KS2 Mathematics Parents' Information Evening

Tuesday 6th December 2022

Let your light shine

“Let your light shine before others that they may see your good deeds and glorify your Father in heaven.” Matthew 5:16

Kingsland CE Primary School

‘Let your light shine’

“Let your light shine before others that they may see your good deeds and glorify your Father in heaven.” Matthew 5:16

School Improvement Plan 2022 – 2023 Summary

Curriculum sequencing – knowing more and remembering more

The following issues have been identified through school self-evaluation procedures that include attainment and progress, data analysis, questionnaires, group discussions, pupil voice conversations and observations of teaching and learning.

Ofsted (O)	SIAMS (S)
Overall effectiveness – what is it like to attend the school?	How effective is the school’s distinctive Christian vision, established and promoted by leadership at all levels, in enabling pupils and adults to flourish?

A	The Quality of Education – Love to Learn (O) Wisdom, Knowledge and Skills (S2)			RAG
1	**Mathematics**	TfM – planning materials; curriculum sequencing; problem solving & number sense; fluency	SD / W. Maddocks	
2	**English**	Reading: reading book progression Writing: writing for a purpose	SD / AP / HW / H. Webb	
3	**EYFS**	Sequencing the EYFS curriculum; reading & maths progression; classroom resources & outside area	GC / S. Connop	
4	**Music curriculum**	Acapella singing; composition; instrument resource provision; musical moments; assessment	SD / SLT / all staff / Love to Learn governors	

Ofsted and the curriculum

- Progress means **KNOWING MORE AND REMEMBERING MORE**
- So a curriculum needs to carefully plan for that progress by considering the **BUILDING BLOCKS** and **SEQUENCE** in each subject
- **Change to long term memory**
- **Sticky knowledge**

Teaching for Mastery in Mathematics

What does mathematics look like at Kingsland?

National Curriculum for Mathematics

Aims

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.

Programmes of Study of the NC

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions (decimals / percentages / ratio / proportion)
- Measurement
- Geometry – properties of shapes
- Geometry – position and direction
- Statistics (Y2 – Y6)
- Algebra (Y6)

What is Teaching for Mastery in mathematics?

- For *all* children – a belief that ALL children can achieve
- To secure deep <u>understanding</u>
- To enable children to reason mathematically
- Whole class interactive teaching – ping pong
- Longer time to deepen understanding – not do more of the same
- Balance of factual fluency and conceptual understanding

If someone came to a Kingsland maths lesson, what would they see?

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- Whole class inclusive teaching – ping pong
- Pre-planned key questions
- Children speaking in full sentences
- Stem sentences that provide children with accurate mathematical language – repeated altogether
- Use of high quality images and representations
- Mathematical concepts being looked at from all angles – conceptual variation

If someone came to a Kingsland maths lesson, what would they see?

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- Work in books that shows small step progression through a mathematical concept
- Open ended problem solving activities
- Teachers spending time creating high quality lessons and resources rather than overly detailed marking
- Focussed, short / sharp paired talk
- A carefully planned journey of questions and activities through the concept

If someone came to a Kingsland maths lesson, what would they NOT see?

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- Learning being capped by highly differentiated groupings
- Repetitious questions in books which only allow children to see the concept from one angle
- Abstract teaching with no conceptual understanding
- Lots of unnecessary marking in books
- Learning by rules and success criteria
- Lots of ‘talk and chalk’ / listening with no interaction
- Children not engaging with the maths because it is too hard / too easy

