Year 5

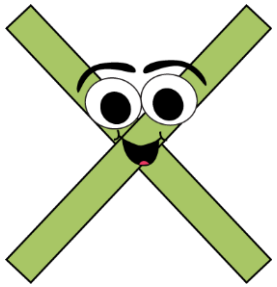
Coffee and Calculations

Aims of the National Curriculum

Fluent recall of **mental maths facts** e.g. times tables, number bonds. Etc.

To **reason** mathematically – children need to be able to **explain** the mathematical concepts with number sense; they must explain **how** they got the answer and **why** they are correct.

Problem solving – applying their skills to real-life contexts.



MULTIPLICATION

National Curriculum Objectives:

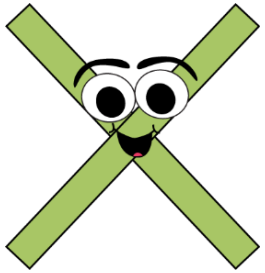
Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers

Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers

Establish whether a number up to 100 is prime and recall prime numbers up to 19

Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

Multiply and divide numbers mentally drawing upon known facts



Vocabulary

Prime Number- A number with 2 factors, 1 and itself

Factor- A whole number that divides into a number

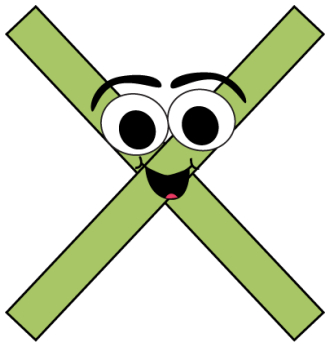
Multiple- Numbers in times tables

Square Number- When you multiply a number by itself the answer you get is a square number

Times Table Rockstars

Same but different?

Leading to multiplication using a compact method	Compact for TU × TU
3 7 8 × 5 5 7 2 6 4 6 4 5 6 9 × 4 5 7 8 3 8 5 5 2	28 × 39 2 8 × 2 3 7 9 2 5 2 8 4 0 1 0 9 2 567 × 86 5 6 7 4 8 4 6 3 5 3 4 0 2 4 5 3 6 0 4 8 7 6 2



Rally Coaching (Fluency)

1 Complete the following

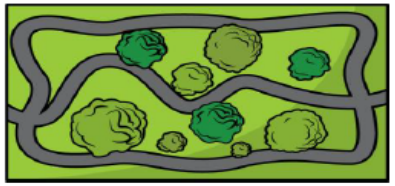
$$\begin{array}{r} 132 \\ \times\ 14 \\ \hline 528 \quad (132 \times 4) \\ 1320 \quad (132 \times 10) \\ \hline \\ \hline \end{array}$$

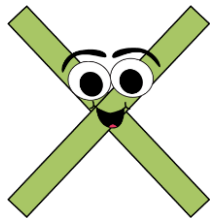
$$\begin{array}{r} 563 \\ \times\ 29 \\ \hline \\ + \quad \hline \\ \hline \end{array} \quad \begin{array}{l} (\square \times \square) \\ (\square \times \square) \end{array}$$

2 Complete the following

637 × 24 | 573 × 28 | 426 × 35

3 A playground is 128 yards by 73 yards.
Calculate the area of the playground.





1 Use the method shown to complete.

$$\begin{array}{r} 3250 \\ \times\ 26 \\ \hline 19500 \quad (\square \times \square) \\ + \ 65000 \quad (\square \times \square) \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 2456 \\ \times\ 34 \\ \hline \\ + \quad \hline \\ \hline \end{array} \quad \begin{array}{l} (\square \times \square) \\ (\square \times \square) \end{array}$$

2 Calculate:

3,282 × 32 | 7,132 × 21 | 9, 708 × 38

3 Put <, > or = in each circle to make the statements correct.

4,458 × 56 ◯ 4,523 × 54

4,458 × 55 ◯ 4,523 × 54

Reasoning and Problem Solving

Joe has answered 47 × 36

$$\begin{array}{r} 47 \\ \times\ 36 \\ \hline 282 \\ 141 \\ \hline 323 \end{array}$$

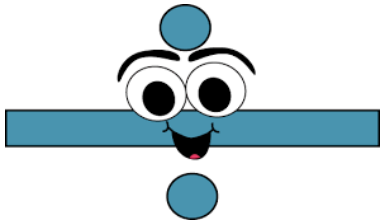
Alice says:

The answer should be 1,692, not 323

Who is correct?
Explain how you know.

