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# *Maths workshop 2: What to do about maths at home*

10TH FEBRUARY 2025

# *Why are we here?*

- The way maths is being taught is fundamentally changing
- Because your children's experience of maths at primary school will be very different to yours
- To give you ways of communicating with your children about maths
- To continuing to help support you in supporting them at home

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# *Why listen to me?*

- NCETM Primary Teaching for Mastery Specialist
- NCETM Professional Development Lead Teacher
- NCETM Sussex Maths Hub Lead Teacher
- Maths Lead for 15 years
- DfE / STA consultant (maths)

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# *What do we hope you'll get from this?*

- Ideas, strategies and resources that you can use effectively at home, with children of all ages

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# *What do children need to be?*

- From the National Curriculum:
  - Fluent
  - Flexible
  - Reasoning
  - Problem solving

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# *What to do about maths at home*

- **Language** that builds mathematicians
- **Vocabulary** that your children use that you might not know
- **Activities** that engage
- **Further resources** that are useful

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# Language

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# *Positive vs. Negative*

- Researchers found that when mothers told their daughters they were not good at math in school, their daughter's achievement declined almost immediately (Eccles & Jacobs, 1986)
- Neuroscientists Erin Maloney and colleagues found that parents' math anxiety reduced their children's learning of math across grades 1 and 2, but only if parents helped their children on math homework (Maloney, Ramirez, Gunderson, Levine, & Beilock, 2015). If they did not help them on homework, the parents' math anxiety did not detract from their children's learning.

https://www.youcubed.org/resources/parents-beliefs-math-change-childrens-achievement/

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# *Positive vs. Negative*

- Frustrations
  - Differences in methods
    - 9,999 + 562

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# *Positive vs. Negative*

- Frustrations
  - Working memory – “You knew that just now!”
  - Multiplication tables

| | |
|---|---|
| 1 | **Equal groups (Size)** |
| 2 | **How many equal groups (Number)** |
| 3 | **Size and number of groups** |
| 4 | **Inefficiency of repeated addition → multiplication** |
| 5 | **Notation and language of multiplication** |
| 6 | **Multiplication is commutative** |
| 7 | **Securing times tables facts** |
| 8 | **Use variation to explore and deepen the concept (inc. generalisation)** |
| 9 | **Multiplication as scaling** |

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# *Procedure vs. Concept*

- “That’s not how I did it at school.”
  - Bus stop or short division?

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# *Journey vs. Destination*

- What's more important – the thinking or the answer?

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# *Journey vs. Destination*

- Speaking in full, mathematically accurate sentences
  - not just answers
  - values the journey