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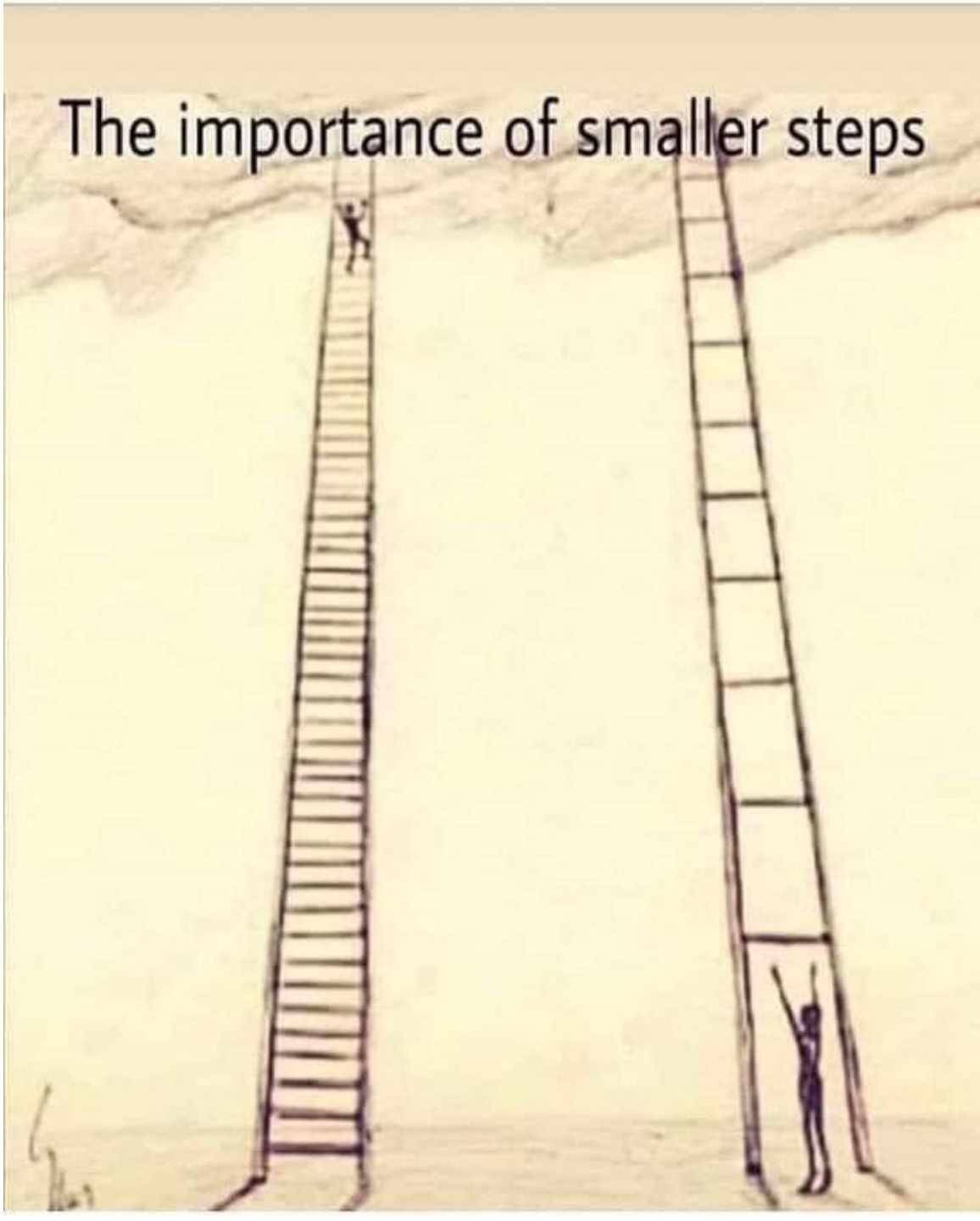
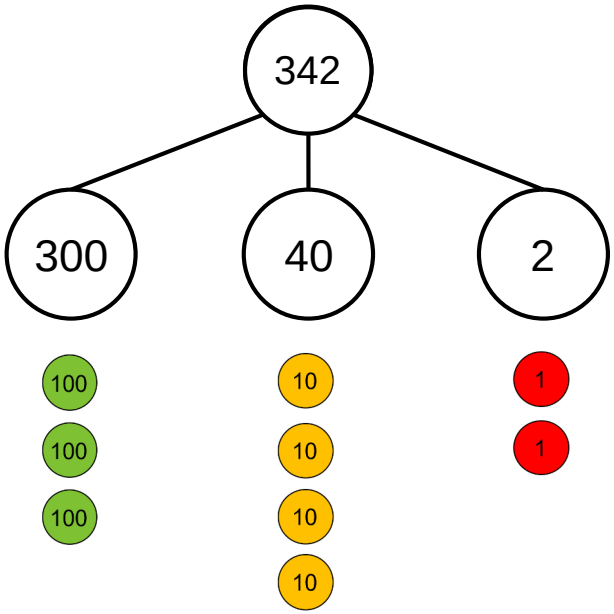
Teaching of Mathematics

What does Teaching for Mastery look like?

Developing children's NUMBER SENSE with small steps of learning

The small steps of learning

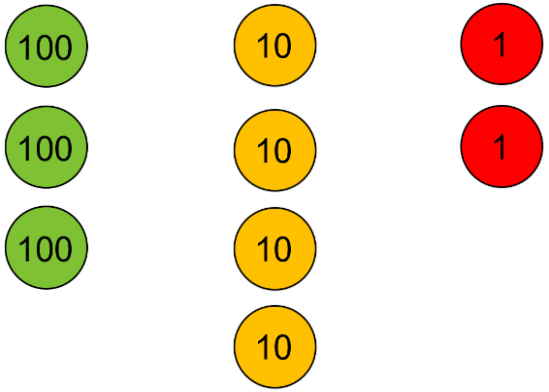




- Represent this number using place value counters and a part-part-whole model.
- What digit is in the tens place? What is the value of the hundreds digit?
- What does the 2 represent?

The 2 represents two ones.

- Repeat for different 3-digit numbers
- Show children representations of numbers either using part-part-whole or place value counters and ask them to write the value of each number represented.

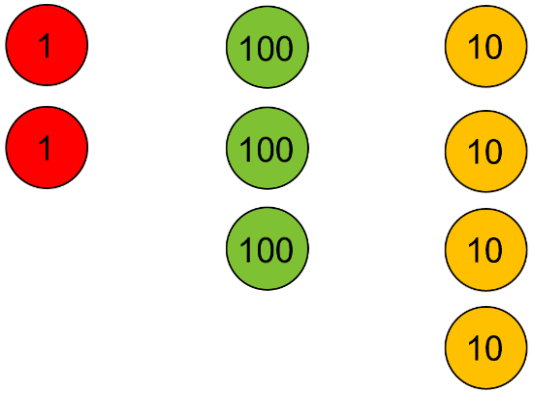


300 + 40 + 2 = 342

- Say the value of each column of counters.
- Click to reveal the value of each set of counters and write the total value as an addition equation.
- What is the value of the 4?

The 4 represents four tens.

- Repeat using representations of other 3-digit numbers.



2 + 300 + 40 = 342

- Say and reveal the value of each column of counters. Write the total value as an addition equation.
- What do you notice? Does is matter that the counters are in a different order?
- What is the value of the 3?

The 3 represents three hundreds.

- Repeat for other 3-digit numbers, using different arrangements.

342

100s	10s	1s
3	4	2

- Click to reveal each digit in turn. Use the language structures below to describe the value of each digit.

The digit in the hundreds place is 3. It has a value of 300.

The digit in the tens place is 4. It has a value of 40.

The digit in the ones place is 2. It has a value of 2.

- Repeat using other 3-digit numbers.

