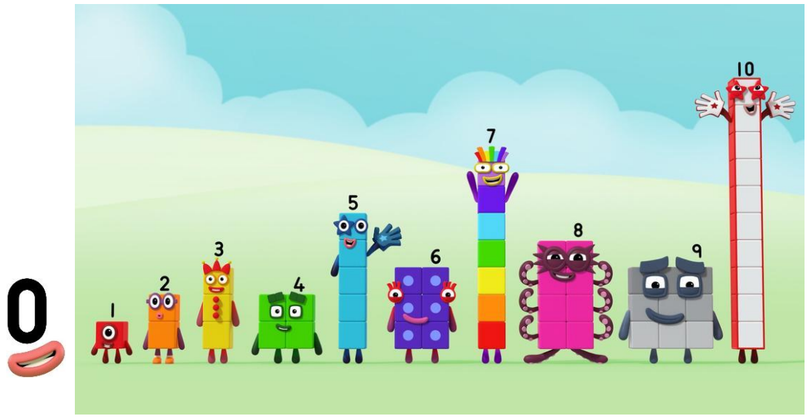
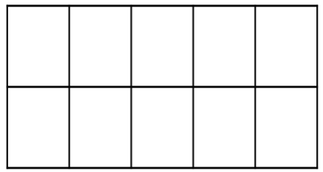
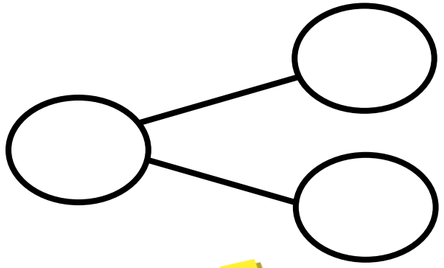
# WELCOME PARENTS





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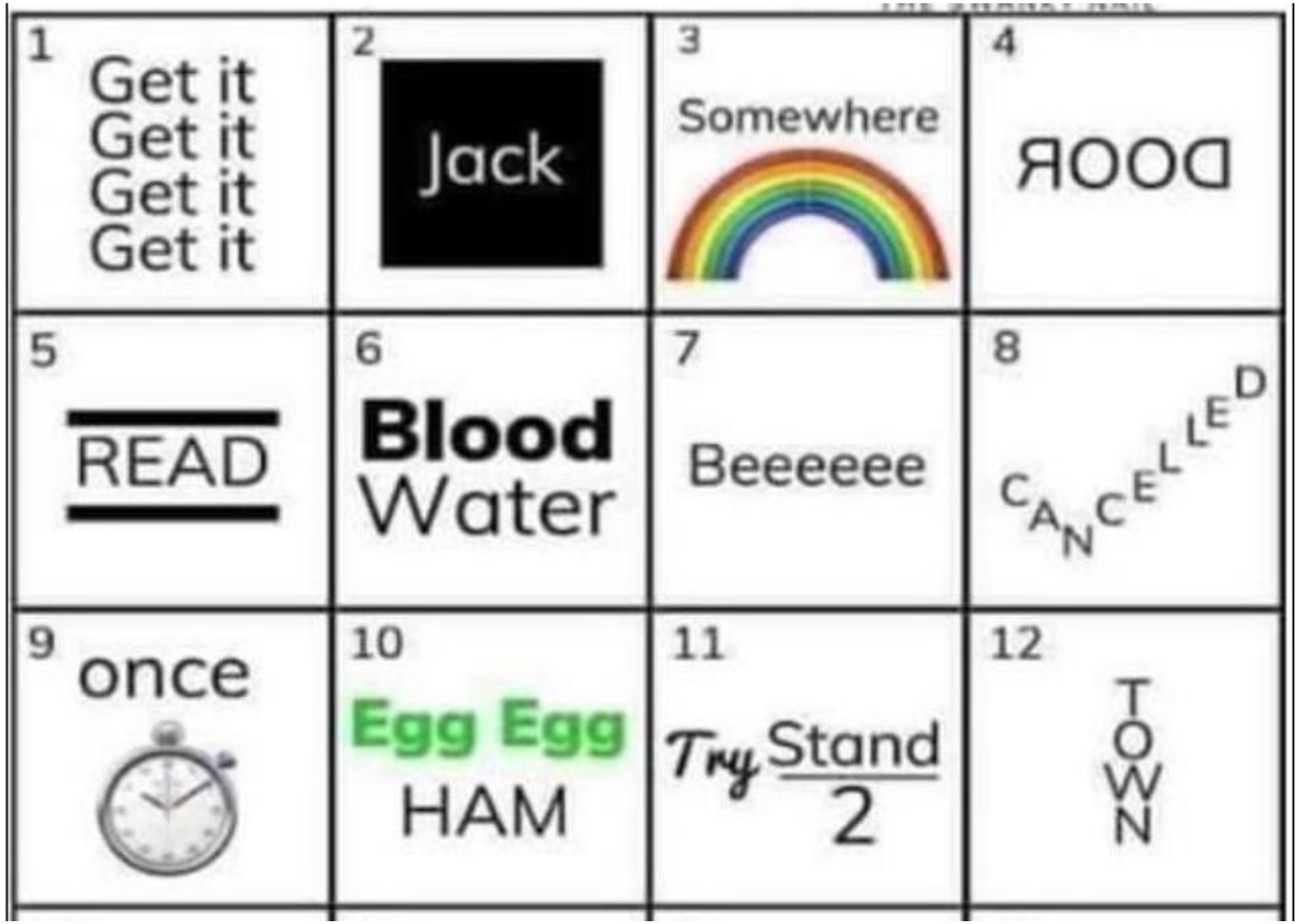
NCETM
NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS

