Year 6

Coffee and Calculations

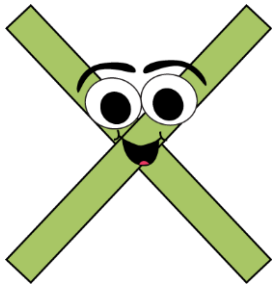
Aims of the National Curriculum

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.

Vocabulary Bingo



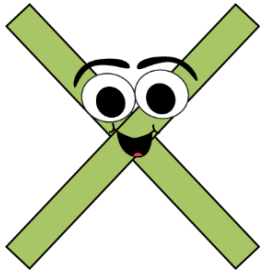
MULTIPLICATION

National Curriculum Objectives:

Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.

Perform mental calculations, including with mixed operations and large numbers.

Identify common factors, common multiples and prime numbers.



Rally Coaching

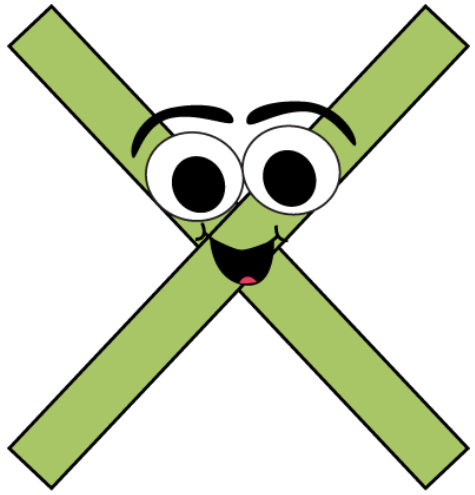
22

$$\begin{array}{r} 4781 \\ \times\ \ 23 \\ \hline \end{array}$$

Show your method

3749×38

$$\begin{array}{r} 3749 \times \\ 38 \\ \hline 29922 \\ 112470 \\ \hline 142392 \end{array}$$

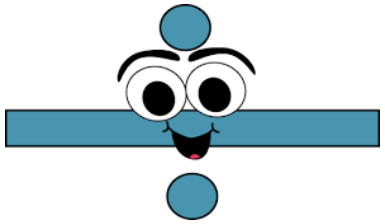


24

$$\begin{array}{r} 418 \\ \times\ \ 46 \\ \hline \end{array}$$

Show your method

2 marks

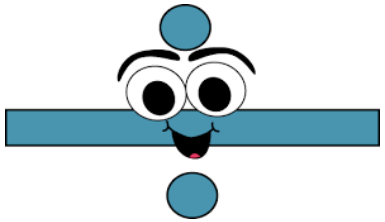


DIVISION

National Curriculum Objectives:

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



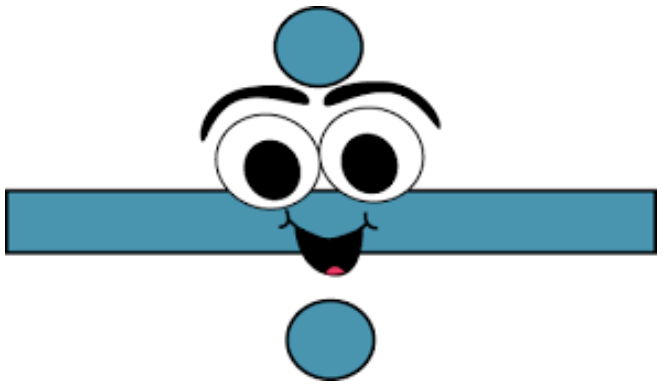
Rally Coaching

20

17 | 7 1 4

Show your method

Short Division	Long Division drawing on known facts
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	493 ÷ 15 32 r 13/15 15 | 4 9 3 4 5 0 4 3 3 0 1 3



36

59 | 2 2 4 2

Show your method

2 marks

FRACTIONS, DECIMALS AND PERCENTAGES

National Curriculum Objectives:

Use common factors to simplify fractions; use common multiples to express fractions in the same denomination

Compare and order fractions, including fractions >1

Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

Multiply simple pairs of proper fractions, writing the answer in its simplest form

