
cmy
Centre for
Multicultural Youth

# Acknowledgement of Country

- The Centre for Multicultural Youth  acknowledges the traditional custodians of the lands  on which we meet and pays respect to elders: past, present and emerging community leaders.
- We welcome any members of the community here today.
- This acknowledgement recognises CMY's role in the collective work of promoting  human rights, social justice and reconciliation in our communities.


Ladjiladji
Jarijari
Dadi Dadi
Wadiwadi
Ngargad
Wembawemba
Wergaia
Baraba Baraba
Yorta Yorta
Waveroo
Jaitmatang
Ngarigo
Bidwell
Nguraiilam wurrung
Jardwadjali
Dja Dja wurrung (Jaara)
Djab wurrung
Bindjali
Daung wurrung
Watha wurrung
Woi wurrung (Wurundjeri)
Gunai (Kurnai)
Buandig
Dhauwurd wurrung (Gunditjmara)
Djargurd wurrung
Gulidjan
Bun wurrung
Girai wurrung
Gadubanud

# Pre Evaluation

Centre for Multicultural Youth

https://forms.gle/qTkzZV9i5HJo3rkT9

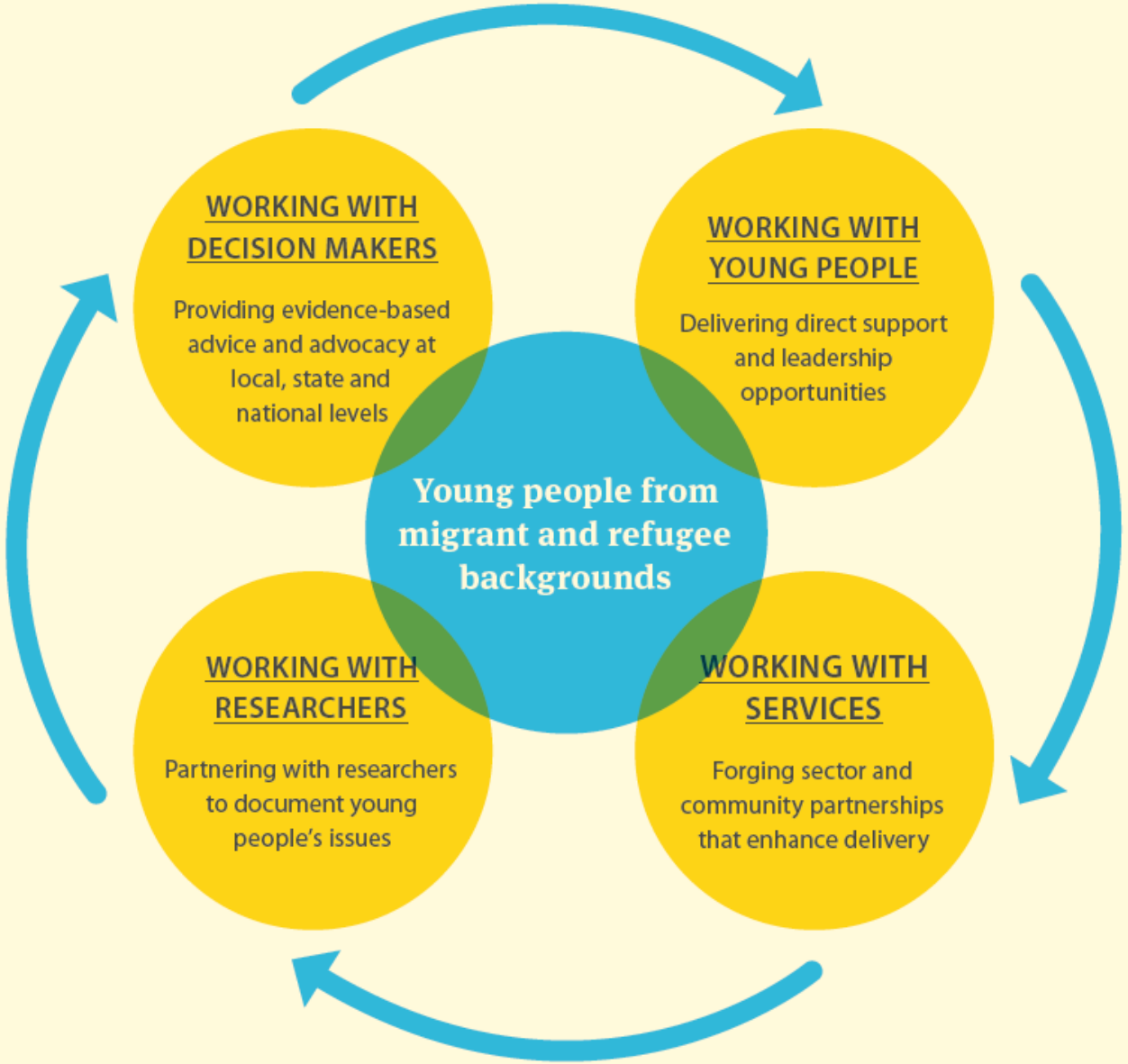
# Who we are

We are a Victorian not-for-profit organisation supporting young people from migrant and refugee backgrounds to build better lives in Australia.

cmy
Centre for
Multicultural Youth

# Our approach

Young people are always at the centre of what we do.
What we learn from them helps us develop stronger communities, support other service providers and lead positive change at all levels.