342

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9

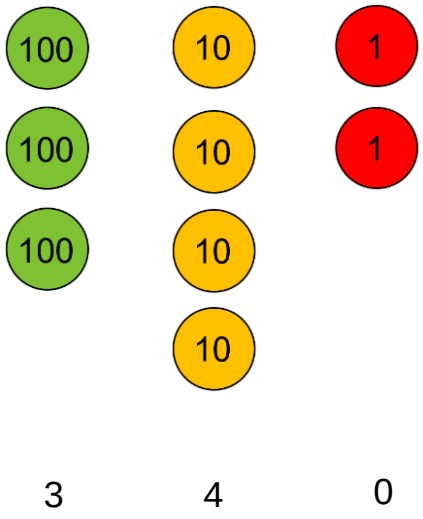
300 + 40 + 2 = 342

- Click to reveal a 3-digit number and represent the total value as an addition equation.
- Repeat for other 3-digit numbers including those containing a zero.

$$342 = 2 + 300 + \underline{\quad 40 \quad}$$

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9

- Complete the equation. What do you notice? Does it matter that the parts are in a different order?
- Write the equation with the parts in a different order. Does it make a difference to the total value?
- Use Gattegno charts and counters to build other 3-digit numbers, including those involving zero.



- What would happen if we took the two ones away? Click to reveal this on the representation. Write the number we now have. What does the zero represent?

The zero represents no ones.

- Show children other representations of 3-digit numbers using place value counters and ask them to subtract all of one digit. Write the number they are left with.
- If I took away five tens and I now have 601, what number did I start with?

4NF-1 Recall of multiplication tables

1 × 1	1 × 2	1 × 3	1 × 4	1 × 5	1 × 6	1 × 7	1 × 8	1 × 9	1 × 10	1 × 11	1 × 12
2 × 1	2 × 2	2 × 3	2 × 4	2 × 5	2 × 6	2 × 7	2 × 8	2 × 9	2 × 10	2 × 11	2 × 12
3 × 1	3 × 2	3 × 3	3 × 4	3 × 5	3 × 6	3 × 7	3 × 8	3 × 9	3 × 10	3 × 11	3 × 12
4 × 1	4 × 2	4 × 3	4 × 4	4 × 5	4 × 6	4 × 7	4 × 8	4 × 9	4 × 10	4 × 11	4 × 12
5 × 1	5 × 2	5 × 3	5 × 4	5 × 5	5 × 6	5 × 7	5 × 8	5 × 9	5 × 10	5 × 11	5 × 12
6 × 1	6 × 2	6 × 3	6 × 4	6 × 5	6 × 6	6 × 7	6 × 8	6 × 9	6 × 10	6 × 11	6 × 12
7 × 1	7 × 2	7 × 3	7 × 4	7 × 5	7 × 6	7 × 7	7 × 8	7 × 9	7 × 10	7 × 11	7 × 12
8 × 1	8 × 2	8 × 3	8 × 4	8 × 5	8 × 6	8 × 7	8 × 8	8 × 9	8 × 10	8 × 11	8 × 12
9 × 1	9 × 2	9 × 3	9 × 4	9 × 5	9 × 6	9 × 7	9 × 8	9 × 9	9 × 10	9 × 11	9 × 12
10 × 1	10 × 2	10 × 3	10 × 4	10 × 5	10 × 6	10 × 7	10 × 8	10 × 9	10 × 10	10 × 11	10 × 12
11 × 1	11 × 2	11 × 3	11 × 4	11 × 5	11 × 6	11 × 7	11 × 8	11 × 9	11 × 10	11 × 11	11 × 12
12 × 1	12 × 2	12 × 3	12 × 4	12 × 5	12 × 6	12 × 7	12 × 8	12 × 9	12 × 10	12 × 11	12 × 12

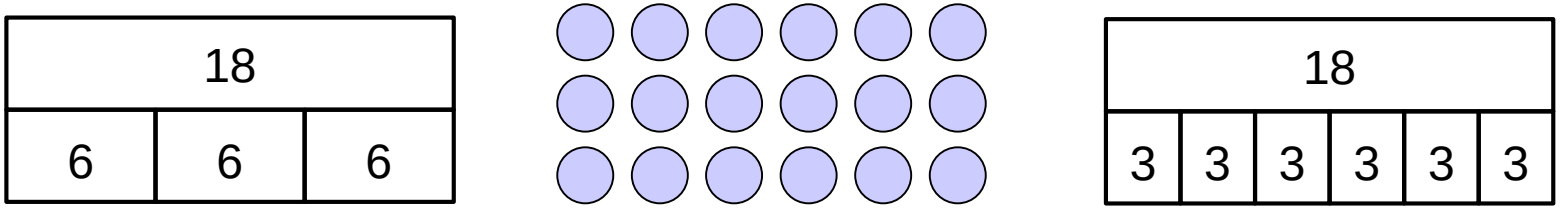
- This grid shows the 144 multiplication facts which occur in the Year 4 multiplication check.
- What do you notice about each row? Each column?
- What happens to the product when we go down a column? Across a row?
- Can you spot any rows/columns the same?
- Which row/column do you find easiest?

4NF-1 Recall of multiplication tables

2 × 2							
3 × 2	3 × 3						
4 × 2	4 × 3	4 × 4					
5 × 2	5 × 3	5 × 4	5 × 5				
6 × 2	6 × 3	6 × 4	6 × 5	6 × 6			
7 × 2	7 × 3	7 × 4	7 × 5	7 × 6	7 × 7		
8 × 2	8 × 3	8 × 4	8 × 5	8 × 6	8 × 7	8 × 8	
9 × 2	9 × 3	9 × 4	9 × 5	9 × 6	9 × 7	9 × 8	9 × 9

- We can discount the 1 times table facts, because generally children knows these.
- Because each product is repeated we can halve the number of facts we need to learn. We now have 36 as shown in this grid
- Once children can recall these, and apply them to commutative calculations, for example recognise that 5 x 7 has the same product as 7 x 5 = 35, they have learnt the essential facts for written multiplication and division.