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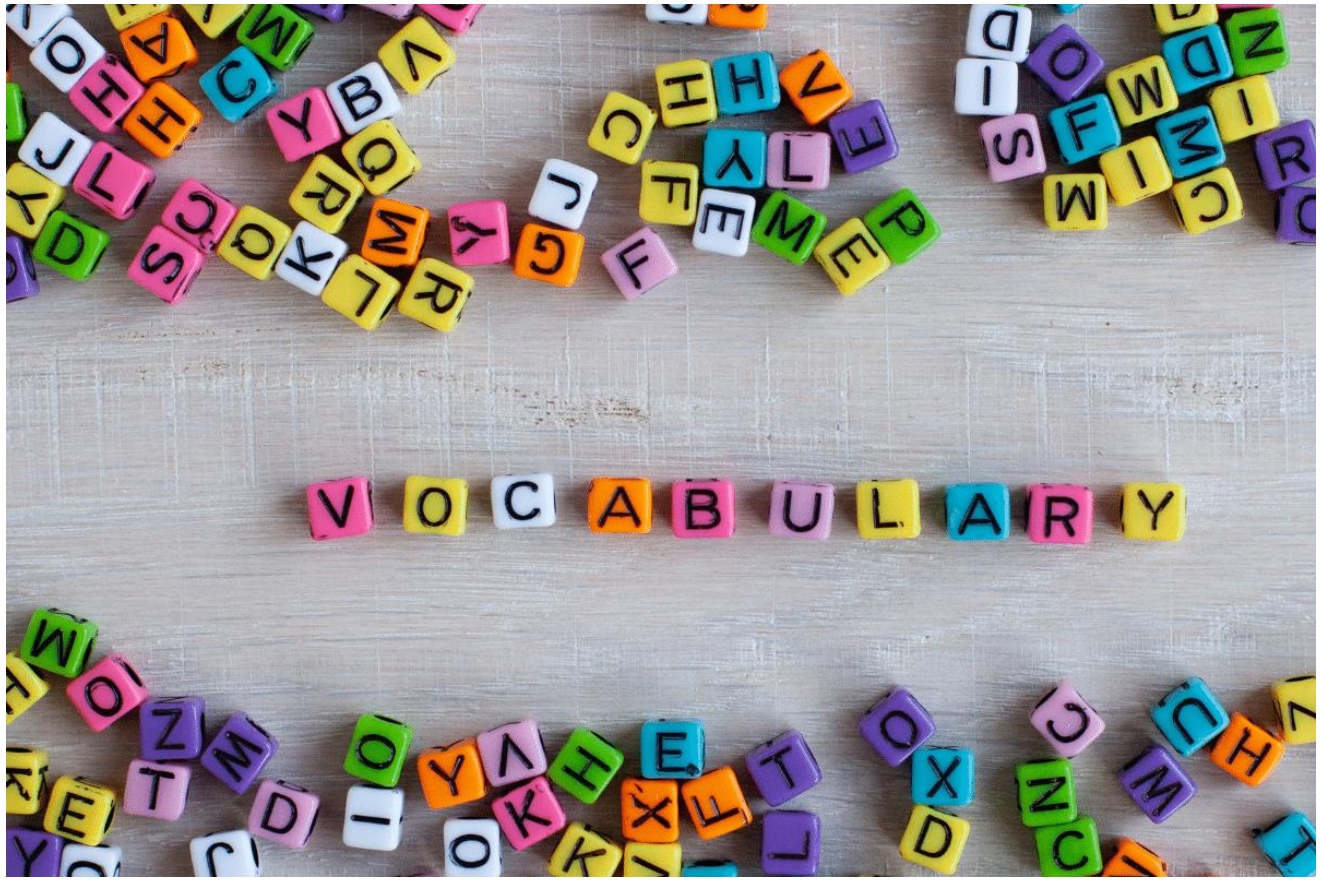
# Vocabulary

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# *NCETM glossary*

- www.ncetm.org.uk/media/hpihrj3s/national-curriculum-glossary.pdf
- 91 pages!
- Accurate, mathematical definitions
- Includes KS1, KS2 *and* KS3 vocabulary
- Aimed at teachers
  - e.g. ‘plane’

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# *mathsisfun.com*

- https://www.mathsisfun.com/definitions/index.html
- Dictionary with 1,264 definitions
- Illustrations and animated examples
- Not always 100% conceptually accurate…
  - …but close

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# Activities

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# *What do children need to be?*

- From the National Curriculum:
  - Fluent
  - Flexible
  - Reasoning
  - Problem solving

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# *Cooking!*

- Wide variety of mathematical skills
- Real world application
- Delicious results (hopefully!)

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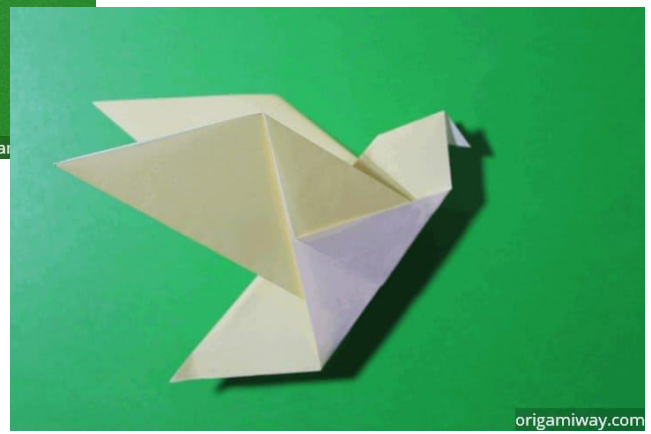
# Origami