# MY Education

Two key programs:

- Learning Beyond the Bell (LBB)
- Refugee Education Support Program (RESP)

cmy
Centre for
Multicultural Youth

# Tutoring Strategies to Support EAL Learners in Mathematics

cmy.net.au

# Training Objectives:

Centre for Multicultural Youth

**By the end of the session today, you will be able to:**

- Recognise some of the challenges EAL students may face in learning mathematics
- Identify and implement strategies to support EAL students to learn mathematics in an OSHLSP setting

# Who are EAL learners?

# Students from a refugee background

Centre for Multicultural Youth

- May have had no formal schooling in their first language
- May have low levels of literacy in English or in their first language
- Might be suffering the after effects of trauma
- May have had disrupted schooling due to movement within and between countries
- May find the intersection of home culture and school/peer culture challenging


cmy
Centre for Multicultural Youth

cmy.net.au

https://www.cmy.net.au/e-learning/refugee-journeys/story_html5.html

cmy
Centre for
Multicultural Youth

# What are some of the challenges EAL learners might face in Mathematics?

# The EAL Learner

- Maths uses language in a specific way
- EAL students are learning English and maths simultaneously
- Maths builds on previous learning
- Fear of failure
- Difference in how maths is taught across cultures
- ROTE learning vs problem solving

# Meet Moises

Centre for Multicultural Youth

# Breakout Rooms

**In your small groups, identify:**

- Moises' strengths
- What did Moises find difficult?
- What did the teacher do well?
- What could the teacher have done better?



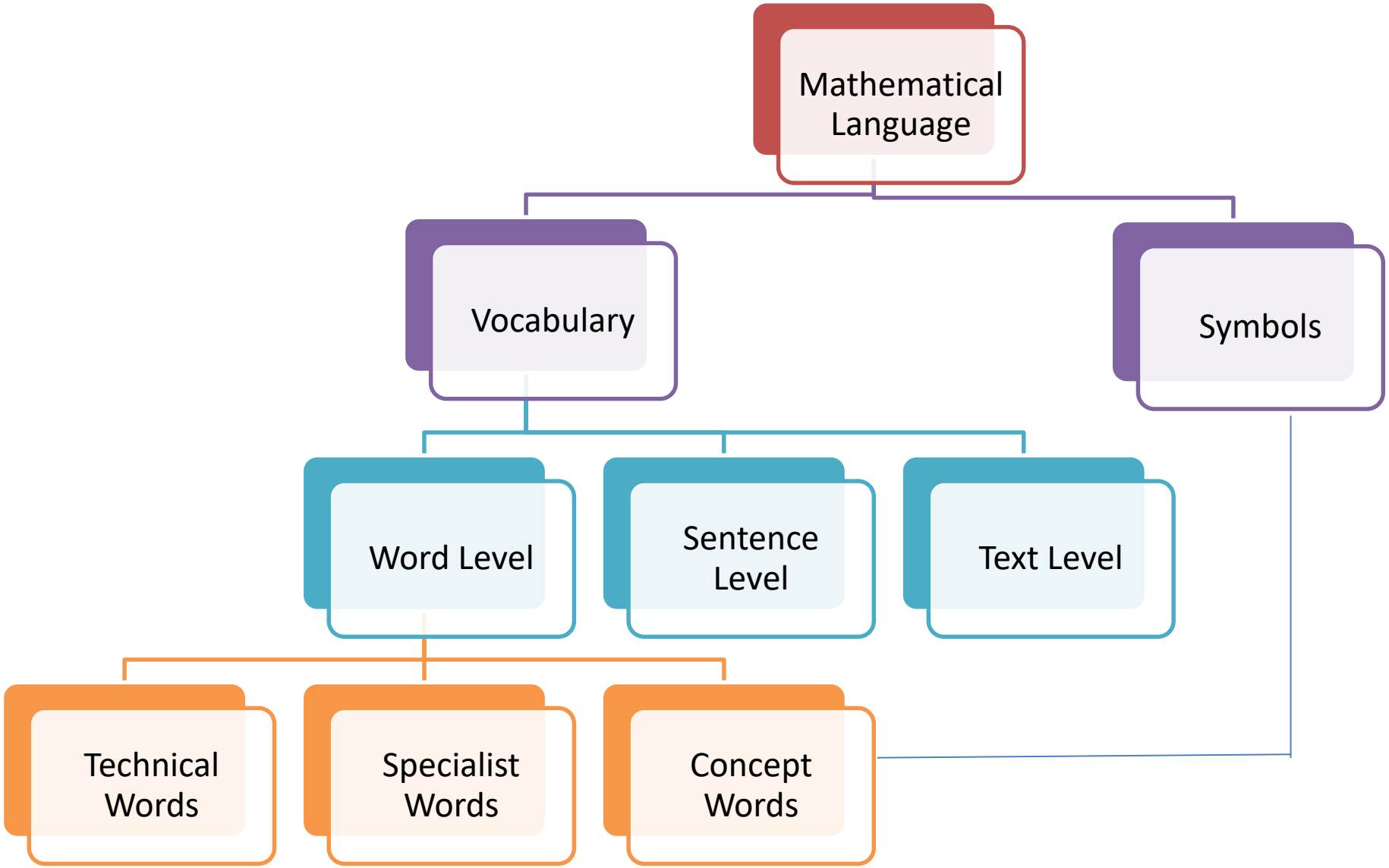
https://docs.google.com/document/d/1iV9rE77ILK_diKFoMJTtfrhwGH2xbSua5KvtFGU9fxs/edit