Divide proper fractions by whole numbers

Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction

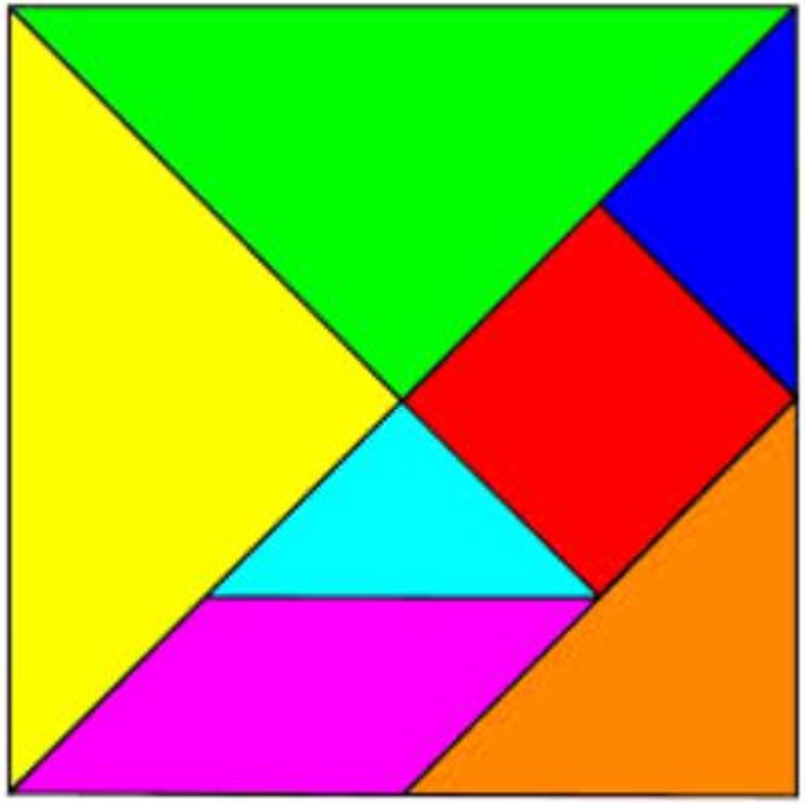
Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places

Multiply one-digit numbers with up to 2 decimal places by whole numbers

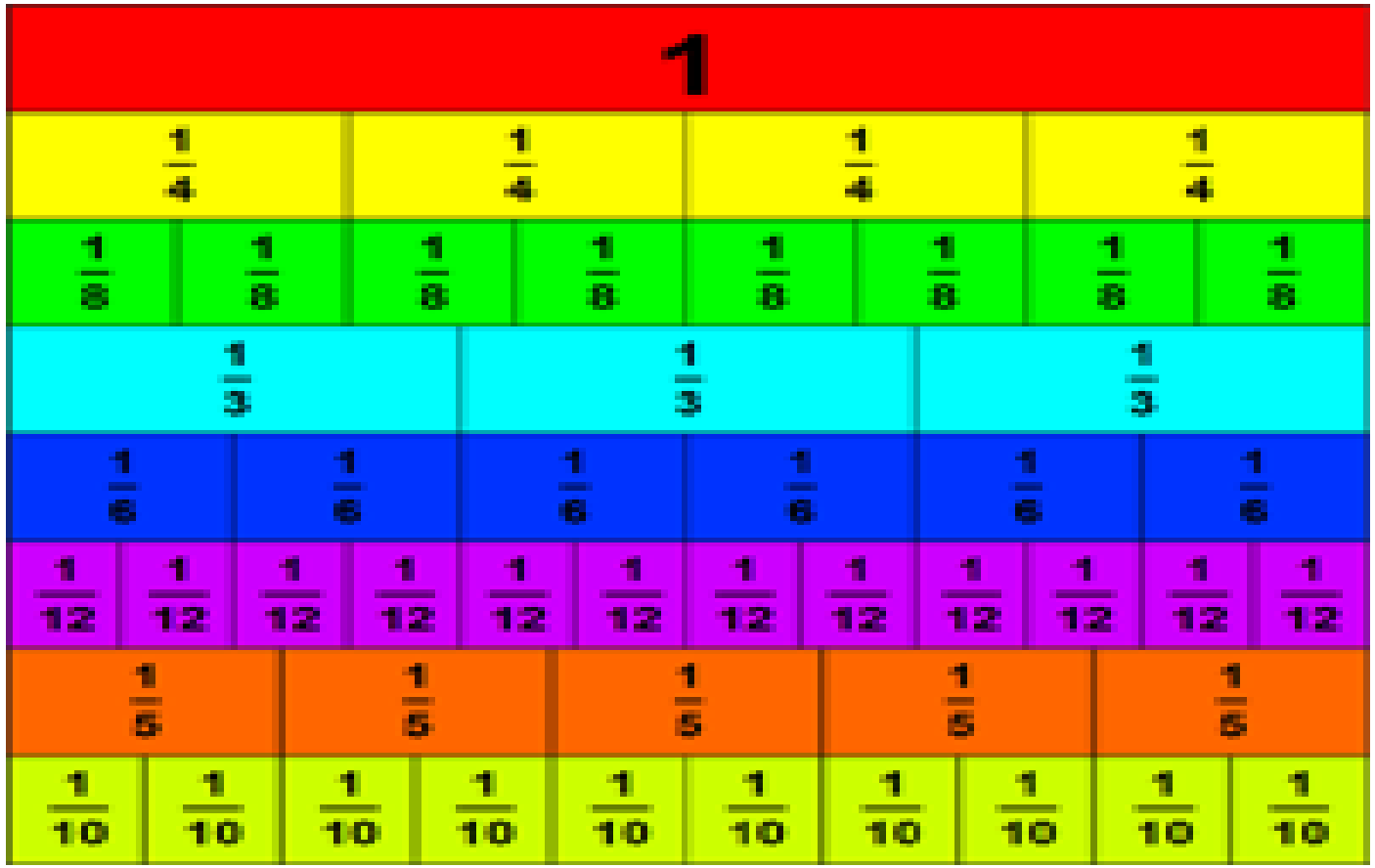
Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