- https://www.origamiway.com/very-simple-origami-for-kids.shtml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# Music

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# Lego


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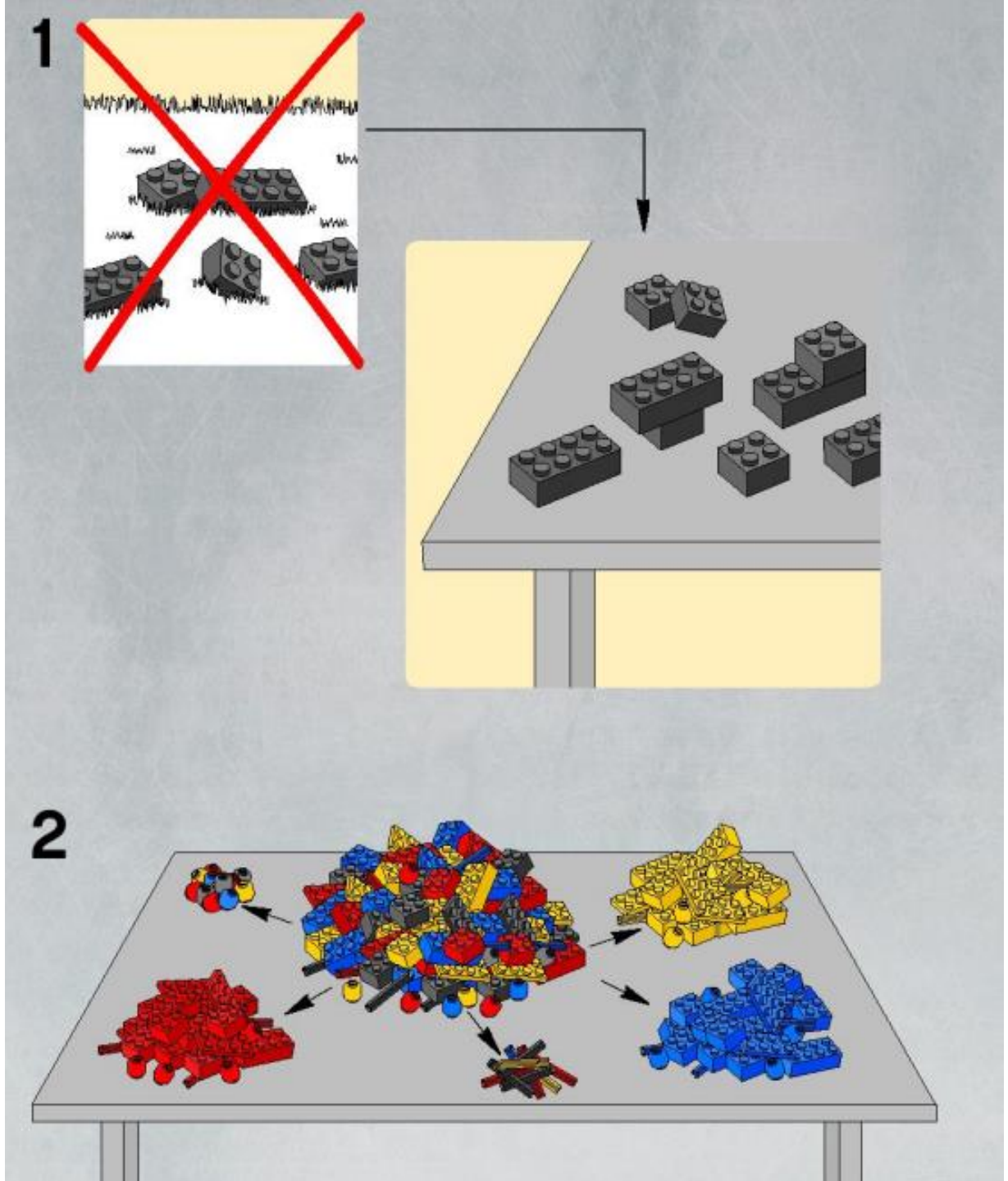
1
2