# Mathematical Vocabulary

cmy
Centre for
Multicultural Youth

# Language and Mathematics

- **Conversational language**
  - Non-Academic
  - General and/or informal language that students might use with peers or family
- **Academic language**
  - The language and conventions specific to mathematics




cmy
Centre for Multicultural Youth



https://ealresources.bell-foundation.org.uk/teachers/teaching-eal-learners-maths

# Mathematical Vocabulary

cmy
Centre for Multicultural Youth

**Technical Words**

Words that only have a mathematical meaning

E.g. algebra, triangle, subtraction

**Challenges**

- Learning new words from scratch
- Unlikely to have heard or used them before
- Can often have a complicated structure

# Supporting EAL Students with Technical Words

- Linking game “I have… who has….”
- Flash cards
- Posters on wall (can print off from internet- list of useful websites included in resource list at end of ppnt)
- Create poster *with* student and have on display
- Help students to create a dictionary of technical words
- Study Stack: https://www.studystack.com/flashcard-96156
- Jenny Eather ‘maths dictionary’ http://www.amathsdictionaryforkids.com/

# Mathematical Vocabulary

Centre for Multicultural Youth

**Specialist Words**

Words that have specific meanings in mathematics that are different from their ordinary use  e.g. mean, power, table

**Challenges**

- Same word, different meanings
- Need good grasp of English to be able to differentiate based on context
- Can be difficult even for Australian-born students

# Mathematical Vocabulary

**Concept Words**

General words that are used that confer relationships between concepts

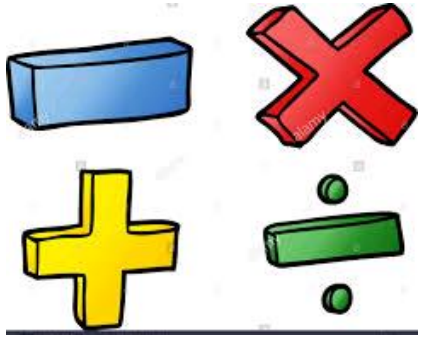
E.g. expression, difference, sum

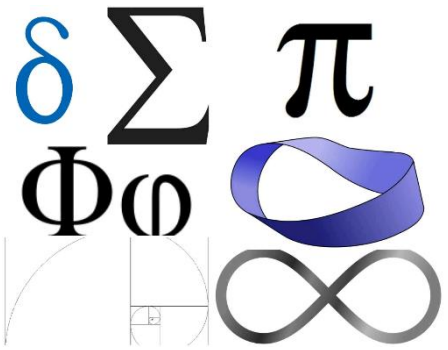
**Challenges**

- These terms may be difficult and abstract to define
- Dependent on the context of the question
- Often there are multiple synonyms for concept words

# Mathematical Symbols

- Can refer to numerals
- Specialised function
- Symbols often have many ways of being talked about- the function of a symbol has many synonyms





cmy
Centre for
Multicultural Youth

# Tutoring Strategies

# The role of the OSHLSP tutor

cmy
Centre for
Multicultural Youth

- Provide opportunities for EAL learners to practise conversational language and academic language and to use it in speech and writing (games, creating posters, bilingual glossaries etc.)

- Practise the most common types of problems frequently, encouraging EAL learners to learn key words and phrases that often come up (altogether, each, the same, as many as possible etc.)

- Encourage bilingual glossaries of key words and phrases, including verbs that are often used (earn, cost, hire etc.)

- Model the language EAL learners need to use

- Help EAL learners to develop strategies to tackle worded problems where they may not be familiar with all the words

# Scaffolding

cmy
Centre for
Multicultural Youth

# What is Scaffolding?

Techniques that provide extra support to students.

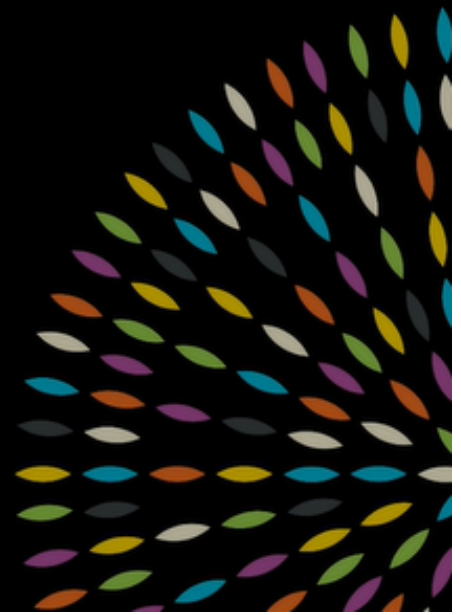
Scaffolding helps students to bridge learning gaps and achieve understanding they may not be able to reach on their own.

cmy
Centre for
Multicultural Youth

# Tips for tutors: Maths

A five-part series of training videos for
volunteer tutors in homework clubs across Victoria

