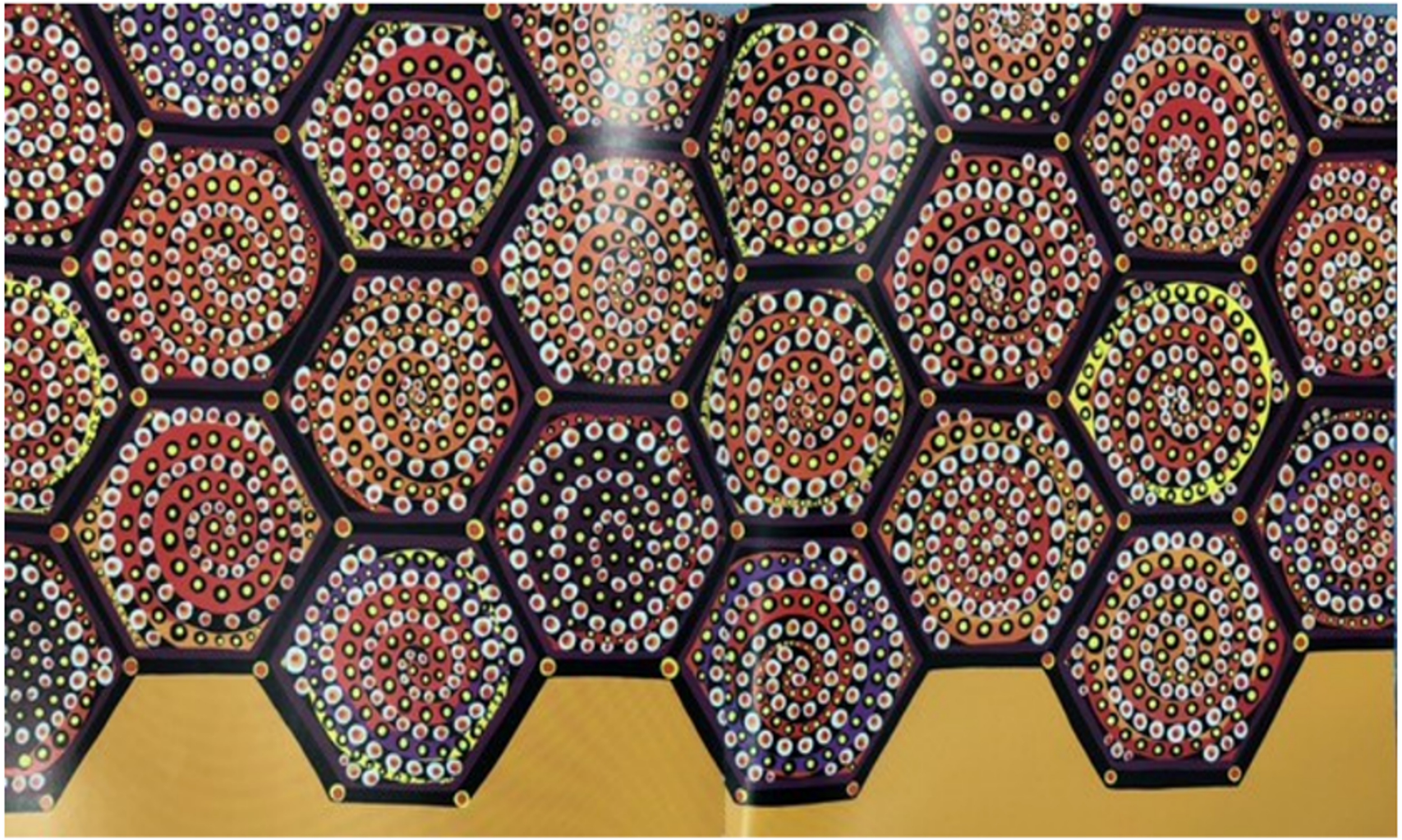
Burwood Public School

Instructional Rounds
2023



Honeycomb Home. Bronwyn Bancroft, Bundjalung Woman.

Acknowledgement of Country

With voices clear, all at Burwood Public School Acknowledge the Wangal Clan as the Traditional Custodians of this place.