# Art

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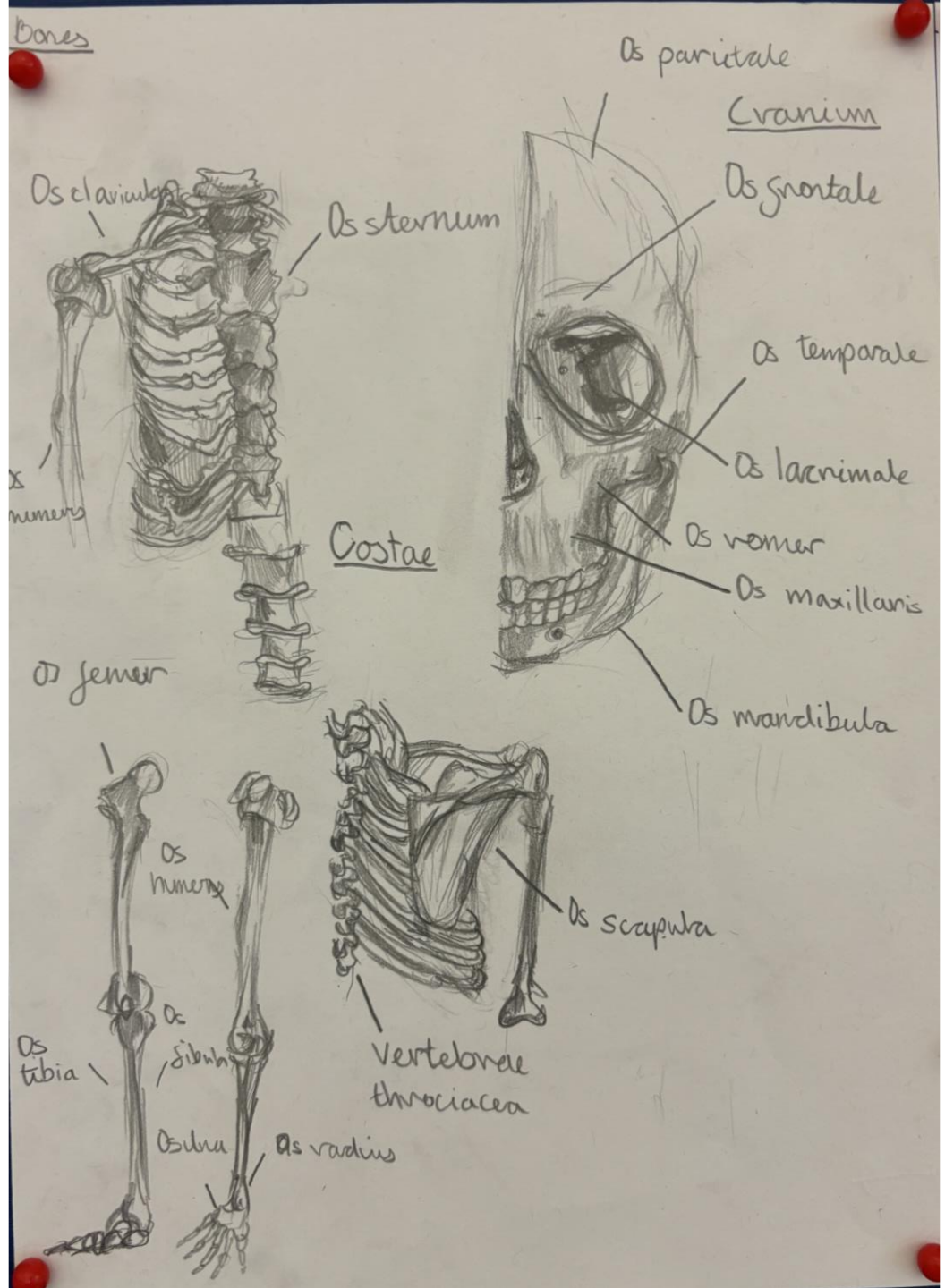