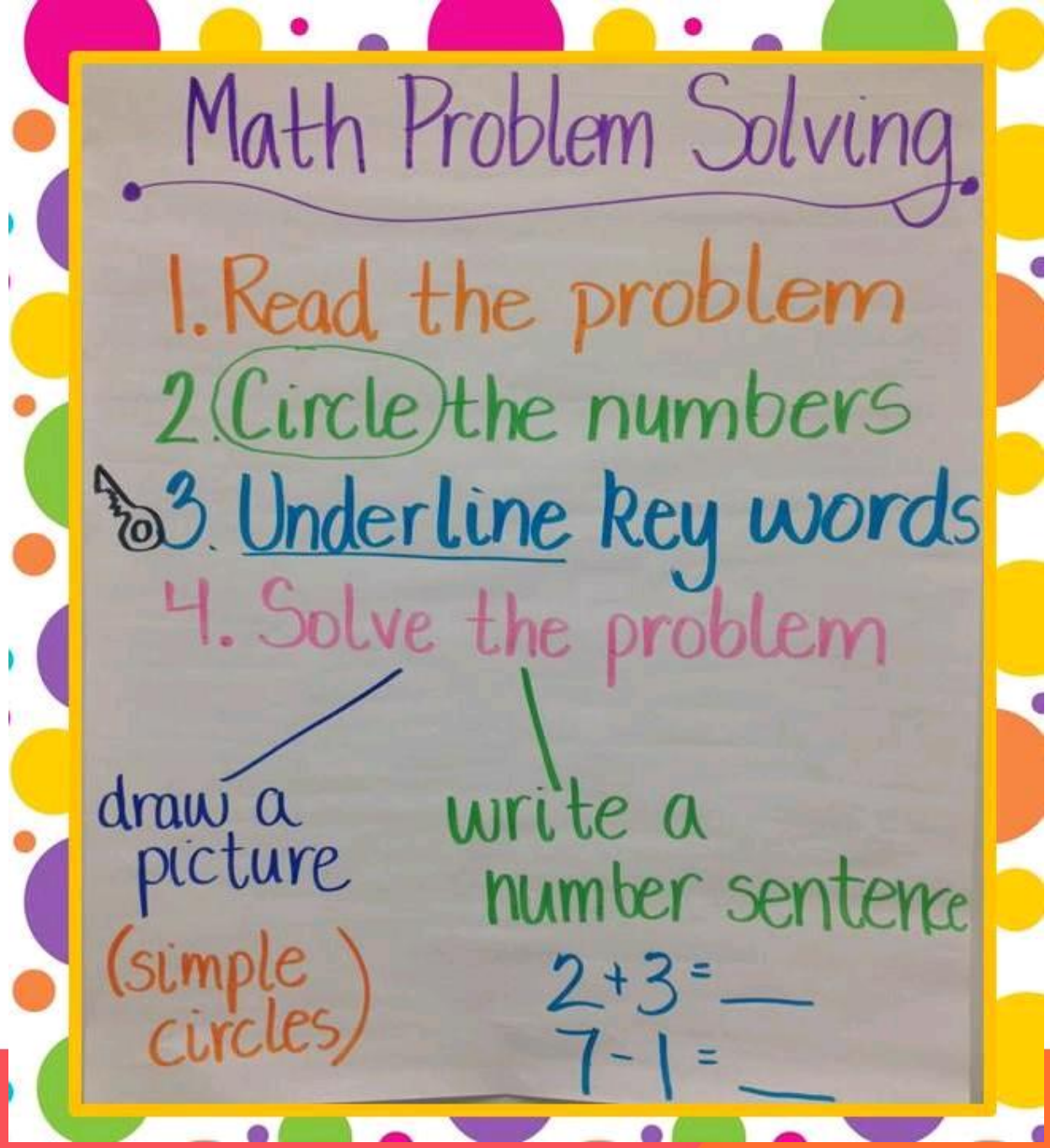
cmy
CENTRE FOR
MULTICULTURAL YOUTH



# Problem Solving Strategies

Centre for Multicultural Youth

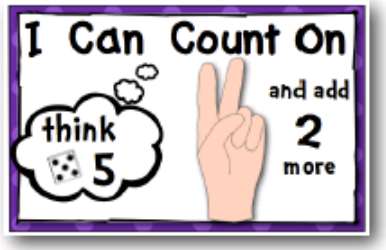
| |
|---|
| Read the Problem :<br>**Kai has 12 pens. If her brother has 10 pens, what is the mean number of pens between the two?** |
| What are the relevant words? |
| What symbols do I need to use? |
| What calculations do I need to do? |
| What is the answer? |

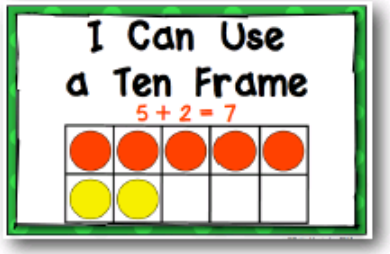



cmy
Centre for Multicultural Youth

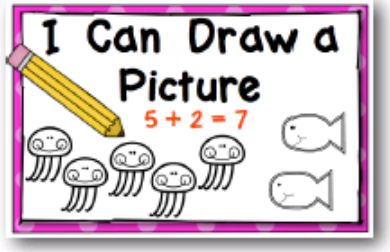
Name _____

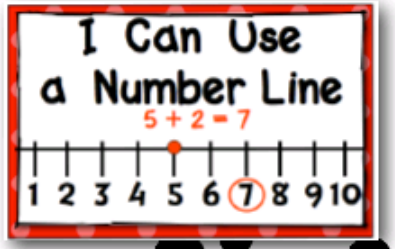
# Ways I Can Solve a Math Problem...