MATHS HUBS
VENN ESSEX

Something to get you warmed up - work out all the phrases shown in these pictures!



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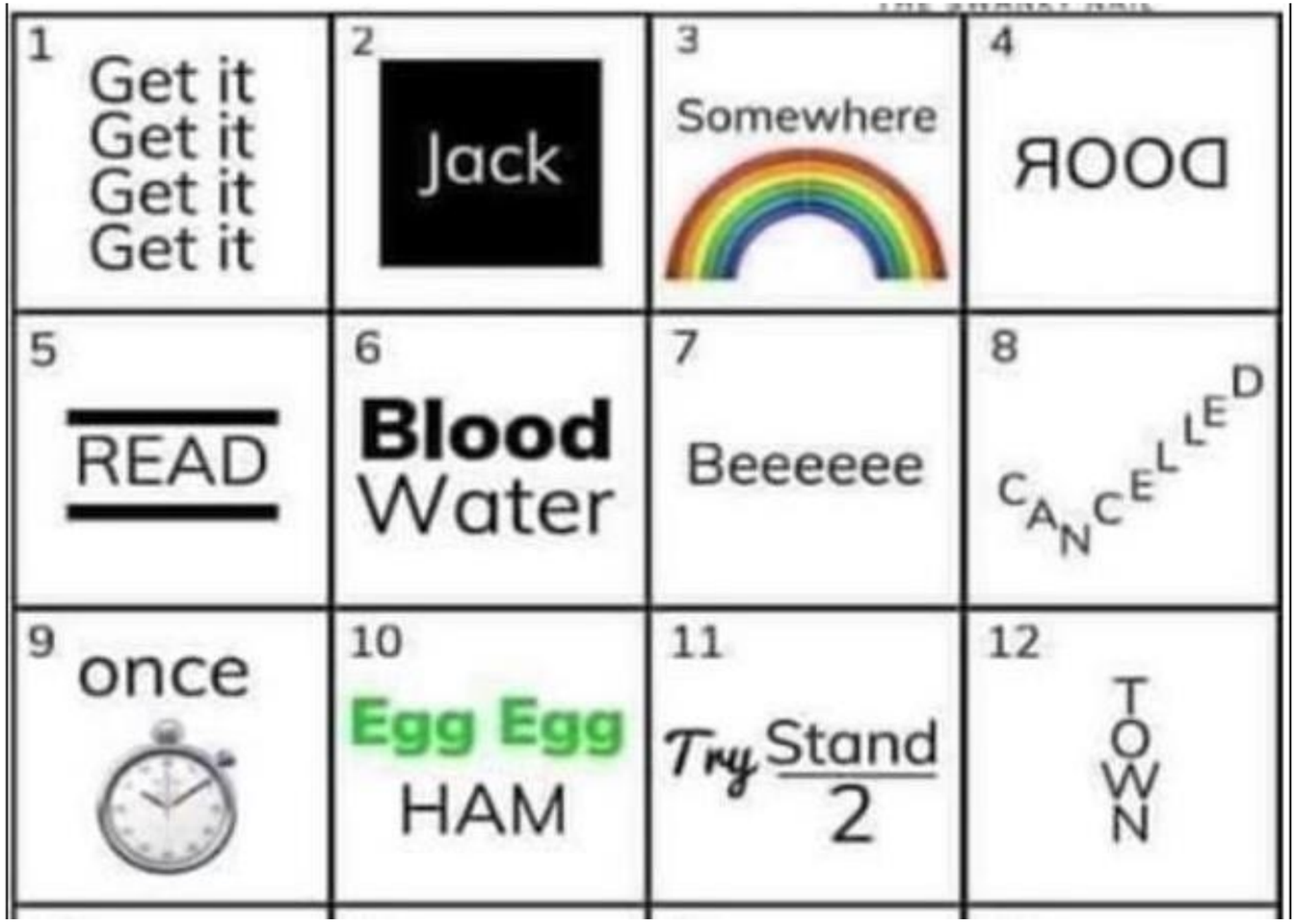



