Marvellous Maths Workshop
Year Six

Creativity Excellence Resilience

Aims

- To develop understanding of how Maths is taught at Bridge
- To explain end of year expectations
- To share ideas for supporting pupils at home

Curriculum

- **Fluency**
- **Reasoning**
- **Problem solving**

Curriculum

- **Fluency**: The development of conceptual understanding and the ability to recall and apply knowledge rapidly and accurately through varied and frequent practice with increasingly complex problems over time.
- **Reasoning:**
- **Problem Solving:**

Curriculum

- **Fluency**: The development of conceptual understanding and the ability to recall and apply knowledge rapidly and accurately through varied and
- **Reasoning**: The ability to talk about relationships, make generalisations, develop an argument, justification or proof using mathematical language.
- **Problem solving**:

Curriculum

- **Fluency**: The development of conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **Reasoning**: The ability to talk about relationships, make generalisations, develop an argument, justification or proof using mathematical language.
- **Problem solving**: Applying maths to solve problems and persevere to seek solutions.

Areas of Learning

- **Number**
  - * Number & Place Value
  - * Addition & Subtraction
  - * Multiplication & division
  - *Fractions (inc Decimals and percentages)
  - *Ratio and proportion
  - *Algebra
- **Measurement**
- **Geometry**
  - *Shape
  - *Position & direction

Year Six Expectations for Number and Place Value

- read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
- round any whole number to a required degree of accuracy
- use negative numbers in context, and calculate intervals across zero
- solve number and practical problems that involve all of the above.

Year Six Calculations Expectations

- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- perform mental calculations, including with mixed operations and large numbers
- identify common factors, common multiples and prime numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

How do we do this?

- **Concrete**
- **Pictorial**
- **Abstract**

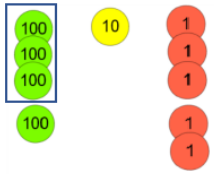
How do we do this?

- **Concrete –** use of real objects and manipulatives
- **Pictorial –** (representational) pictures to illustrate manipulatives
- **Abstract –** numbers and calculations

Calculations

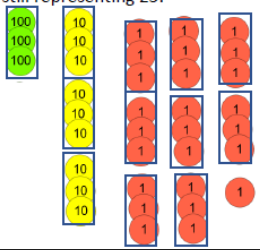
Short division with exchange and remainders

415 ÷ 3 =

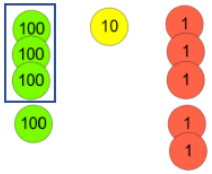


Children group the 400 in groups of 300 still. The remaining 100 is exchanged for 10 10s. Still representing 110.

Children group the 110 in groups of 30 to reveal 3 groups. The remaining 2 10s are exchanged for 20 1s still representing 25.



415 ÷ 3 =



Children are to draw pictures and write as written algorithm.

$$\begin{array}{r|l} & \overset{1}{} \\ 3 & 4\ {}^{1}1\ 5 \end{array}$$

Exchange and regroup.

$$\begin{array}{r|l} & 3 \\ 3 & 4\ {}^{1}1\ {}^{2}5 \end{array}$$

Exchange and regroup.

415 ÷ 3 =

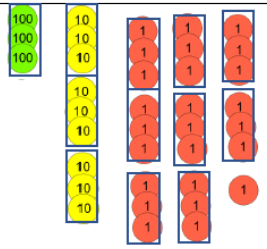
$$\begin{array}{r|l} & 1\ 3\ 8\ \text{r}\ 1 \\ 3 & 4\ {}^{1}1\ {}^{2}5 \end{array}$$

When children are confident enough to use more abstract approaches, involving exchanges use the method above.

Discuss with the children the need for the digits and what they represent as you progress through the algorithm.

Children group the 25 in to 8 groups of 3 and show they have 1 remainder.
Write out as you model using the manipulatives

$$\begin{array}{r|l} & 1\ 3\ 8\ \text{r}\ 1 \\ 3 & 4\ 1\ 5 \end{array}$$



$$\begin{array}{r|l} & 1\ 3\ 8\ \text{r}\ 1 \\ 3 & 4\ {}^{1}1\ {}^{2}5 \end{array}$$

Keep writing as you go.