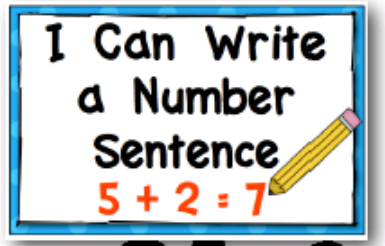






cmy
Centre for Multicultural Youth

# Problem Solving Strategies

## Draw a picture

## Guess and check

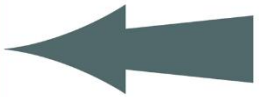
## Make a list


## Make a table

| A | B | C |
|---|---|---|
| 1 | 2 | 3 |

## Act it out

## Work backwards



start from the end

## Write a number sentence

10 + 4 = 14

## Use objects

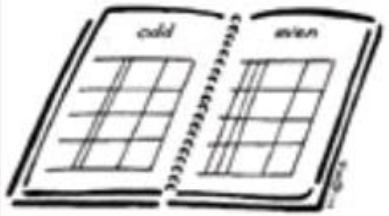
Act It Out

Make a model

Break problem into smaller parts

Draw a picture or diagram

Make a table or list

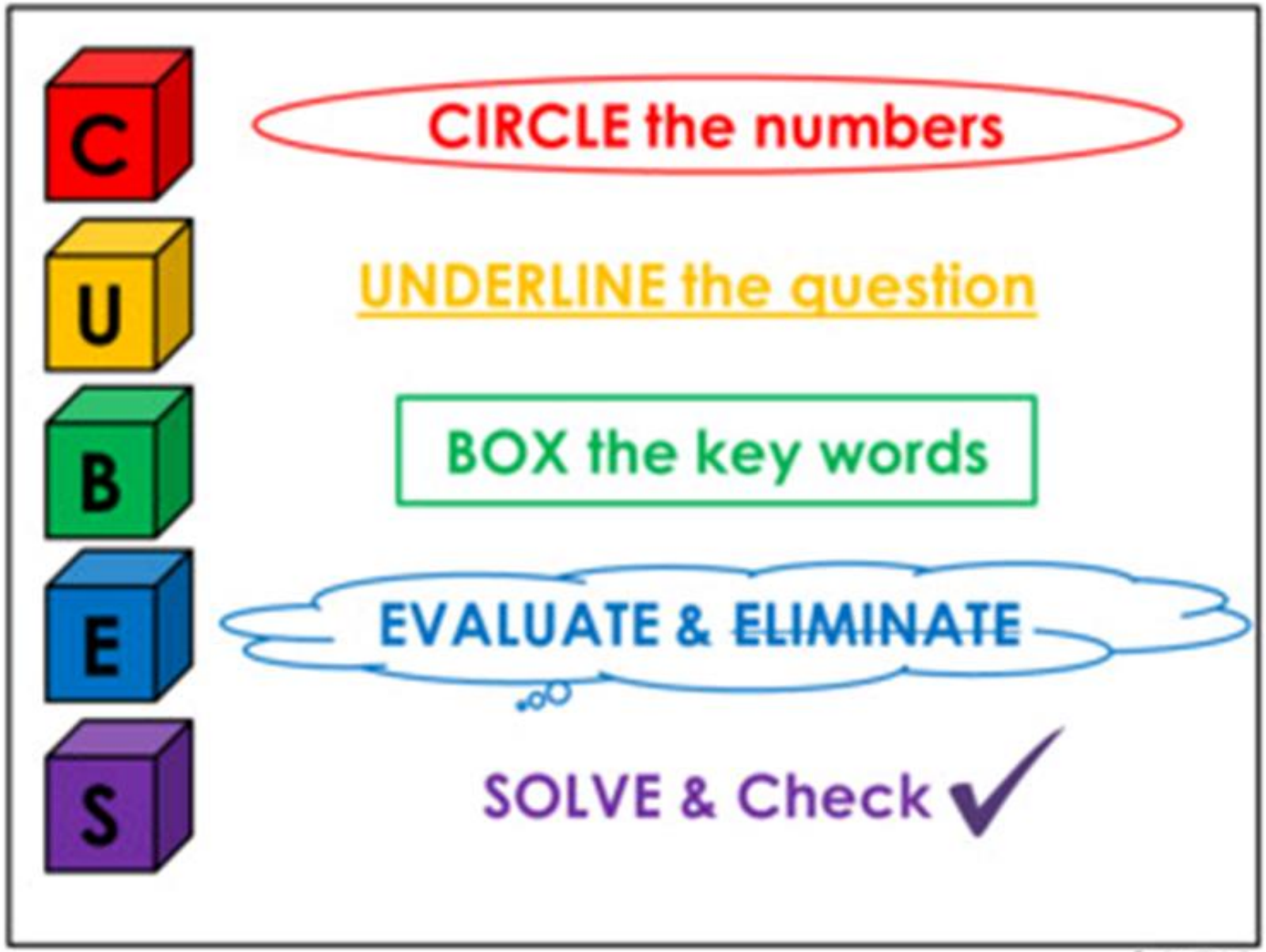


Look for a pattern

Estimate, check and improve


Solve a simpler problem


cmy
Centre for Multicultural Youth




cmy
Centre for
Multicultural Youth

# Problem Solving Task

Centre for Multicultural Youth

You will be divided into breakout rooms.
Use one or more of the problem solving strategies we have just discussed to practice how you could scaffold an EAL student to solve the problems.

# Mental Maths Strategies

It is not uncommon for children and young people of refugee background to have limited or no access to education across years of long-term displacement (Schools In For Refugees, VFST 2016).

Mental maths strategies in the early years form the basis of mathematical literacy throughout a person's life. Young people with disrupted education pathways could have missed important foundational concepts.

OSHLSP can provide opportunities to practice foundational mental computation  strategies.