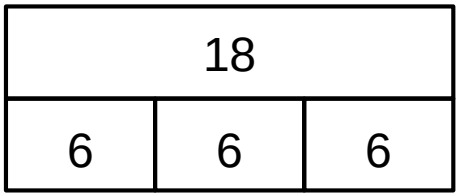
4NF-1 Recall of multiplication tables

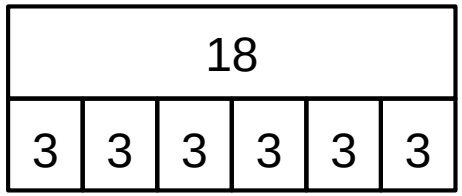


- What do you see? We have a row of 6, another row of 6 and another row of 6. We have three rows of 6. We have three 6s which makes 18.
- Now let's look at it a different way. We have a column of 3, another column of three… we have six columns of 3. We have six 3s which makes 18.

3 x 6 = 6 x 3 = 18

4NF-1 Recall of multiplication tables





$6 \times 3 = 18$

$3 \times 6 = 18$

$18 \div 6 = 3$

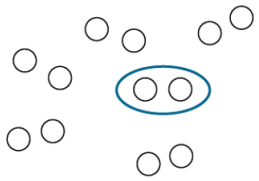
$18 \div 3 = 6$

$\frac{1}{6}$ of 18 = 3

$\frac{1}{3}$ of 18 = 6

- What other related facts can you write using division?
- Can you write any facts using fractions of amounts?

5F-2 Find equivalent fractions



$\frac{2}{12}$ and $\frac{1}{6}$

$\frac{2}{6}$ and $\frac{1}{3}$

$\frac{2}{6}$ and $\frac{1}{3}$

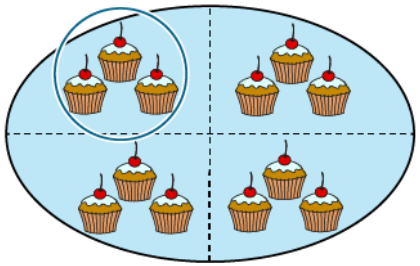
$\frac{12}{16}$ and $\frac{3}{4}$

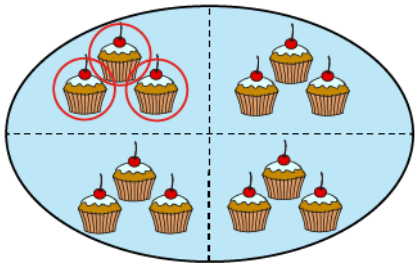
$\frac{2}{16}$ and $\frac{1}{8}$

$\frac{4}{6}$ and $\frac{2}{3}$

- Equivalent fractions can be written for each of the representations.
- Can you see each of the pairs of equivalent fractions by looking at the whole in different ways?
- Explain why they are equivalent fractions – why they represent the same value?

5F-2 Find equivalent fractions





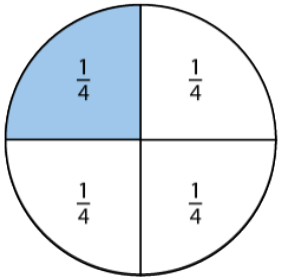
$\frac{1}{4}$ $\frac{3}{12}$

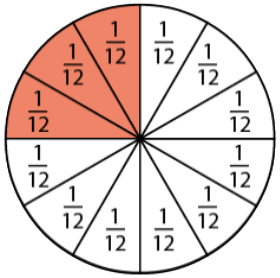
- What do you notice about the two representations?
- Explain why $\frac{1}{4}$ and $\frac{3}{12}$ are equivalent fractions.

The whole is divided into 4 equal parts and 1 of those parts is circled.

The whole is divided into 12 equal parts and 3 of those parts are circled.

5F-2 Find equivalent fractions





$\frac{1}{4}$ $\frac{3}{12}$

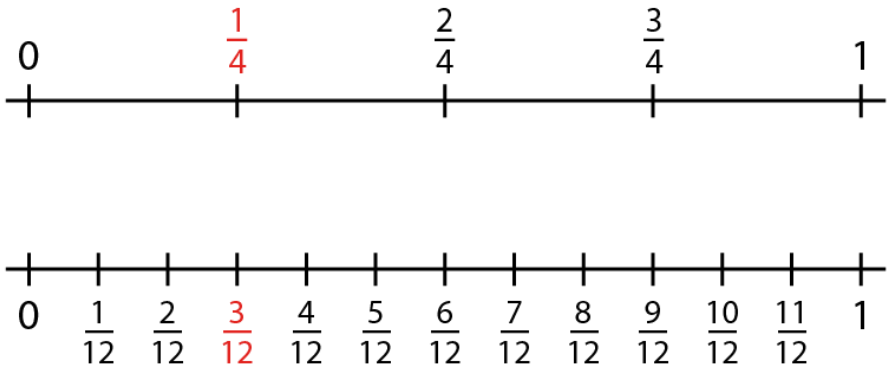
$\frac{1}{4}$ and $\frac{3}{12}$ are equivalent because 1 is the same portion of 4 as 3 is of 12.

- What do you notice about the two representations?
- Explain why $\frac{1}{4}$ and $\frac{3}{12}$ are equivalent fractions.
- If the two circles were pizzas, would they represent the same portion of pizza?

The whole is divided into 4 equal parts and 1 of those parts is shaded.

The whole is divided into 12 equal parts and 3 of those parts are shaded.