Developing an abstract view…

Number Facts

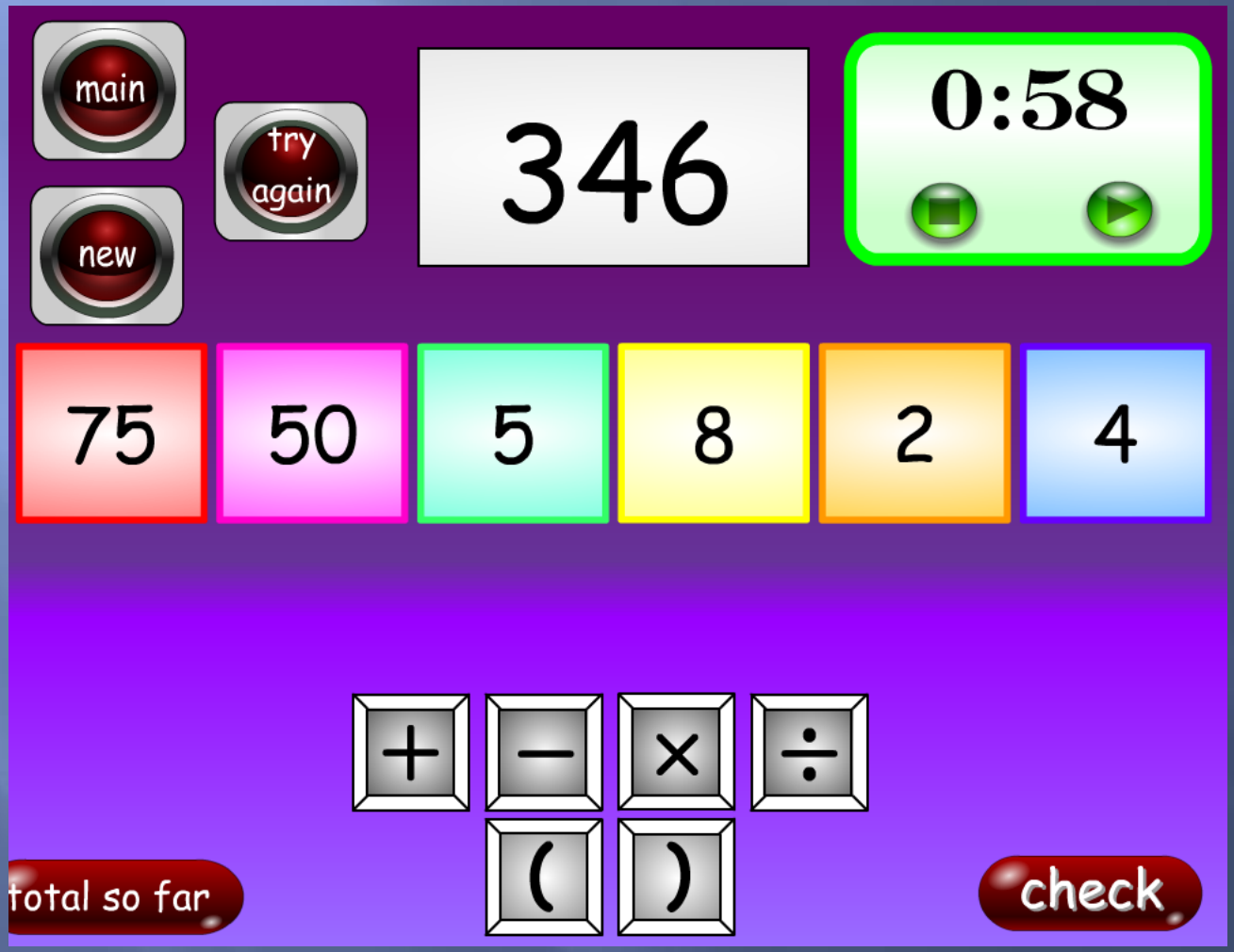
5888 ÷ 32

1 x 32 = 32 (Number stays the same)
2 x 32 = 64 (Double 1 x 32)
3 x 32 = 96 (Add 32 to 2 x 32)
4 x 32 = 128 (Double 2 x 32)
5 x 32 = 160 (Half 10 x 32)
6 x 32 = 192 (Double 3 x 32)
7 x 32 = 224 (6 x 32 + 32)
8 x 32 = 256 (Double 4 x 32)
9 x 32 = 288 (8 x 32 + 32 or 10 x 32 – 32 (whichever is easiest)
10 x 32 = 320 (Place value 10 x 32)
11 x 32 = 352 (10 x 32 add 32)
12 x 32 = 384 (10 x 32 + 2 x 32)

Daily Maths Lessons

- Use manipulatives under visualizer and pictorial representations on interactive board
- Partners
- Practical activity or game
- Recording (Fluency & Problem Solving)
- Reasoning (Possibly scribed for the child)
- Morning Maths sessions
- Friday Arithmetic sessions

Countdown



Creativity Excellence Resilience

Quick Fire…

7 + 2 =	9 + 6 =	8 + 3 =	1 + 9 =
17 + 2 =	10 + 6 =	10 + 3 =	2 + 8 =
7 + 12 =	11 + 6 =	12 + 3 =	3 + 7 =
17 + 12 =	13 + 6 =	3 + 14 =	6 + 4 =

The odd one out…

55

121

71

13

921,129

True or False

7,563 ÷ 3 = 528 x 9
572 x 20 = 11,450
3,404 ÷ 23 = 149
284 x 23 = 6,553

To Finish

- How would we build on this in class?
- All operations built upon the C,P, A approach.
- Times Table Rock stars

Any Questions?