1. Forget it
2. Jack in the box
3. Somewhere over the rainbow
4. Back door
5. Read between the lines
6. Blood is thicker than water
7. Bee line
8. Cancelled cheque
9. Once upon a time
10. Green eggs and ham
11. Try to understand
12. Downtown

# Maths Principles at Holy Cross

1. We will mathematise the world around us.
2. We will use manipulates to expose different mathematical structures but we will make maths more than the manipulatives.
3. We recognise receptive understanding – we will use the mathematical vocabulary to help children develop and explain their thinking.
4. We will get mathematics into the children's eyes, ears, hand and feet.
5. We will scaffold children to construct their own thinking.

# Maths Principles at Holy Cross

## BUT MOST IMPORTANTLY…….

Thinking is at the heart of Mathematics and therefore should be at the heart of Mathematical teaching and learning. At Holy Cross we believe that all our children can do Maths (and do it well) because we aim to develop children's thinking.

# Aims of today's meeting

- To gain an understanding of the National Maths curriculum and expectations.
- To get an insight into what it means to be fluent and why fluency is important.
- To gain an understanding of KIRFs at Holy Cross
- To take away some ideas to support your children at home.

# What does the National Curriculum say?

- The national curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

# Consistency

- **We aim to be consistent in:**

**The manipulatives that we use across the school.**

**The mathematical vocabulary that we use**

**The way maths is taught.  To help us achieve this aim we use Power Maths and White Rose resources**

**The use of KIRFs (Key Instant Recall Facts) from Reception to Year 6. Your child will be coming home with the Yearly KIRFs sheet. We hope that you enjoy working alongside your children with this mathematics work.**

**Should you have any questions about the KIRFs , please do not hesitate to contact the school**

# What does it mean to be fluent?

- **Fluency is the "quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics." (NCETM, 2017)**

# What does it mean to be fluent?

- **Let’s have a go….**

**How would you calculate 8.5 X 11?**

**Discuss and work out with your partner**

# Maths – KIRFs

## Key Instant Recall Facts (KIRFs) Progression

| Year Group | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|---|---|---|---|---|---|---|
| Reception | I can recognise quantities to five without needing to count them. | I can recognise and recall numbers to 10. | I can order and count numbers from 0 to 10, forwards and backwards in a sequence. | I can work out 1 more or 1 less than a given number to 10. | I can identify groups with the same number of things. | I can partition numbers to 5 into two groups. |
| Year 1 | I know one more and one less with numbers up to 10. | I know number bonds for each number to 5. | I know number bonds for each number to 10. | I know number bonds to 10 (addition and subtraction facts). | I know doubles and halves of numbers to 10. | I can tell the time using o'clock and half past. |