5F-2 Find equivalent fractions



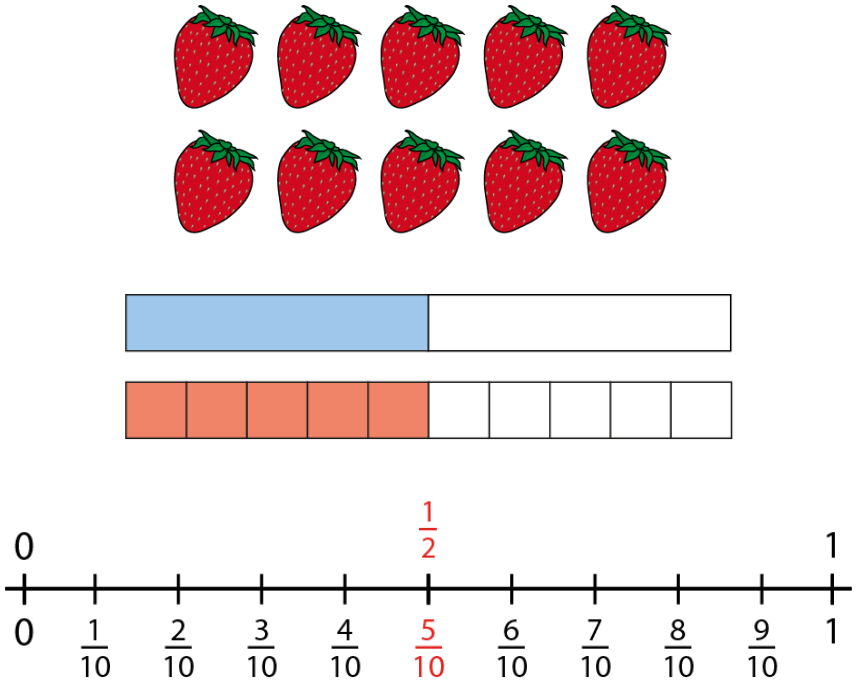
$$\frac{1}{4} = \frac{3}{12}$$

- What do you notice about where 0 and 1 are located on both number lines?
- What is the same about both fractions shown in red on the number lines?
- Why are the two fractions located at the same point on the number lines?

$\frac{1}{4}$ and $\frac{3}{12}$ are equivalent because they are located at the same point on the number lines.

- Identify other equivalent fractions on the number lines. Explain how you know that they are equivalent.

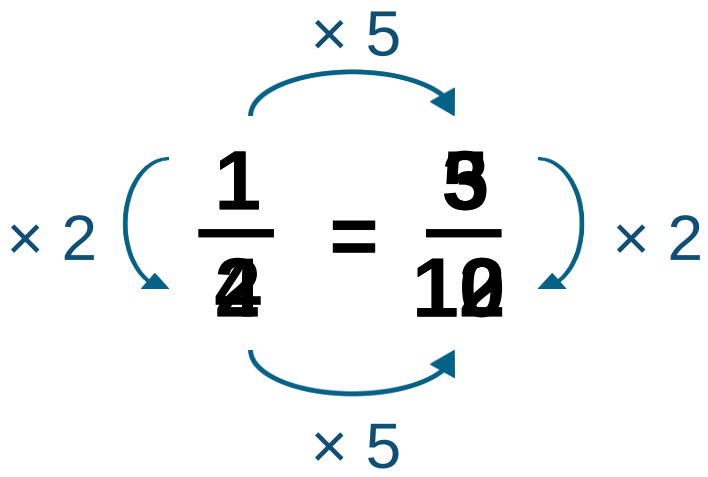
5F-2 Find equivalent fractions



- What do you notice about the representations shown?
- What is the same and what is different in each representation?
- Identify $\frac{1}{2}$ and $\frac{5}{10}$ in each representation.
- What can be said about the fractions $\frac{1}{2}$ and $\frac{5}{10}$? Why is this the case?

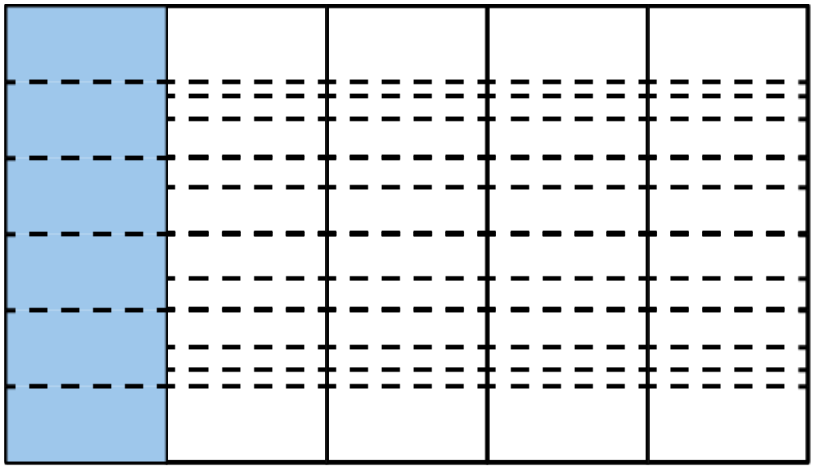
$\frac{1}{2}$ and $\frac{5}{10}$ are *equivalent because 1 is the same portion of 2 as 5 is of 10.*

5F-2 Find equivalent fractions



- What do you notice about the vertical relationship between the numerator and denominator of each fraction?
- What do you notice about the horizontal relationship between the numerators and denominators of both fractions?

5F-2 Find equivalent fractions



$$\frac{1}{5} = \frac{\text{[illegible]}}{\text{[illegible]}} = \frac{3}{15} = \frac{4}{20} = \frac{5}{25} = \frac{6}{30}$$

- How many equal parts make the whole? How many of these parts are blue? What fraction of the whole is shaded?
- How can we describe the fraction of the whole that is shaded if we change the number of parts that are found in the same- sized whole?
- Keep your attention on the blue part ($\frac{1}{5}$). For each change in the number of parts can you still see $\frac{1}{5}$?
- What can be said about all of the fractions that have been identified?