FRACTIONS

Corrrect or Incorrect



Equivalent Fractions



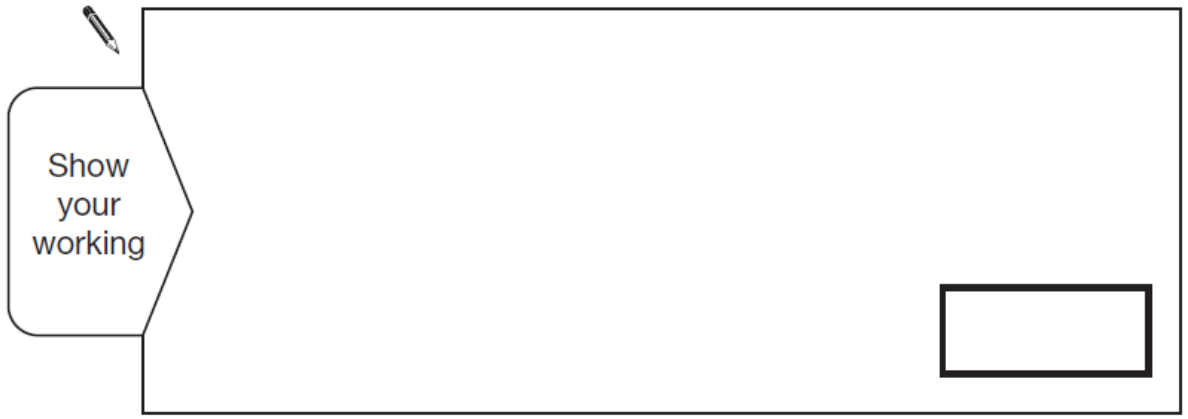
Fraction strips

How can the fraction wall/strip help children make sense of problems like this?

24 In a class, 18 of the children are girls.

A quarter of the children in the class are boys.

Altogether, how many children are there in the class?



Simplifying fractions

Some fractions can be made simpler by finding the highest common factor . (The highest number that will go into both parts of the fraction.)

Eg for 8/10 both the numerator and denominator can be divided by 2 to give 4/5.

16/24 Both the numerator and denominator can be divided by 2, 4 and 8. The highest common factor (HCF) is 8, so this fraction can be simplified to give 2/3.

ACTIVE MATHS

Adding and Subtracting Fractions

Order the calculations on your sheets from easiest to hardest

12 $\frac{62}{100} - \frac{38}{100} =$ 1 mark

23 $\frac{3}{4} - \frac{3}{8} =$ 1 mark

26 $\frac{1}{4} + \frac{1}{5} + \frac{1}{10} =$ 1 mark

24 $\frac{4}{7} + \frac{5}{7} =$ 1 mark

32 $\frac{2}{6} - \frac{1}{8} =$ 1 mark

30 $2\frac{1}{3} + \frac{5}{6} =$ 1 mark

Adding and Subtracting Fractions

If fractions have common denominators, just add or subtract the numerators.

Convert improper fraction to a mixed number.

12 $\frac{62}{100} - \frac{38}{100} =$

1 mark

24 $\frac{4}{7} + \frac{5}{7} =$

1 mark

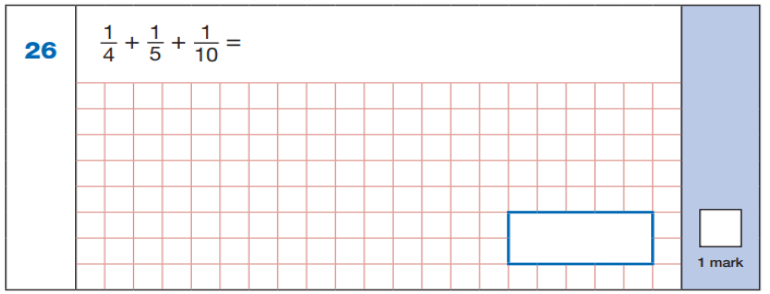
Adding and Subtracting Fractions

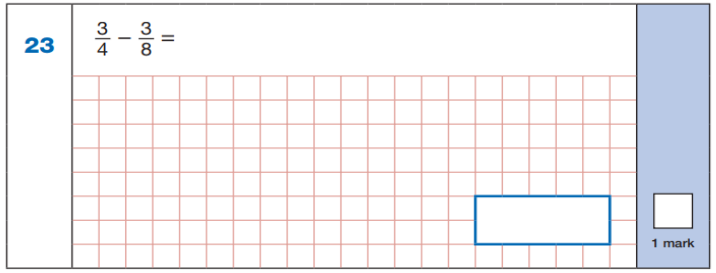
If fractions have different denominators, make the denominators same by finding the lowest common denominator.