We pay our respects to their Elders past, present and emerging.

With Deeds Not Words we learn, grow and care for Country together with our Aboriginal brothers and sisters, Aunties and Uncles.

Student Leadership team

Behind the school- Student leaders news broadcast

About our school

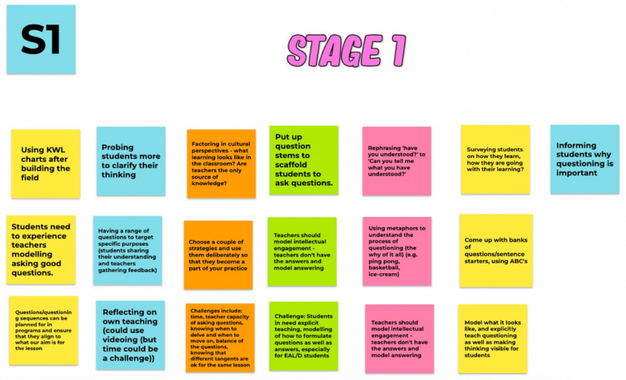
2022 Next Steps

Term 1: Building capacity

- Support programming and including high level questioning and student talk using new maths syllabus (as accelerated adopters of the new K–2 maths syllabus)
- To ensure consistency between stages, establish a driving team to lead maths using high quality maths activities, incorporating strong questioning and student talk
- Readings:
  - Rosenshine's Principles of Instruction
  - Explicit Teaching – Hattie, Wiliam and Ritchhart
  - Rigor: Is not a four letter word – Blackburn & Routledge
  - The Lay of the Land – Moss & Brookhart
  - "Looking for Effective Questioning" – Brookhart
  - Asking Good Questions – Ritchhart
- Resolve – PL on 'Challenging Mathematical Experiences'
- Investigating and using a variety of questioning strategies e.g. hinge questions, talk moves, number talks

Angie's room	Julie's room	Library
The real power of questions	***Rosenshine Questioning***	***Interactions from CoT – pages 220-226)***