5F-2 Find equivalent fractions

$$\frac{1}{5} = \frac{2}{10} = \frac{3}{15} = \frac{4}{20} = \frac{5}{25} = \frac{6}{30}$$

$\frac{1}{5}$ and $\frac{2}{10}$ are equivalent because 1 is the same portion of 5 as 2 is of 10.

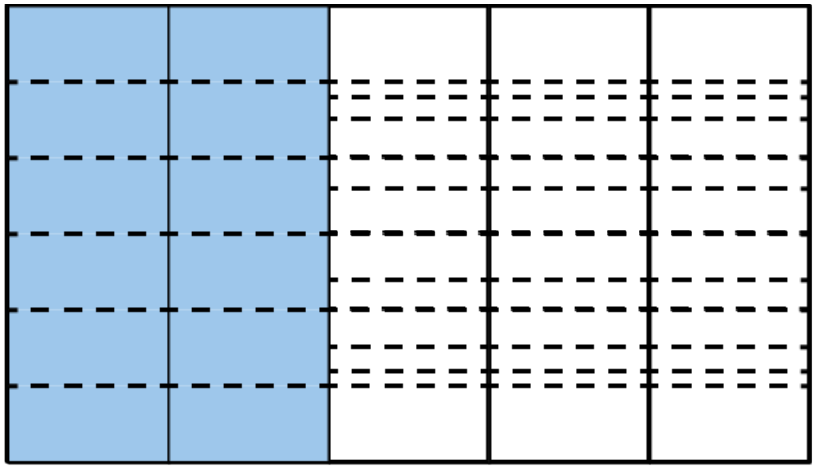
1 is $\frac{1}{5}$ of 5 and 2 is $\frac{1}{5}$ of 10 so both represent $\frac{1}{5}$.

- How can you describe the vertical relationship between the numerator and the denominator?

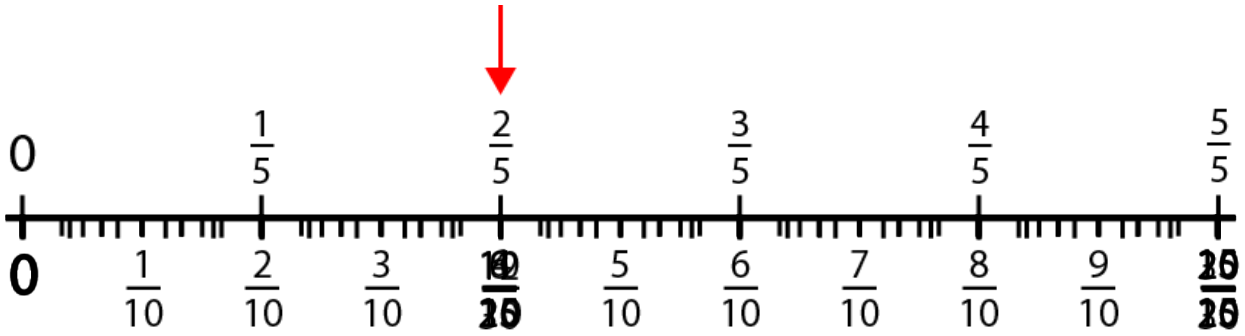
The denominator is five times larger than the numerator.

- If the vertical relationship is the same for all fractions, what can be said about these fractions?
- Create a set of equivalent fractions for $\frac{1}{3}$.

5F-2 Find equivalent fractions



$$\frac{2}{5} = \frac{\square}{\square}$$



- What fraction of the whole is shaded?
- Where would this fraction be located on a number line?
- Identify the fraction and its location on the number line when the same-sized whole is split into a different number of parts.

$$\frac{2}{5} = \frac{4}{10} = \frac{6}{15} = \frac{8}{20} = \frac{10}{25} = \frac{12}{30}$$

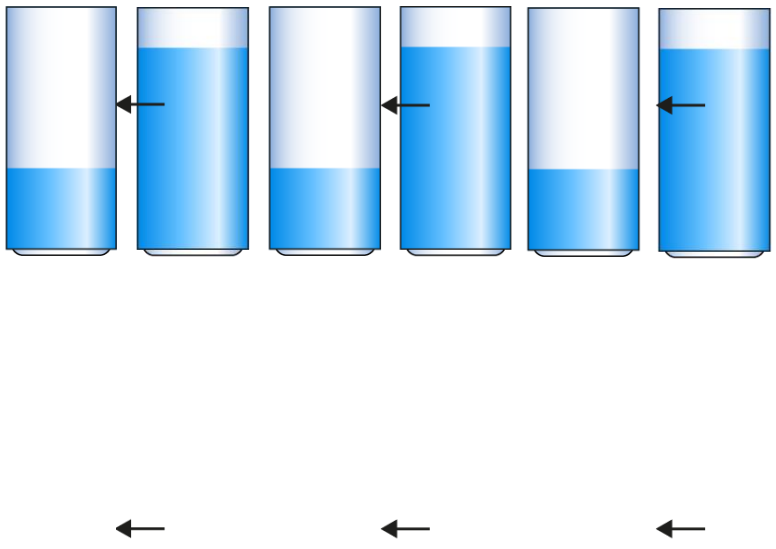
- Describe the horizontal relationship between the numerators and denominators to help explain how we know the following fractions are equivalent.

The numerator and denominator of the second fraction are both __ times greater than the first fraction. This means that the fractions are equivalent.

- How do we know that these fractions are equivalent? Describe the vertical and horizontal relationships within your explanation.
- Create a set of equivalent fractions for $\frac{2}{3}$.