Can you spot and correct the errors in the calculation below.

$$\begin{array}{r} 2534 \\ \times\ \ 23 \\ \hline 7592 \\ 5068 \\ \hline 12660 \\ \hline \end{array}$$

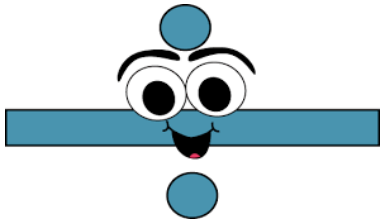


DIVISION

National Curriculum Objectives:

Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000



Division leading to formal division

578 ÷ 7

```
    8 2 r 4
  ---------
7 | 5 7 8
    5 6 0
    -----
      1 8
      1 4
      -----
        4
```

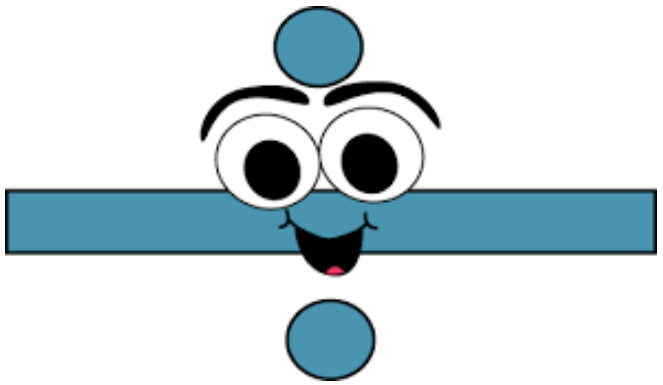
Formal (short) Division

638 ÷ 8

```
      7  9 r 4
    ----------
8 | 6 (6)3 (7)8
```

6725 ÷ 7

```
     0  9  6  0 r5
   ---------------
7 | 6 (6)7 (4)2 5
```



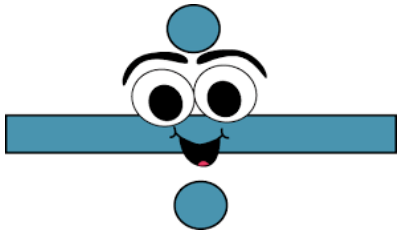
Rally Coaching

3 Use < > or = to compare the statements

$3{,}495 \div 5 \bigcirc 3{,}495 \div 3$

$8{,}064 \div 7 \bigcirc 9{,}198 \div 9$

$7{,}428 \div 4 \bigcirc 5{,}685 \div 5$



Use this method to solve the following questions.

$6{,}613 \div 5$ $2{,}471 \div 3$ $9{,}363 \div 4$

2 Muffins are packed in trays of 6 in a factory.
In one day a factory makes 5,623 muffins.

- How many trays do they need per day?
- How many full trays do they have at the end of the day?

3 For the calculation, 8,035 ÷ 4, can you:

- Write a number story where you have to round the remainder up and one where you round down.
- Write a number story where you have to find the remainder.

FRACTIONS, DECIMALS AND PERCENTAGES

National Curriculum Objectives:

Compare and order fractions whose denominators are all multiples of the same number

Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths

Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 5 2 + 5 4 = 5 6 = 1 5 1]

Add and subtract fractions with the same denominator and denominators that are multiples of the same number

Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

Equivalent Fractions

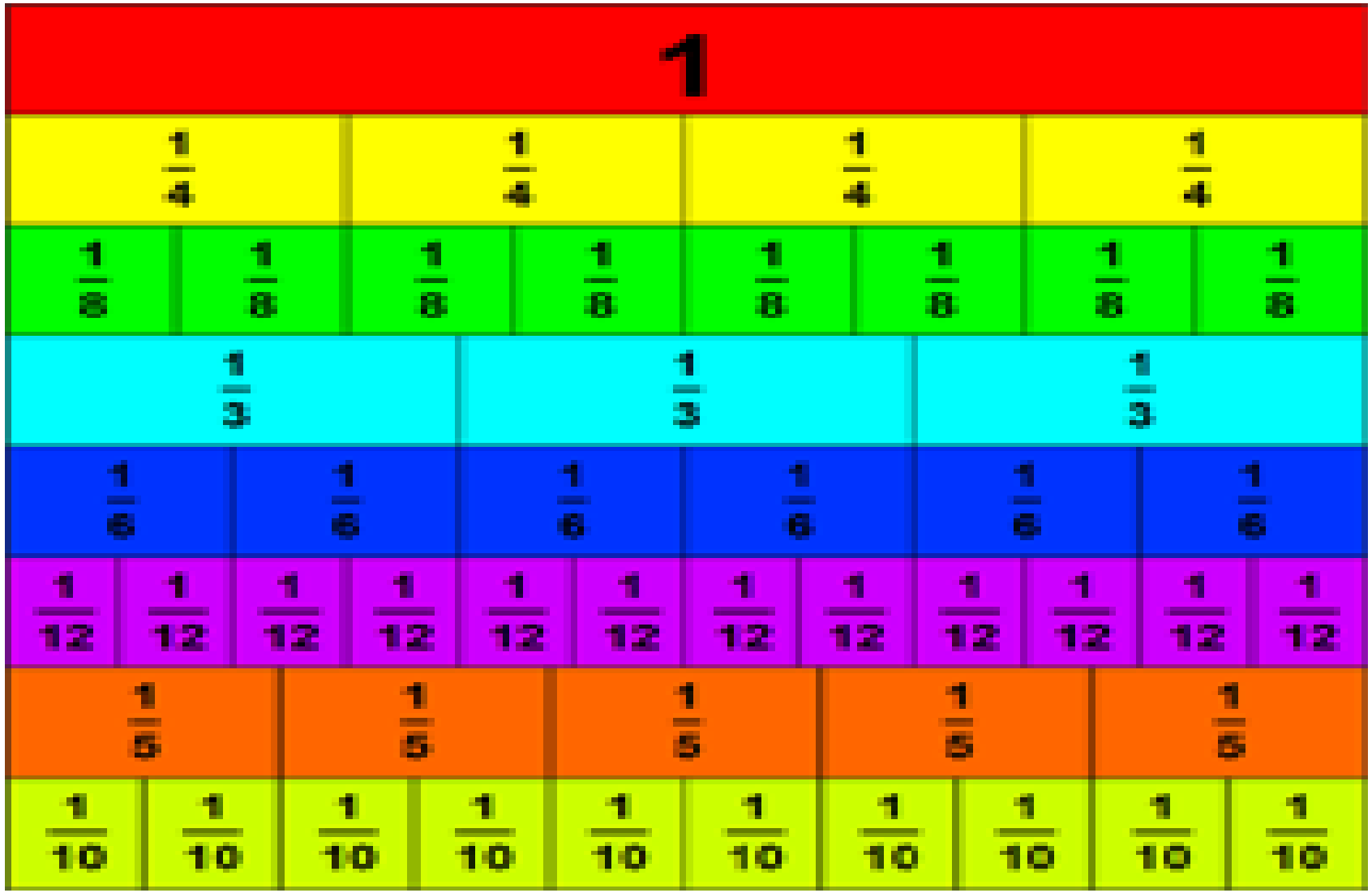
Take a strip of paper. Fold it into half.

Take another strip of paper. Fold into quarters.

Another, fold into eighths.

Another sixteenths.

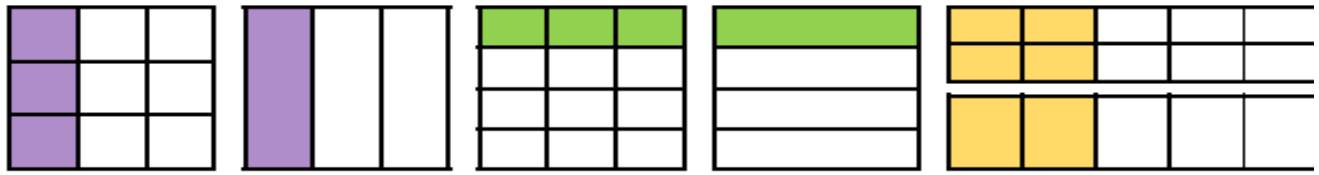
What equivalent fractions can you see? What patterns can you see?