1.3.1 Jamboard of stage feedback from professional readings on student discourse.

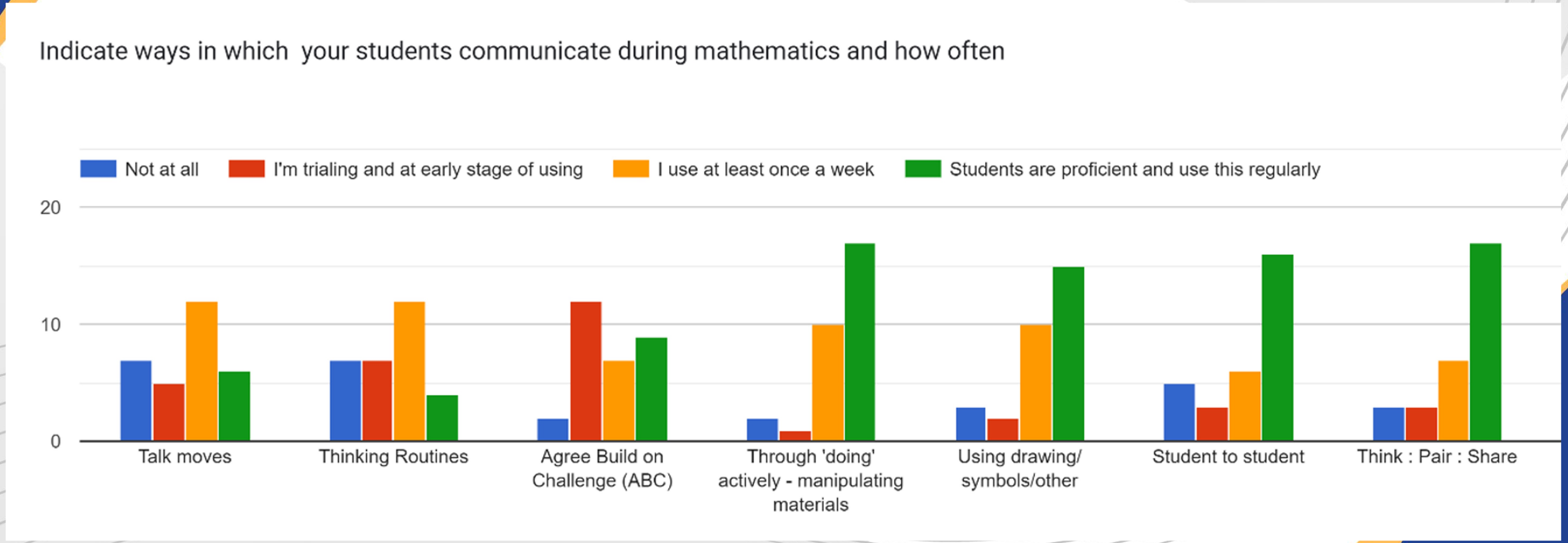


2022 Next Steps

Term 2 – 4: Implementation

- Driving team to find high quality maths tasks (high ceiling, low floor)
- Collaborative planning time for programming, integrating student talk and high level questioning
- Discuss how lessons went, teacher observation, lesson study model
- Incorporate across stage touch points to ensure teachers reflect on strategies they're implementing and what's worked well and what's been improved with follow up collaborative dialogue

Survey Term 1 Week 7 2023



What is your purpose for using any of these routines? (multiple responses from participants)

REFERENCE TO:	
Communication/oral/promote talk/learn through talk	19
S demonstrate understanding /hands on/and allows teacher to clarify or check for understanding/address misunderstandings	16
Thinking	8
Supports peer learning/collaboration/teamwork	6
Reasoning	6
Everyone has a chance to participate/EAL/D learners/caters to our learners	5
Engage students / establishing relationships	4
Justify	3
Formative Assessment/Assessment	3
Show what strategy is being used/develop strategies	2
Working Mathematically	2
Listening	1
Develop language of maths	1

Communication signs used by students for mathematical talks

A

Agree

I agree with... because...

The reason I agree with... is...

B

Build on

Building on what... said...

In addition to... point, I would like to add...

C

Challenge

I would like to challenge... because...

I disagree with... because...

To challenge this I think....

For ABC/reasoning etc to be successful teachers said:
Needs to be explicitly taught/protocols

Practice needs to be built in/planned for (eg types of questions/tasks that elicit discussion/different points of view)

More clarification around ‘build on’

Complexities with challenging the thinking of others and building as a respectful practice

