



Teaching Mathematics at KJA

We have a shared culture at Kensington Junior Academy to dispel any myths that there is a mathematics gene and that only a select few can be good at maths: we fully believe that all children can understand and achieve. We promote and foster mathematical mindsets and actively encourage hard work, practice and a willingness to learn from mistakes. We instil an appreciation and love for maths because the habits of thinking mathematically are life-enriching: we uphold the belief that it is essential to be numerate to fully engage in society. The intention of our approaches are to provide all children with full access to the curriculum, enabling them to 'master' mathematics.

At the core of our teaching is the five big ideas in teaching for mastery:

- **Coherence** - breaking learning down into small steps.
- **Mathematical thinking** - developing deep understanding of concepts taught.
- **Fluency** - autonomous recall of key number facts and the ability to use them in varying contexts.
- **Variation** - varying the presentations of concepts so that mechanical repetition is avoided.
- **Representation and structure** - exposing concepts through the concrete, pictorial and abstract approach.

Mathematics is taught using the DfE approved Power Maths scheme, supplemented by resources from White Rose Maths and NCETM. Teaching staff follow a process model to ensure pupils become adept at '*Thinking like a Mathematician*'.

A Process Model for Maths

#1 Representation and structure

- Communicating concepts
- Making connections
- Accessing ideas

#2 Mathematical Thinking

- Chains of reasoning
- Applying maths to problems
- Making connections

#3 Fluency

- Knowing key mathematical facts
 - Thinking flexibly
 - Making connections

#4 Variation

- What's the same and what's different?
- I know this...so...I know this
- Making connections

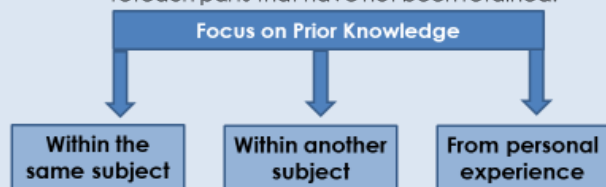
Think like an
Mathematician

In order to **'Think like a Mathematician'** pupils will work through four distinct areas:

Link It

Focus on Prior Knowledge

- Be proactive in helping pupils to **recall prior learning** from previous units of learning within the subject or from other subjects.
- Give time to, and respect, any **personal experiences** pupils may bring to the learning.
- Ensure **pupils are secure in their prior knowledge** within the subject before starting new unit of learning.
- Where appropriate, use a diagnostic assessment to check on retention and then reteach parts that have not been retained.



Learn It

- **Present new learning to pupils in small chunks** to prevent cognitive overload.
 - Effectively the **composite and component** examples work for this.
- **Provide effective modelling** and plan time for guided and independent practice.
- Ensure there are opportunities for pupils to **develop their substantive knowledge** alongside **disciplinary knowledge**.
- Start with an activity to focus on **being a scientist, historian or a geographer (artist, technologist)**
 - Ensure you have **rehearsed any new concepts** and checked understanding.
 - **Use talk for learning** to comprehend new concepts and vocabulary.
 - **New Vocabulary**
- Ensure that there are opportunities for pupils to learn new vocabulary (speaking frames, etc).

Check It

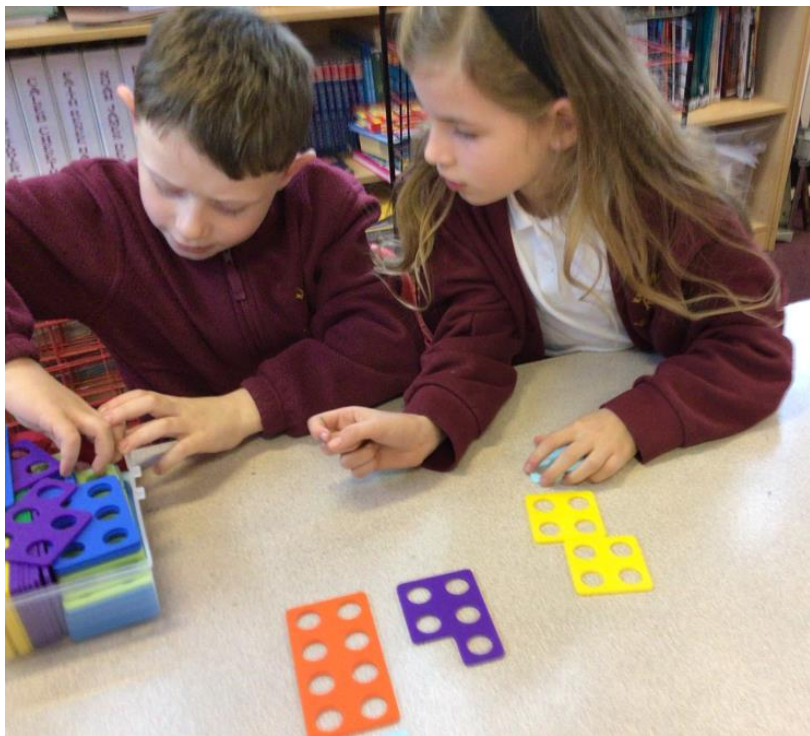
- **Create checkpoints** throughout the lesson to ensure that pupils have understood the current learning.
- **Mark in the moment** and provide instant feedback to pupils. Ensure you **pick up on pupils who are falling behind**.
- When possible, **provide rapid intervention** for those pupils that need it.
- Use retention assessments to help you **gain a picture of any gaps** that may be occurring.