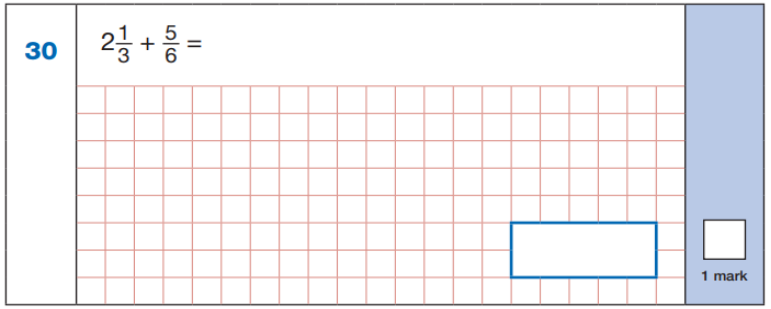
Convert to an equivalent fraction

Add or subtract the fractions

Convert an improper fraction to a mixed number.







Ordering and Comparing Fractions

Putting fractions in order of size can be difficult.

Convert all fractions into fractions that have the same denominator (just as with adding and subtracting fractions)

Try putting these fractions in order and prove to me that you are correct:

3/4

9/10

1/3

1 ¼

15/8

4/5

5/16

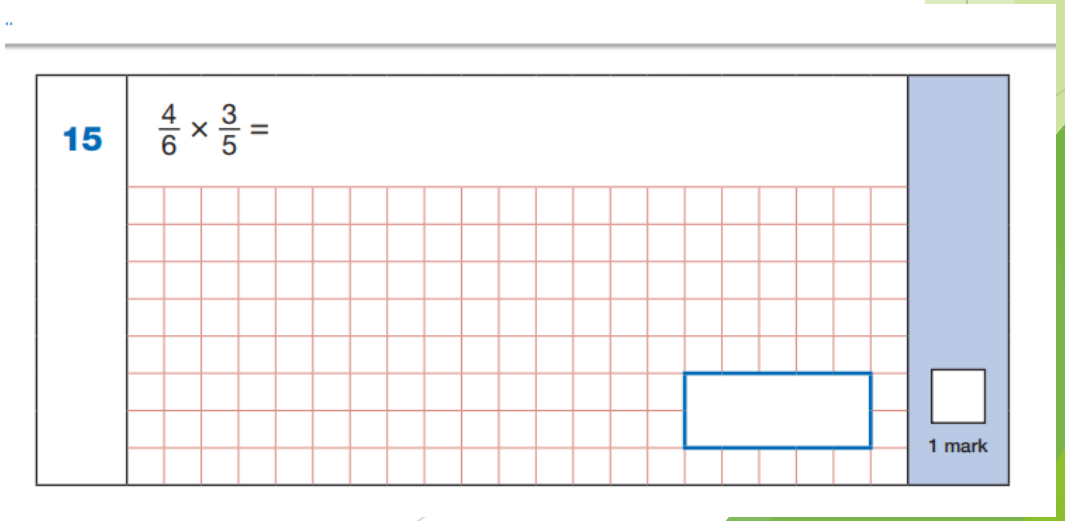
Multiplying Fractions

•It is useful to imagine the multiplication sign means ‘of’ so this calculation can be expressed as ‘what is ½ of ¾?’ and ‘what is ¾ of ½?’

• Multiply the numerators together and the denominators together.
½ x ¾ = 3/8

This answer is the same for both calculations above, as multiplications can always be done either way round and will give the same answer.

QUIZ,QUIZ, TRADE



Dividing fractions by whole numbers

Dividing fractions by whole numbers is easy if you know how.

To divide a fraction by a whole number, multiply the denominator by the whole number.

÷ 2 =

27 $\frac{4}{5} \div 4 =$

1 mark

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28 $\frac{5}{8} \div 2 =$

1 mark

Finding percentages of whole numbers

- To find 10% of any number, divide by 10. 10% of 360=36

- To find 5% of any number, divide by 10 and then halve that number.
  5% of 360=18

- To find 15% of any number, add 10% and 5% together.
  So for 360 = 36 + 18 = 54

- To find 1%, divide by 100. 1% of 360=3.6

Finding percentages of whole numbers

Work out the answers to the following:

Is there another way of doing it?

Which is most efficient and why?