Working mathematically

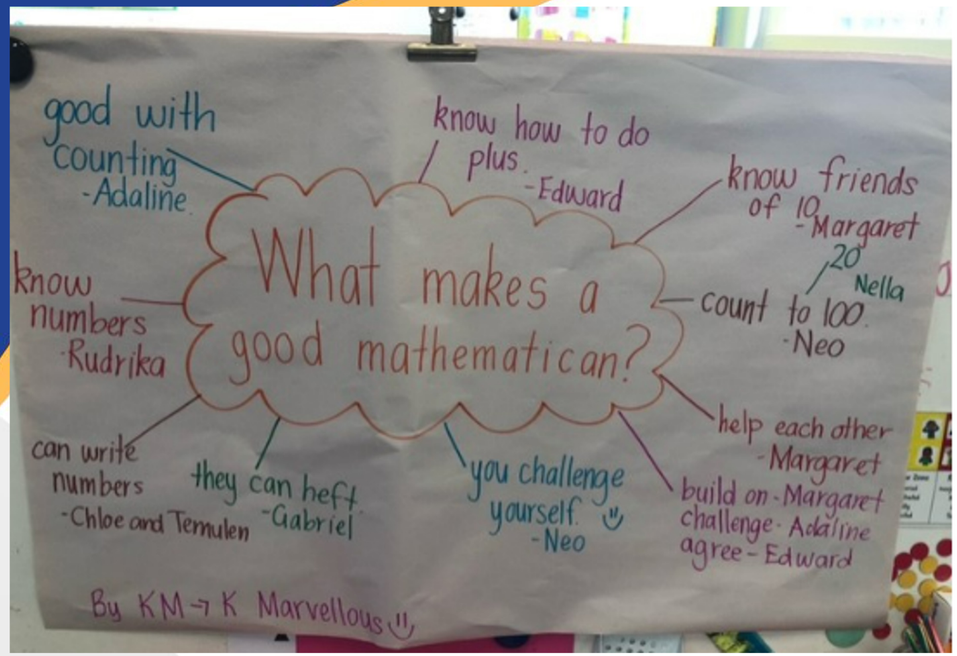
Term 2 week 4

Hattie - Common denominator (Big 7): Expertise of the teacher

Is there alignment with what we think and what students think it means to be a “good” mathematician?....our opportunity

How do we make it visible?

- **The four proficiencies as verbs**
- **On the wall**
- **In programming**



What does a good mathematician look like? (please don't delete this Jamboard?)

I think a good mathmetician is someone who focus's on work, doing most of the equations correclty, and someone who works to the best of their ability. -clara =)

I think a good mathematician is someone who looks carefully in math problems,see what they did wrong and is able to solve them quickly. -Gilliane :U

i think a good mathematician keeps on persevering (trial and error) and checks all there answers before they give in the work, and also try's their very best all the time - aeris

in my opinion, a good mathematician would mostly likely have different, quick and creative ways to solve equations. They would have lots of knowledge regarding to maths, and when

there are very easy questions (ex : 4+3) they can answer it very, very swiftly. People like this can also figure out equations that seem hard to people, very fast too.

Good mathematicians can also be able to help others with questions relating to maths, and the people they help will understand them quickly and easily because

mathematicians should be able to understand and explain how they worked out the answer. - HANNA :D

hink a good athematicians are ople who does eir work carefully d checks if it is rrect. -Carson (DO NOT LETE OR MOVE IIS)

A good mathemation is a person who looks into their problems,tries their best on questions and is able to explain how they got their answers without saying "I jUsT kNoW". -LunivA >:D

A good mathematician is someone who understands questions and can answer them correctly. Nevaan

I think that a good mathmetician is somebody who can solve a diverse range of math works and who has a great focusing power. And mostly getting 3/4 right in a test. EDEN

I think a good mathematician would be someone who can solve a math question quickly without stressing out. They would think it is easy so they don't have to do much working out

to figure it out. They would be able to explain the working out quickly and most people won't understand their working out since they have a good understanding in

maths. A good mathematician will be confident with their answer once they made sure their answer is correct. They will check their work and can recognise what they

did wrong. They will have many different ways of getting their answers. Mathematicians will be able to do more complex and advanced questions than what they are

assigned to do. Their probably have more understanding in maths than other subjects. - emily

nk a good thematician is neone that is fident in math and en someone knows to explain their wer to the stion. They will w how to solve

i think a good mathematician would be a person who understands and is very good and knows a good amount of equations very well

I think a good mathematician should be able to explain how they got their answer and when they don't understand they keep preserving to understand and answer the question.

They know a diverse range of methods to work out answer to a question. Once they have finished working it out the question they revise to make sure they do not make a mistake whilst

working it out. Alina =)

A good mathematician always work out the answers and do trial and error. Antonio

A good mathematician would continue to try to reach higher heights than an average student and will keep practicing to get better and lots of these people are

estions really fast d has a creative y of doing it. A od mathematician works hard and tries their best even though they aren't sure if they are correct. -chloe

I think a Good Mathematician is a guy that most comfortable at! By Soohyun Song ("DO NOT DELETE THIS BEFORE SOMEONE DELETED MINE TODAY!")

I think a good mathematician is a person who is very good at maths and Also can solve questions that are very hard for me easily and say its easy.DONT MOVE THIS

A good mathematician look like someone who try their best - phuc

I believe a good mathematicians are people who are good and confident in math and can solve hard questions using various of strategies.

Suld the one on the top DO NOT MOVE THIS

good mathematicians are kind and good at maths and is a good math teacher:) ZHIHONG DON'T U DARE MOVE

people who go to tutoring and other extra classes that you have to do (DON'T MOVE) OR else

they have to know how to do times tables and ect also they have to not give up they have to keep on going and going in tell they get it right rehan

What are the attributes of a “good” mathematician?