Use the information from above to target intervention through peer support and teacher and TA support.
Identify individuals who need additional challenge.

Show It

- Ensure that there are opportunities for pupils to **showcase** their learning.
- Ensure that this **links the disciplinary with the substantive knowledge**. For example, in history ensure that you link in the impact the period studied had on our lives today. Give pupils time to challenge the quality of the evidence.
- Maximise opportunities to **develop cross curricular activities**, independent writing, knowledge displays, group activities that could be filmed and shared as well as through debate and drama.
- Provide ample opportunity to showcase their new skills and new knowledge in a **variety of ways**.
- In addition, provide **opportunities to use the new vocabulary** they have acquired in other areas of the curriculum.

Outcomes of Learning



290922

1) 1 ✓

2) $\begin{array}{r} 7645 \\ 7 \times \\ \hline 53515 \end{array}$ ✓

3) house ✓

4) $\begin{array}{r} 7883 \\ - 6984 \\ \hline \end{array}$ ✓

5) $\begin{array}{r} 211 \\ 4 \overline{) 844} \\ \hline 300922 \end{array}$

1) 12,24,36,48,60 ✓

2) 1 hour 55 minutes.

3) 8,2,1,4,16 ✓

4,64

5) $\begin{array}{r} 124 \\ 60 \end{array}$

Unit 7: Decimals, Lesson 9

Dividing decimals 2

1) Complete these divisions.

$4 \overline{) 4.24} = 1.06$ ✓ $6 \overline{) 8.64} = 1.44$ ✓ $8 \overline{) 9.20} = 1.15$ ✓

$4 \cdot 24 \div 4 = 1.06$ $8 \cdot 64 \div 6 = 1.44$ $9 \cdot 2 \div 8 = 1.15$

2) a) Predict if the answer to each of these divisions will have no decimal places, one decimal place or two decimal places. Write the letters in the table.

A	B	C	D	E	F
$25 \div 4$	$2.6 \div 2$	$100.5 \div 5$	$8.72 \div 4$	$1,080 \div 4$	$1.38 \div 3$

No decimal places	One decimal place	Two decimal places
D	A B C	E F

b) Complete each division to check your predictions.

A) $4 \overline{) 06.25} = 1.5625$ ✓ C) $5 \overline{) 020.1} = 4.002$ ✓ E) $4 \overline{) 0265} = 66.375$ ✓

B) $2 \overline{) 1.3} = 0.65$ ✓ D) $4 \overline{) 2.18} = 0.545$ ✓ F) $3 \overline{) 0.46} = 0.15333...$ ✓

A $25 \div 4 = 6.25$ ✓ C $100.5 \div 5 = 20.1$ ✓ E $1,080 \div 4 = 270$ ✓

B $2.6 \div 2 = 1.3$ ✓ D $8.72 \div 4 = 2.18$ ✓ F $1.38 \div 3 = 0.46$ ✓

26.09.22

$16,980,000 + 8,000,000 + 1 = 24,980,001$ ✓

$2,640.00$ ✓

3) obtuse x acute > 90

$\begin{array}{r} 1999 \\ - 1999 \\ \hline 4588 \end{array}$ ✓

$\begin{array}{r} 216 \\ 54 \overline{) 864} \\ \hline \end{array}$ ✓

27.09.22

1,0 ✓

2) 1,321 ✓

3) 5 ✓ $\begin{array}{r} 400 \\ \times 2 \\ \hline 800 \end{array}$

4) $\begin{array}{r} 6710800 \\ + 4200 \end{array}$

Unit 7: Decimals, Lesson 9

3) a) Solve these divisions.

$10.5 \div 3 = 3.5$ ✓ $10.5 \div 6 = 1.75$ ✓ $10.5 \div 30 = 0.35$ ✓

a) $\begin{array}{r} 03.5 \\ 3 \overline{) 10.5} \\ \hline \end{array}$ b) $\begin{array}{r} 01.75 \\ 6 \overline{) 10.50} \\ \hline \end{array}$ c) $\begin{array}{r} 09.50 \\ 3 \overline{) 10.5} \\ \hline \end{array}$

b) Explain how the answers to the divisions are related to each other.

Because they all end in a 5. The divide end is the same.

4) a) Reena is trying to solve $7.33 \div 10$ using short division. Find and explain her mistake.

$\begin{array}{r} 0.703 \\ 10 \overline{) 7.33} \\ \hline \end{array}$ She was meant to extend to the 100, but she extend to 1000. So her answer is incorrect.

b) Choose an efficient method to solve the division correctly.

Dividing a fraction by a whole number 1

1) a) A circle is divided into 6 equal parts. Follow these instructions:

- Divide 1 of the sixths into 2 parts.
- Shade in 1 of the parts you have just made.

What fraction of the circle is shaded?

$\frac{1}{6} \div 2 = \frac{1}{12}$ ✓

$\frac{1}{12}$ of the circle is shaded.

b) Use the diagram to work out $\frac{1}{5} \div 2$.

$\frac{1}{5} \div 2 = \frac{1}{10}$ ✓

2) Use the diagram to show $\frac{1}{8} \div 2$.

$\frac{1}{8} \div 2 = \frac{1}{16}$