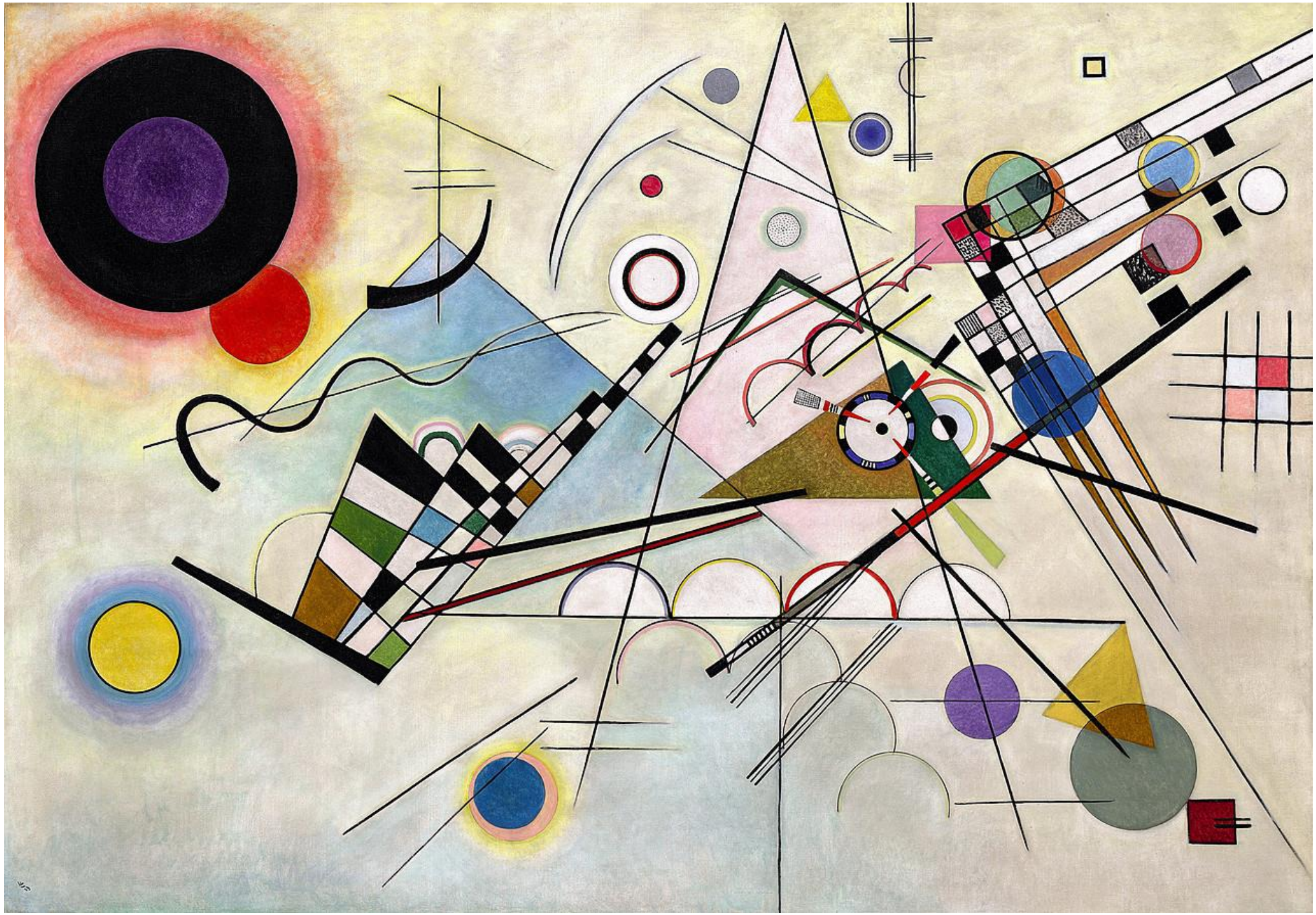
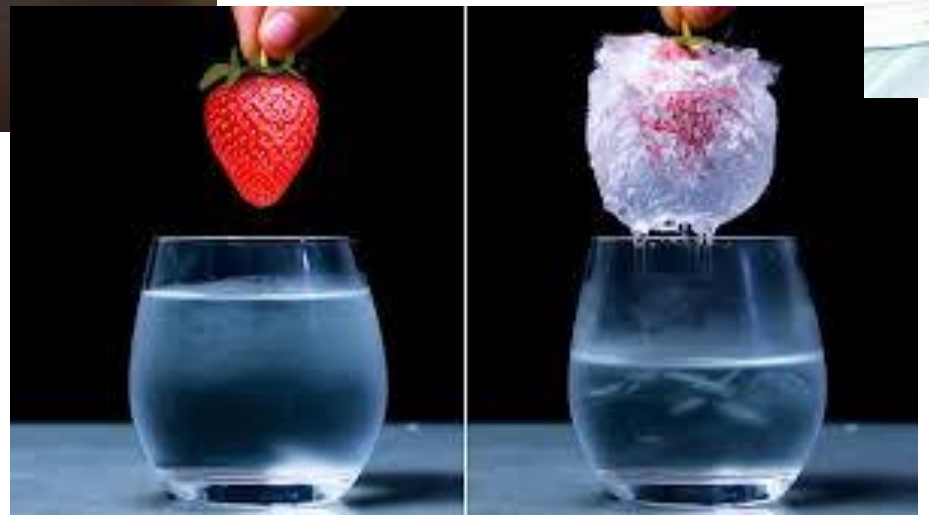