# Maths – KIRFs

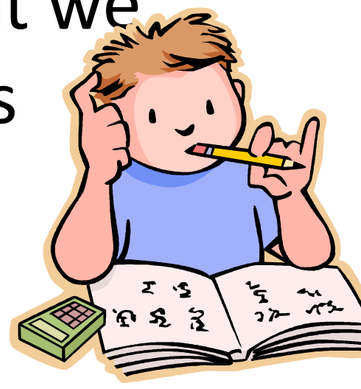
| | | | | | | |
|---|---|---|---|---|---|---|
| Year 2 | I know number bonds to 20. | I know the multiplication and division facts for the 2 times table. | I know doubles and halves of numbers to 20. | I know the multiplication and division facts for the 5 times table. | I know the multiplication and division facts for the 10 times table. | I can tell the time using quarter past and quarter to. |
| Year 3 | I know number bonds for all numbers to 20. | I know the multiplication and division facts for the 3 times table. | I can tell the time to the nearest 5 minutes. | I can recall facts about duration of time. | I know the multiplication and division facts for the 4 times table. | I know the multiplication and division facts for the 8 times table. |
| Year 4 | I know number bonds to 100. | I know the multiplication and division facts for the 6- and 12-times table. | I know the multiplication and division facts for the 9- and 11-times table. | I know the multiplication and division facts for the 7 times table. | I can multiply and divide single-digit numbers by 10 and 100. | I can recall decimal equivalents of fractions. |
| Year 5 | I can double and half any number up to 100. | I know the multiplication and division facts for all times tables up to 12 × 12. | I can find factor pairs of a number. | I can recall square numbers up to $12^2$ and their square roots. | I know decimal bonds to 1 and 10. | I can recall metric conversions. |
| Year 6 | I know the multiplication and division | I can identify common factors of a pair of numbers. | I know common decimals. | I can identify prime numbers up to 50. | I know the formulae for finding the | I know the first 5 cube numbers. |

# Key Instant Recall Facts (KIRFs)

Key Instant Recall Facts or KIRFs are those “pieces” of mathematical knowledge that we expect children to know off-by-heart.

They need to be constantly practiced and rehearsed at home as well as school - in order for children to be able to recall them quickly, confidently and accurately.

The demands of the New Primary National Curriculum ensures that we now place greater emphasis on  improving the fluency of children’s mathematical understanding.



# What does research say?

- Learning key facts ‘by heart’ enables children to concentrate on the calculation which helps them to develop calculation strategies.
- Using and applying strategies to work out answers helps children to acquire and so remember more facts.
- Many children who are not able to recall key facts often treat each calculation as a new one and have to return to first principles to work out the answer again.
- Once they have a secure knowledge of some key facts, and by selecting problems carefully, you can help children to appreciate that from the answer to one problem, other answers can be generated.

# KIRFs and Vocabulary

- **Helps children to clarify their thinking**
- **Exposes the ‘why’ of maths**
- **Helps children to explain their thinking**
- **Some vocabulary are included in KIRFs**

# Fluency - Efficiency

- **This  frees up working memory.  We  can hold between 3 and 7 ideas in their short term/working memory at once but we have an infinite capacity in our long term memory.**

- **By committing facts and knowledge about numbers to memory it has the potential to improve the short term memory and reduce cognitive overload. Efficiency allows children not to be bogged down in too many steps.**

- **A good strategy is If I know….. then I also know….this stops children from over relying on always counting from 1**

# Fluency - Efficiency

**If I know….. then I also know**

**3 + 4 = 7**

**3 tens + 4 tens = 7 tens**

**3 million + 4 million = 7 million**

**3 cats + 4 cats = 7 cats**

**£3 + £4 = £7**

$$\frac{3}{9} + \frac{4}{9} = \frac{7}{9}$$

**3 tenths + 4 tenths = 7 tenths (0.3 + 0.4 = 0.7)**

**3 groups of 7 + 4 groups of 7 = 7 = 3 X 4 + 4 X 7 =**

**7 X 7**

**3X + 4x = 7X**

# Fluency - Accuracy

**Children accurately apply what they know – they calculate accurately as part of their problem-solving process.**

**They record carefully, apply their knowledge of number facts and number relationships and double check their results.**

# Fluency - Flexibility

**Children make connections in Maths.**

**The are competent in more than one approach to solving a particular problem such as two-digit multiplication.  They chose the correct approach for the correct problem.**

# How can you support your child at home

- **Talk , talk, talk**
- **The KIRFs have some suggested ideas**
- **Make maths a part of daily routine**
- **TimeTable Rock Start/Numbots (logins will be sent home). Teacher may also set homework on here.**
- **White Rose 1 minute app**
- **Numberblocks**
- **Try using …if you know this then what else do you also know?**

# Thank you for coming.

# Any questions?