1
1/4 1/4 1/4 1/4
1/8 1/8 1/8 1/8 1/8 1/8 1/8 1/8
1/3 1/3 1/3
1/6 1/6 1/6 1/6 1/6 1/6
1/12 1/12 1/12 1/12 1/12 1/12 1/12 1/12 1/12 1/12 1/12 1/12
1/5 1/5 1/5 1/5 1/5
1/10 1/10 1/10 1/10 1/10 1/10 1/10 1/10 1/10 1/10

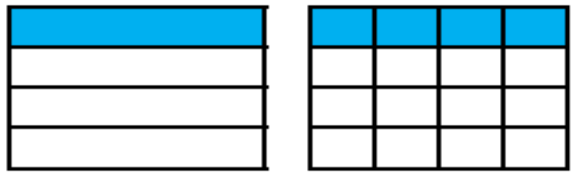
Equivalent Fractions

Maths Hunt

Use the models to write equivalent fractions.



2 Emma uses the models and her multiplication and division skills to find equivalent fractions.



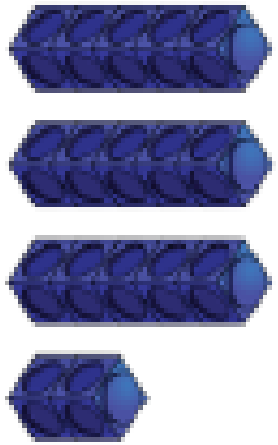
$\frac{1}{4} = \frac{4}{16}$ (× 4 above, × 4 below)

Use this method to find equivalent fractions to $\frac{2}{4}$, $\frac{3}{4}$ and $\frac{4}{4}$ where the denominator is 16

3 Emma uses the same approach to find equivalent fractions for these fractions. How will her method change?

$\frac{4}{12} = \frac{\square}{3}$ $\quad$ $\frac{6}{12} = \frac{\square}{4}$ $\quad$ $\frac{6}{12} = \frac{\square}{2}$

Mixed Numbers and Improper Fractions

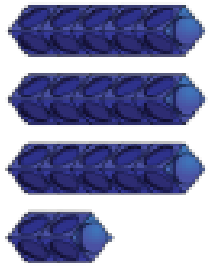
Step 1: Start with mixed number	Step 2: Build the mixed number using cubes. Think carefully about how many parts make a whole.	Step 3: Count the number of cubes to find the numerator of the improper fraction
$3\frac{2}{5}$		$3\frac{2}{5} = \frac{17}{5}$

Mixed Numbers and Improper Fractions

Use this method to convert 2 2/3

2 3/5

3 3/4

Step 1: Start with mixed number	Step 2: Build the mixed number using cubes. Think carefully about how many parts make a whole.	Step 3: Count the number of cubes to find the numerator of the improper fraction
$3\frac{2}{5}$		$3\frac{2}{5} = \frac{17}{5}$

Mixed Numbers and Improper Fractions

To convert mixed numbers to improper fractions, multiply the whole number by the denominator and add the remaining numerator.

3 2/5 = 3x5=15 + 2 = 17/5

Mixed Numbers and Improper Fractions

To convert an improper fraction to a mixed number, divide the numerator by the denominator. Write the remainder as a fraction.

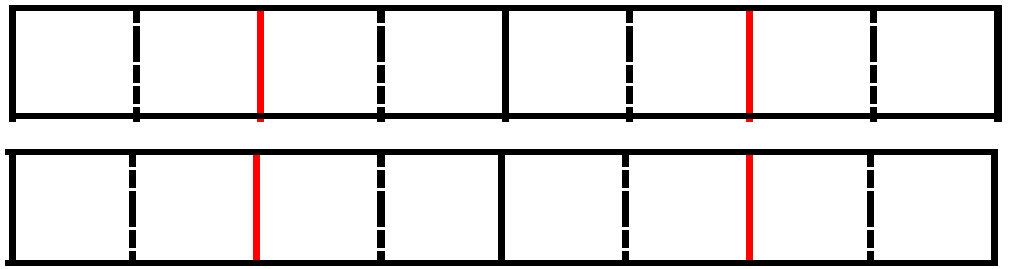
Eg 17/5 = 17 divided by 5 = 3 remainder 2=3 2/5

QUIZ, QUIZ, TRADE

Adding and Subtracting Fractions

2 Use the bar model to add the fractions. Record your answer as a mixed number.

$\frac{3}{4} + \frac{3}{8} + \frac{1}{2} =$



Draw your own models to solve:

$\frac{5}{12} + \frac{1}{6} + \frac{1}{2}$

$\frac{11}{20} + \frac{3}{5} + \frac{1}{10}$

$\frac{3}{4} + \frac{5}{12} + \frac{1}{2}$