5F-2 Find equivalent fractions

$\frac{8}{24}$ $\frac{5}{6}$ $\frac{1}{3}$ $\frac{50}{60}$ $\frac{3}{9}$ $\frac{20}{24}$



- Which of these fractions are equivalent? How do you know?
- Does each representation of water in the glass match each fraction? How do you know?
- How does each representation help to show which fractions are equivalent to each other?

5F-2 Find equivalent fractions

- *Practise identifying equivalent fractions to build fluency.*

$\frac{5}{10}$ $\frac{25}{100}$ 

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How else can we develop children's NUMBER SENSE …?

- Reasoning
- Problem solving
- Efficient strategies
- Models, images and representations

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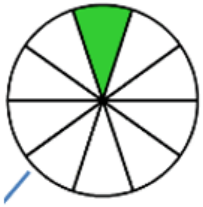
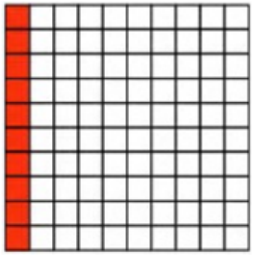
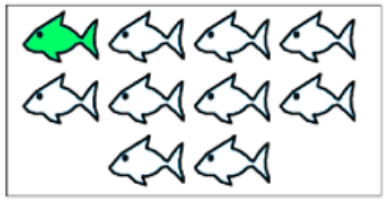
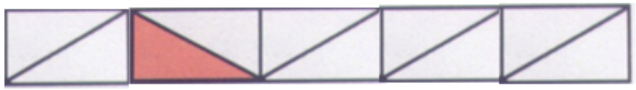
Conceptual variation

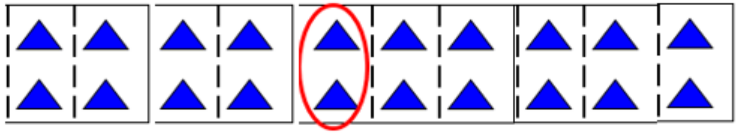
Are the coloured parts or the circled parts $\frac{1}{10}$ of the whole? If not ,can you use a fraction to describe the part?











Intelligent Practice

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What's the same? What's different?

$2 \times 3 =$	$6 \times 7 =$	$9 \times 8 =$
$2 \times 30 =$	$6 \times 70 =$	$9 \times 80 =$
$2 \times 300 =$	$6 \times 700 =$	$9 \times 800 =$
$20 \times 3 =$	$60 \times 7 =$	$90 \times 8 =$
$200 \times 3 =$	$600 \times 7 =$	$900 \times 8 =$

KS2 Arithmetic Paper

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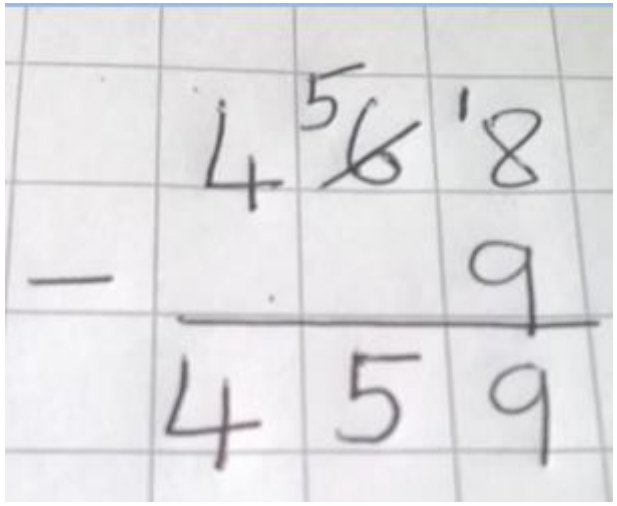
4	468 – 9 =



- **Efficient strategies**

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2 paper tapes were broken, can you guess which original paper tape is longer?

Why? How do you get your answer?

$\frac{1}{5}$ 

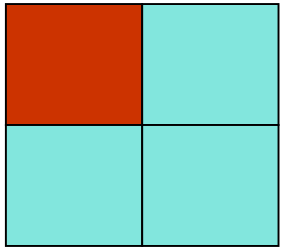
$\frac{1}{5}$ 

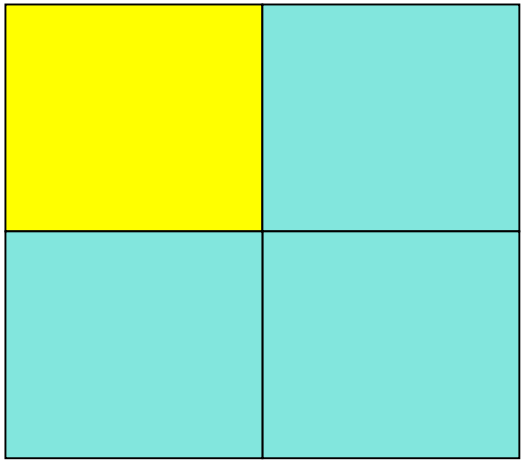
Think: Which line is longer?

First : $\frac{1}{2}$ 

Second : $\frac{1}{3}$ 

Which is the larger fraction?





How do you know?

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Mathematical Thinking

$\square + 17 = 15 + 24$

$99 - \square = 90 - 59$

Consider the strategies you used?

This illustrates how a conceptual method rather than a procedural method can lead to a quicker answers.

Always, sometimes, never?

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Addition always results in a larger number.

Prove it and convince us …

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Challenge

$$9999 + 999 + 99 + 9 + 5$$

I add all the numbers from 1 to 100. What answer do I get?