Bones
Os parietale
Cranium
Os frontale
Os clavicula
Os sternum
Os temporale
Os lacrimale
Os vomer
Os maxillaris
Os mandibula
Costae
Os femur
Os humerus
Os scapula
Os tibia
Os fibula
Os radius
Vertebrae thoraciacea



# *Science experiments*



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# *Further resources*

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# *For 0 to 5s*

- https://www.surreycc.gov.uk/children/support-and-advice/families/publications/count-with-me-maths-tips-for-parents
- ‘Count with me’ tips and activities for parents

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# *Numberblocks*

- https://www.bbc.co.uk/cbeebies/shows/numberblocks
- https://www.bbc.co.uk/iplayer/episodes/b08bzfnh/numberblocks
- www.ncetm.org.uk/classroom-resources/ey-numberblocks-at-home/

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# *The gold standard*

- www.nrich.maths.org/parents
- Early years to post-16
- Challenging
- Engaging
- Interesting
- Interactive
- University of Cambridge Millenium Project

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# *Stanford University Online*

- ‘How to Learn Math’
- https://www.edx.org/learn/math/stanford-university-how-to-learn-math-for-students
- Six free 20 minute lessons aimed at students but appropriate for parents

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# Syllabus

**Part 1: The Brain and Math Learning.**

1. Knocking Down the Myths About Math.

Everyone can learn math well. There is no such thing as a “math person”. This session give stunning new evidence on brain growth, and consider what it means for math learners.

2. Math and Mindset

When individuals change their mindset from fixed to growth their learning potential increases drastically. In this session participants will be encouraged to develop a growth mindset for math.

3. Mistakes and Speed

Recent brain evidence shows the value of students working on challenging work and even making mistakes. But many students are afraid of mistakes and think it means they are not a math person. This session will encourage students to think positively about mistakes. It will also help debunk myths about math and speed.

**Part 2: Strategies for Success.**

1. Number Flexibility, Mathematical Reasoning, and Connections

In this session participants will engage in a “number talk” and see different solutions of number problems to understand and learn ways to act on numbers flexibility. Number sense is critical to all levels of math and lack of number sense is the reason that many students fail courses in algebra and beyond. Participants will also learn about the value of talking, reasoning, and making connections in math.

2. Number Patterns and Representations

In this session participants will see that math is a subject that is made up of connected, big ideas. They will learn about the value of sense making, intuition, and mathematical drawing. A special section on fractions will help students learn the big ideas in fractions and the value of understanding big ideas in math more generally.

3. Math in Life, Nature and Work

In this session participants will see math as something valuable, exciting, and present throughout life. They will see mathematical patterns in nature and in different sports, exploring in depth the mathematics in dance and juggling. This session will review the key ideas from the course and help participants take the important strategies and ideas they have learned into their future.

# Be child led

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