(/17 class responses)

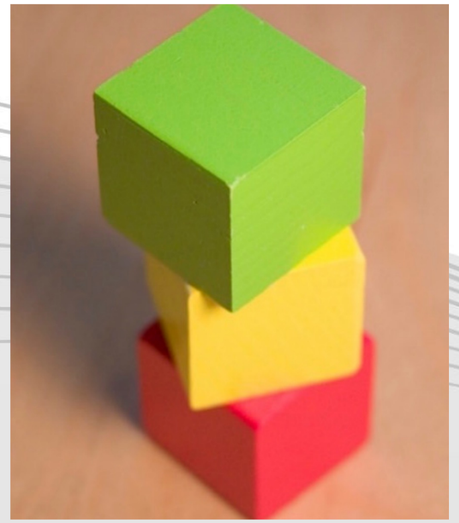
over ⅔:

- **Grapples/perseveres**
- **Uses reasons/justifies (uses ABC)**
- **Learns from mistakes**
- **Talks about their thinking**
- **Communicates**

- **Answers questions**
- **Works quickly**

1. How many **different towers** could you make using one red, one blue and one white block?

2. How many **different towers** could you make if you now have **a fourth** gold block as well?



Explaining ≠ reasoning

Observation	Analysing	Generalising	Justifying
Not evident	Does not notice common property or pattern	Does not communicate a common property or rule (conjecture) for a pattern.	Does not justify
Beginning	**Recalls** random known facts or **attempts to sort** examples or **repeats patterns.**	**Attempts to communicate** a common property or rule (conjecture) for a pattern.	• **Describes** what they did and **recognises** what is correct or incorrect. • **Argument is not coherent** or does not include all steps.
Developing	• Notices a common property, or **sorts and orders** cases, or **repeats and extends** patterns. • **Describes** the property or pattern.	**Generalises: communicates** a rule (conjecture) using mathematical terms, and records other cases or examples.	• **Attempts to verify** by testing cases and **detects and corrects** errors or inconsistencies. • Starting statements in a **logical argument** are correct.
Consolidating	• **Systematically searches** for examples, **extends** patterns, or **analyses** structures, to form a conjecture. • **Makes predictions** about other cases.	**Generalises: communicates** a rule (conjecture) using mathematical symbols and **explains what** the rule means or **explains how** the rule works using examples.	• **Verifies** truth of statements by confirming all cases or **refutes** a claim by using a counter example. • Uses a correct **logical argument**.
Extending	**Notices and explores** relationships between properties.	• **Generalises** cases, patterns or properties using mathematical symbols and **applies** the rule. • **Compares** different expressions for the same pattern or property to show equivalence.	• Uses a **watertight logical argument**. • **Verifies** that the generalisation holds for all cases using logical argument.

Comments (feedback, reasoning prompts for further development):

re(Solve)

re(Solve) MATHEMATICAL REASONING PROMPTS

Mathematics by Inquiry is an initiative of, and funded by, the Australian Government Department of Education and Training

ANALYSING

- What is the same and different about ...?
- What stays the same and what changes?
- Sort or organise the following according to ...
- Alter an aspect of something to see an effect. If we change this what will happen?
- What follows from this? What do you think will happen next if we do this?
- What do you notice...?
- When is it true?
- Is it just sometimes true, or is it always true?

GENERALISING

- How can you describe what is the same?
- What is the rule?
- What is the pattern here?
- How can you describe the pattern?
- What happens in general?
- Is that ... (pattern) always going to work?
- Are there other examples that fit the rule?
- How could you explain the rule to someone else?

JUSTIFYING

- Is this conjecture just sometimes true, or always true?
- How do you know?
- How could we show or prove that it is true?
- True or false? Why? Let's justify.
- Convince me...
- How can we be sure...?
- Tell me what is wrong with....
- Explain - why does this (process/rule/result) work?
- Can you go through that step by step?
- Can you explain that step by step?
- Why?
- If...then...