


UNIVERSITY OF CAMBRIDGE

## Going deeper to develop whole class reasoning

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Tower Hamlets CPD Centre

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## 2019-20 Project overview

Going deeper to develop whole class reasoning.

9 Oct – setting the NRICH scene  
26 November, 4 February, 17 March, 19 May and 23 June


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## Webinar reviews

[youtube.com/user/nrichmaths/videos](https://youtube.com/user/nrichmaths/videos)



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## Tasks to talk about


Cuisenaire ("Cuisenaire – From Early Years to Adult" 2017)  
Cubies (13872)  
Light the Lights (7044)  
Tables Teaser (14242)  
Mystery Matrix (1070)

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## Reflecting on classroom experiences

- What went well?
- Were there any surprises?
- What would you do differently next time, or what additional guidance would you give to a colleague?

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## Progression in reasoning

Describing  
Explaining  
Convincing  
Justifying  
Proving

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# Sealed Solution (1177)

A set of ten cards, each showing one of the digits from 0 to 9, is divided up between five envelopes so that there are two cards in each envelope.  
The sum of the two numbers inside it is written on each envelope:

7 8 13 14 3

What numbers could be inside the "8" envelope?



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# Sealed Solution (1177)

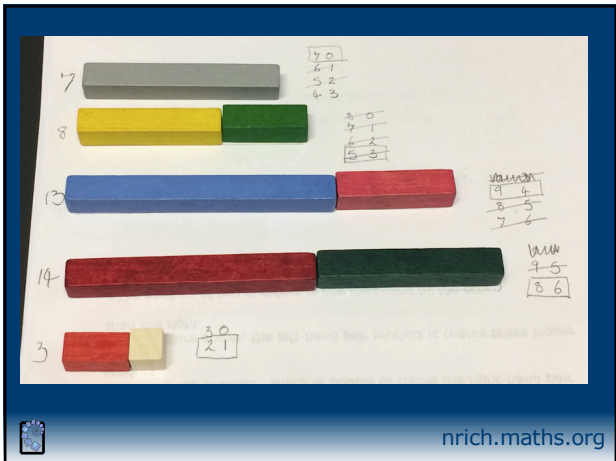
Read through these children's solutions and consider:

- Which stages of reasoning are exemplified by each solution?
- How would you support a child in your class whose work this was, in order to progress their reasoning?



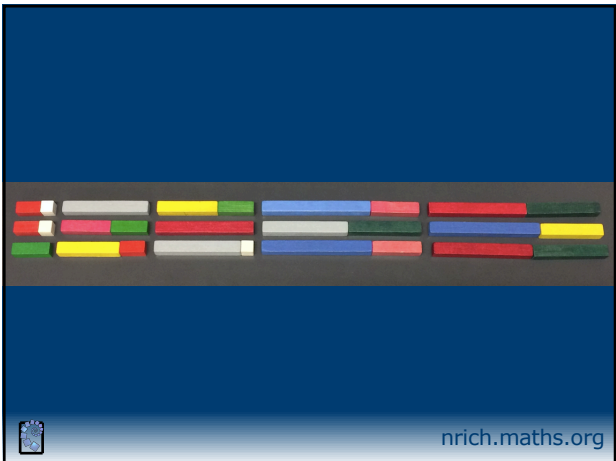
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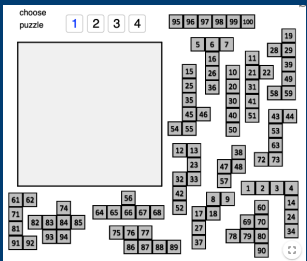


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# 100 Square Jigsaw (5572)

Complete the jigsaw of the hundred square.



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# Robot Monsters (2404)

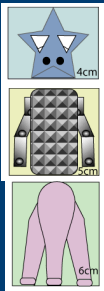
You are going to make Robot Monsters.

What is the tallest Robot Monster that you can make using one head, one body and one set of legs?

What is the shortest one you can make using one head, one body and one set of legs?

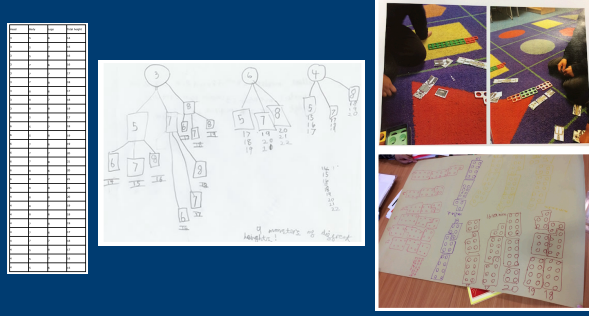
How tall would the Robot Monster be that was made from the three bits left over after you had made the tallest and the shortest?

How many Robot Monsters which are all different heights can you make with the nine pieces (all with one head, one body and one set of legs)?



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## Reflection time

How is your thinking about reasoning developing?

What does this mean for

- your setting
- your colleagues
- your subject leader role (if applicable)?

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## Getting to know you

You told us that some of your children:

- Enjoy maths
- Are keen to learn
- Are excited about exploring and discussing
- Are willing to have a go

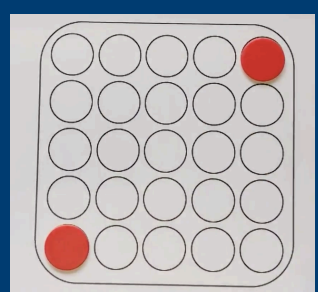
Common considerations:

- Vocabulary/modelling
- Access for all children
- Planning for different needs

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## Poly Plug Rectangles (7511)



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## Playing Poly Plug Rectangles

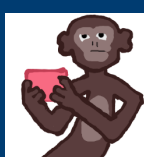
This is a game for two players.

One player visualises a rectangle on the grid and tells their opponent how many spots it has.

The second player tries to find out where the rectangle is on the grid by choosing a spot to test.

The first player says whether or not that spot is part of their rectangle. If it is, the counter is placed with the yellow side up. If not, the counter is placed red side up.

As soon as the second player knows where the rectangle is, they can tell the first player, who will confirm whether or not they are correct.



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## Children's Thinking (13537) Poly Plug Rectangles videos



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## Planning for your setting

Practical ↔ Pedagogical



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## Dissemination planning

Choose an option from the following:

- A handout for staff
- 10mins input at a team meeting/staff meeting
- Meeting with a parallel colleague in your phase/year.



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Can we come in to talk to you and the children about your work on this project and "going deeper"?



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## Teacher Takeaway

- Try a task from today in your setting (be prepared to talk about it next time and provide something that tells the story for us to upload)
- Jot down some things in your journal about the task you tried and things you noticed
- Carry out your chosen dissemination method and be ready to report back on the 4<sup>th</sup> Feb 2020



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## References

Askew, M. (2015) *Transforming Primary Mathematics*. Abingdon: Routledge

Ollerton, M., Williams, H. and Gregg, S. (2017) *Cuisenaire – From Early Years to Adult*. Derby: ATM

Ruthven, K. (1989) 'An Exploratory Approach to Advanced Mathematics' *Educational Studies in Mathematics* **20** 449-467



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