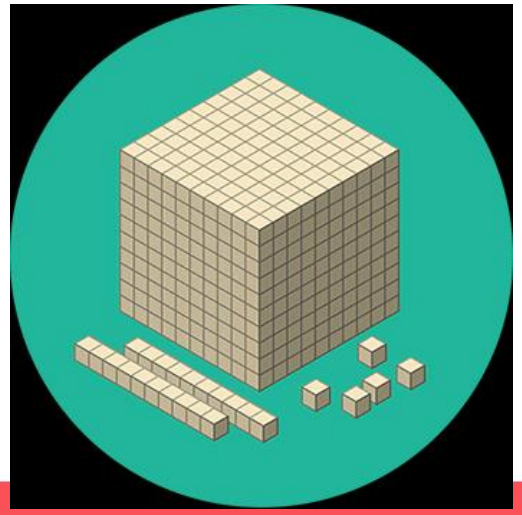
Research indicates that an emphasis on mental computation can improve students' development of number, while an early introduction to formal written methods can harm it (Australian Association of Mathematics Teachers).

# Resources

# Material Aids

**Concrete Materials** should be used to assist students to understand mathematical concepts

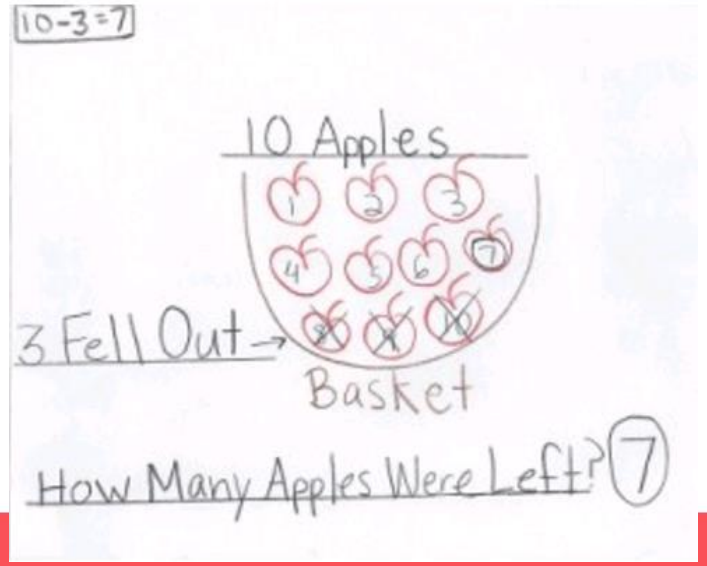
- Hands-on vehicle to expand learning and to aid instruction
- Designed to help students develop ‘interconnected knowledge’

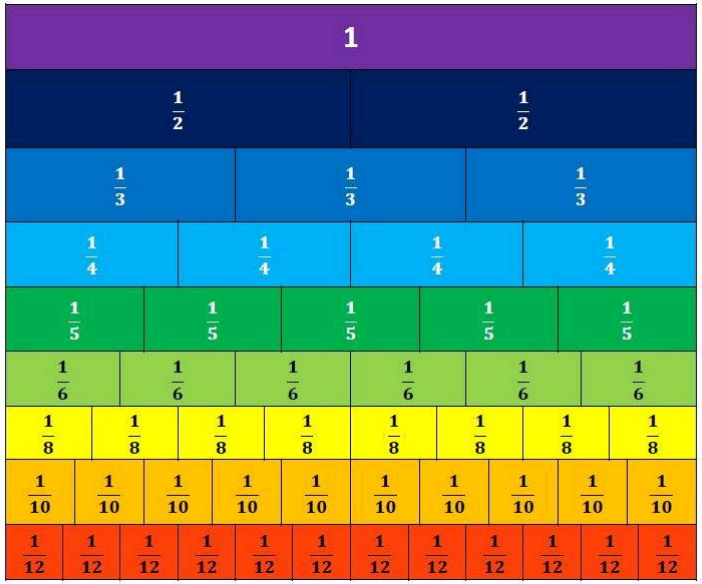


# Visual Aids

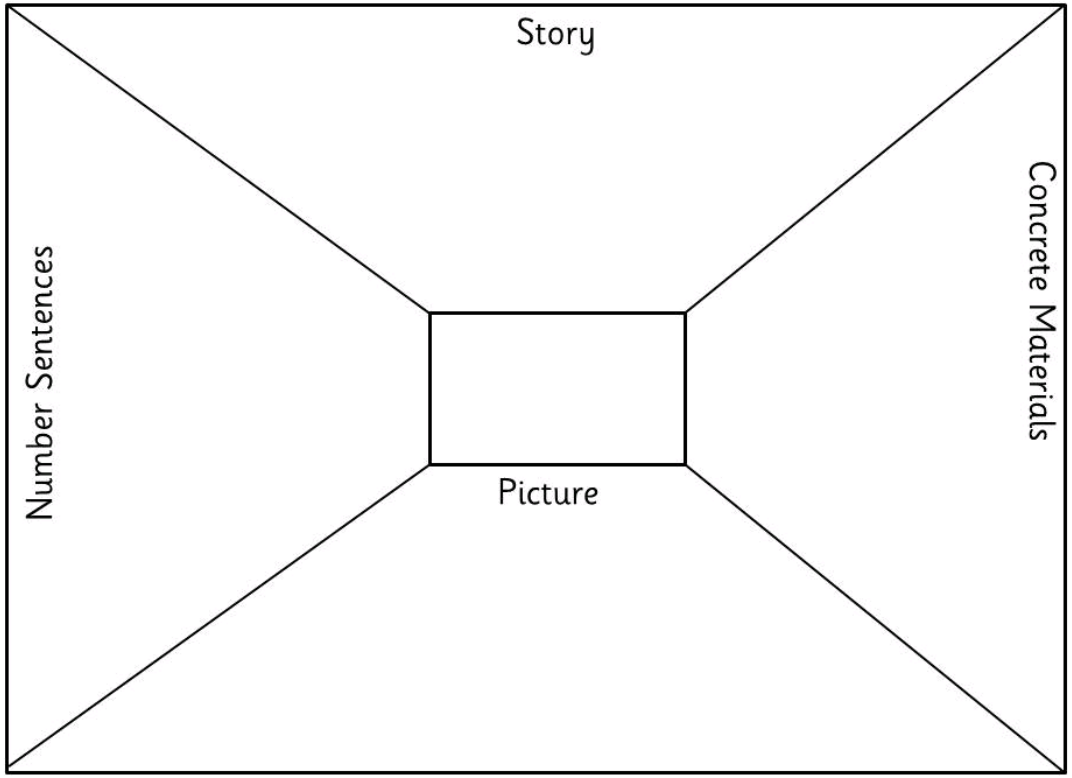
**Visual** means of communicating information can help develop conceptual understandings

- Can aid thinking about mathematical relationships whilst comparisons are conducted

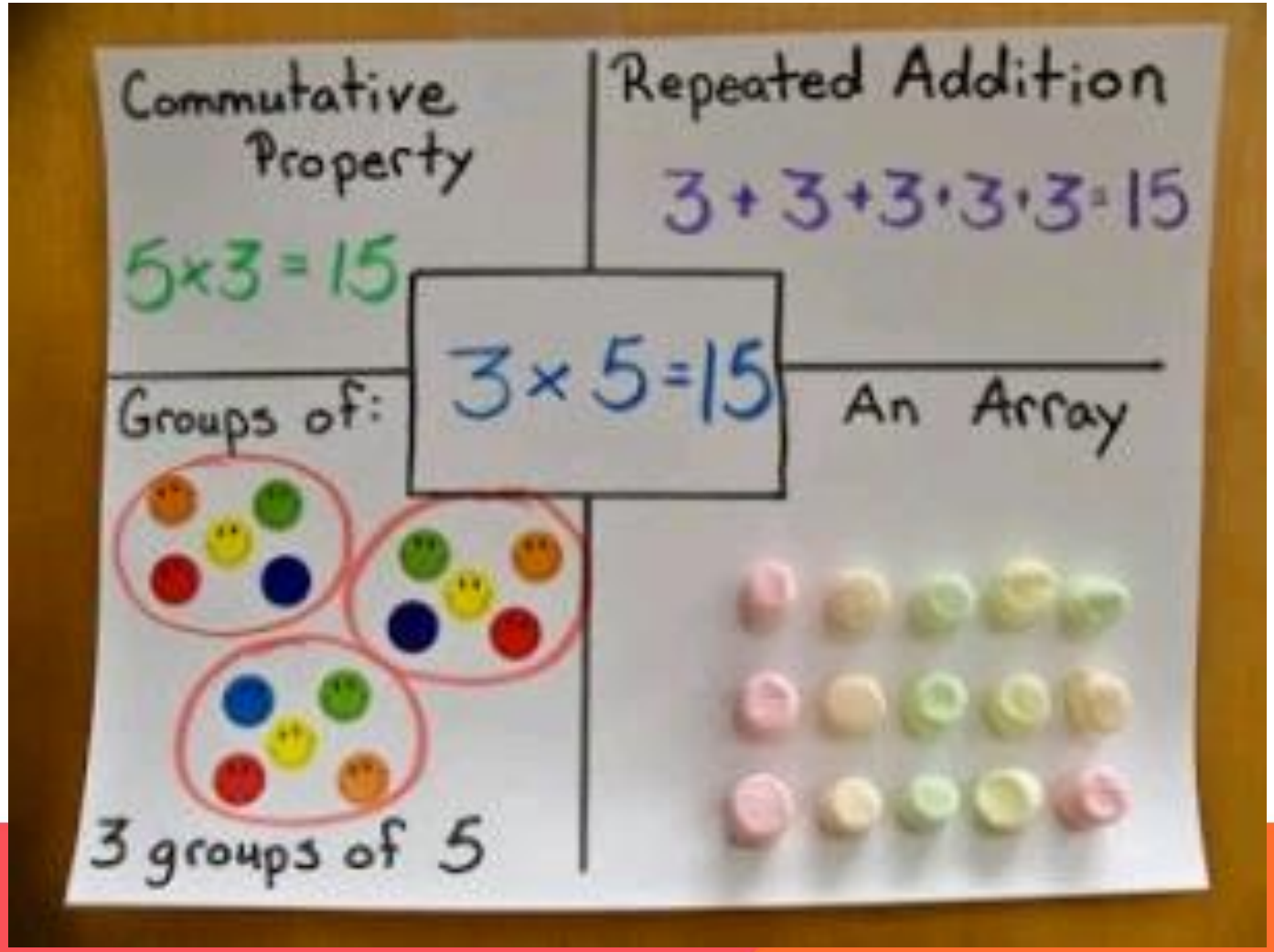


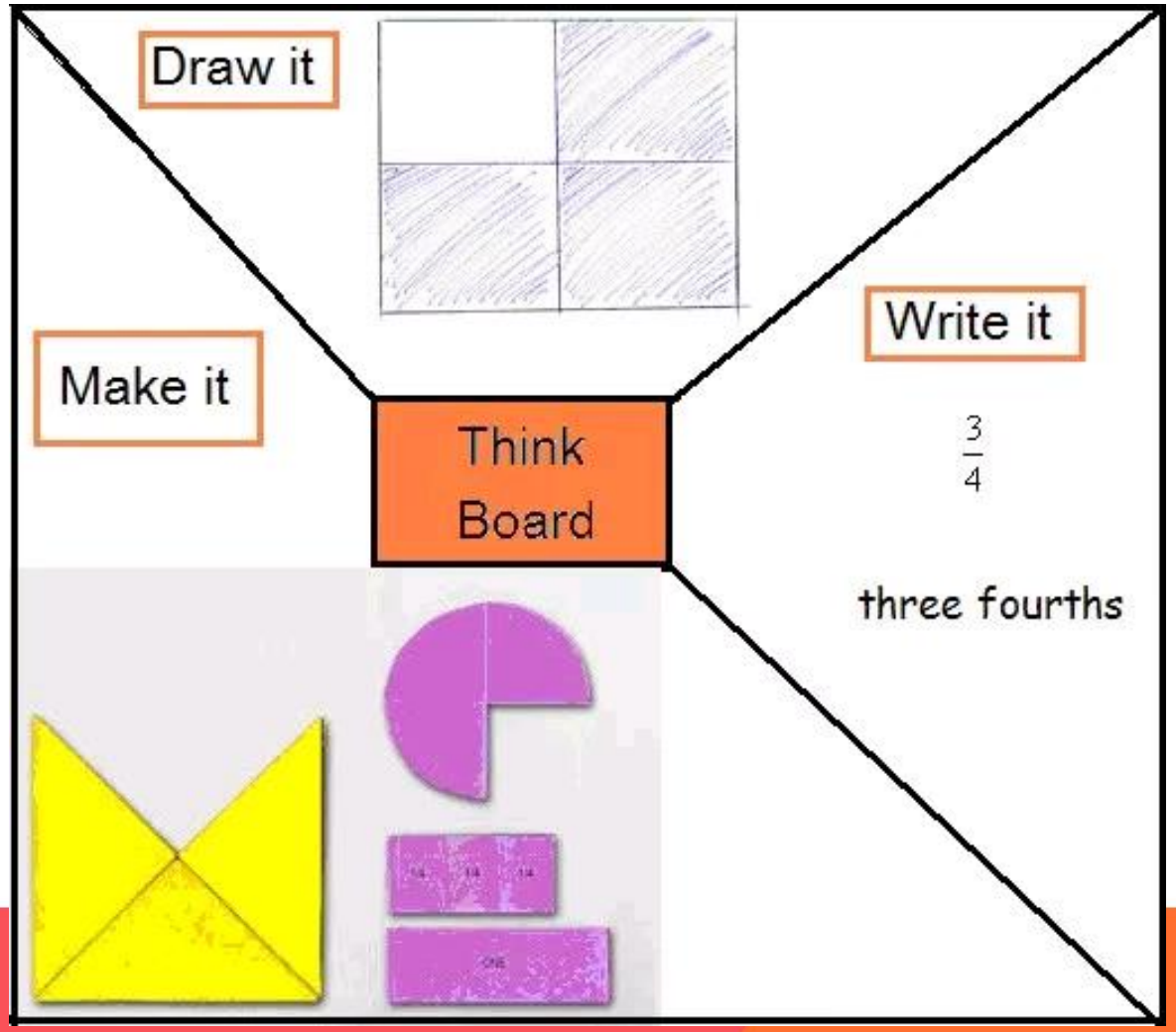
# Think Boards



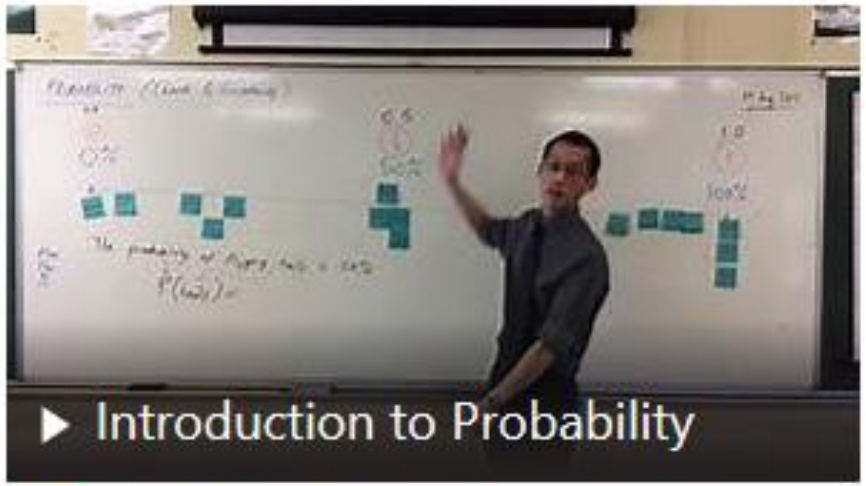
# Think Boards



# Think Boards



# It’s Woo Time





https://www.bing.com/videos/search?q=wootube&&view=detail&mid=81E3DC15B877901FAA3081E3DC15B877901FAA30&&FORM=VDRVRV

# Websites

Australian Association of Mathematics Teachers: https://www.aamt.edu.au/Topdrawer/Mental-computation/Activities

Cool Australia https://www.coolaustralia.org/

Khan Academy: https://www.khanacademy.org/

Jenny Eather: http://www.amathsdictionaryforkids.com/qr/a/abacus.html

Study Stack: https://www.studystack.com/flashcard-96156

ictgames: ictgames.com

LMERC https://lmerc.softlinkhosting.com.au/oliver/home/news

Twinkle- strategy posters: https://www.twinkl.co.uk/resource/maths-vocabulary-posters-t-n-013

# Evaluation

cmy
Centre for
Multicultural Youth

https://forms.gle/fehjNWb2FmGQPqb88

# Thank You

Centre for Multicultural Youth