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KS2 Mathematics Assessments

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- KS1 national tests (Y2)
- Y4 Multiplication Tables Check
- KS2 national tests (Y6)
  - Arithmetic
  - Reasoning paper 1
  - Reasoning paper 2

Y4 Multiplication Tables Check

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Aim to achieve at least 20/25

MANY children should be getting 25/25

25 questions; 6 seconds each

Children in Year 3 should know all multiplication **and division facts** for the following multiplication tables: 10 2 5 3 4 8

Children in Year 4 should know all multiplication **and division facts** up to 12 x 12.

Children in Years 5 and 6 should know all multiplication **and division facts** up to 12 x 12 and be able to rapidly recall them and apply this knowledge to problem solving questions. They should also **make connections** with other related facts e.g. fraction and decimal facts – if I know 6x7=42, then I also know that 0.6x7=4.2 and 60x70=4200.

Y4 Multiplication Check

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By the end of Y4, children should know all multiplication and division facts up to 12 x 12

https://www.timestables.co.uk/multiplication-tables-check/

Kingsland CE Primary School Progression of KIRFs and Place Value

Y	Counting and Place Value	Multiplication Tables	Number Bonds	Doubling and Halving	Addition and Subtraction	Measures
	Counting is essential in developing a deep understanding of the number system, number line and place value of numbers. *Children need lots of practice at crossing boundaries, understanding the value of each digit in the place value columns.* *Children should become fluent in counting from any given number, in steps of any size.* *Children should be as fluent counting backwards as they are counting forwards.* *Counting links into understanding about number sequences.* *Children should become proficient in visualising a number line when counting.*	*Having a good knowledge and understanding of multiplication tables will allow the children easier access to written methods, multiplication, division, fractions, decimals, percentages, ratio and proportion* *There are different stages to learning multiplication tables:* • *Counting up* • *Counting back* • *Chanting* • *Recalling multiplication facts* • *Recalling division facts* • *Recalling x10 greater and x10 smaller facts* • *Recalling x100 greater and x100 smaller facts* • *Extending into negative numbers* • *Recalling related fraction facts* • *Writing number sentences in different ways* • *Understanding balancing number sentences*	*A good understanding of number bonds will allow the children to use this knowledge when solving problems.* *Children who are unable to rely on these key facts will ultimately be doing harder maths.* *Using number bonds in context is essential:* • *Money* • *Measures* *Links should be made to how basic number bonds to 10 can be used with other number bonds.* *Children should have a deep understanding of the power of the = sign, having experience of number sentences being written in many different ways, particularly with balancing calculations e.g.* • *6 + 4 = 10* • *10 = 6 + 4* • *10 – 6 = 4* • *4 = 10 – 6* • *4 + 6 = 7 + 3* *Links should be made to addition and subtraction facts within number bonds.*	*It is essential that children understand the opposite relationship of doubling and halving.* *Children should become proficient in partitioning, and partitioning in different ways, in order to double and halve successfully e.g.* • *75 = 70 + 5* • *75 = 60 + 15* *Children should develop a deep understanding of how simple doubling and halving can be used to double and halve larger numbers, comprehending the links and relationships e.g.* • *Double 6 = 12* • *Double 60 = 120*	*Children should become flexible when adding and subtracting mentally, using a range of different strategies:* • *Counting on* • *Counting back* • *Visualising a number line* • *Use of fingers and other representations* • *Partitioning* • *Finding and using number bonds to aid easier calculations* *Children should have a deep understanding of:* • the = sign in balancing equations • the < and > signs • missing number calculations *… and should regularly use and recognise these types of number sentences.*	*In order for the children to be able to apply knowledge and understanding of different measures, they need to rapidly recall key measures facts.*
R	Count the numbers in order to 5 Count back from 5 to 0 in order Count the numbers in order to 10 Count back from 10 to 0 in order Count the numbers in order to 20 Count back from 20 to 0 in order Read numbers to 10 Write numbers to 10 Count numbers to 10 Order numbers to 10 Read numbers to 20 Write numbers to 20 Count numbers to 20 Order numbers to 20	Count in 10s Count in 2s	Partition numbers to 5 into two groups		Use physical representations to add and subtract	Know the days of the week in order
1	Count forwards and backwards in steps of 10 Count forwards and backwards in steps of 2 Count forwards and backwards in steps of 5 Count to and across 100, forwards and backwards, from any given number Understand equal, more than, less than Given a number, identify one more and one less	x10	Know all number bonds to 5 Find patterns in number bonds to 5 Know all number bonds to 10 Find patterns in number bonds to 10 Know all addition facts for all numbers between 0 and 10 Know all subtraction facts for all numbers between 0 and 10 Understand missing number calculations	Know all doubles to 10 Know all halves to 10	Add a one digit number to a two digit number Subtract a one digit number from a two digit number Add numbers to 10 Subtract numbers to 10 Add a multiple of 10 to a two digit number (using a 100 square and flip flap) Subtract a multiple of 10 from a two digit number (using a 100 square and flip flap) Solve missing number calculations Understand the effect of adding and subtracting 0	Know the seasons in order Know the months of the year in order
2	Count in 10s from any given number, forwards and backwards Count in 2s from any given number, forwards and backwards, crossing boundaries Count in steps of 2, 3 and 5 from 0, forwards and backwards Understand the value of T & U	x2 x5 Children recognise odd and even numbers	Know all number bonds to 20 Find patterns in number bonds to 20 Link number bonds to 20 to number bonds to 10 Understand the = sign in balancing equations Use and understand < and > signs Understand missing number calculations	Know the doubles of all numbers to 20 Know the halves of all numbers to 20	Add multiples of 10 including crossing significant boundaries Subtract multiples of 10 including crossing significant boundaries Know all addition facts for multiples of 10 to 100 Know all subtraction facts for multiples of 10 to 100	Know how many p in a £ Know the number of minutes in an hour Know the number of hours in a day

	Counting and Place Value	Multiplication Tables	Number Bonds	Doubling and Halving	Addition and Subtraction	Measures
3	Count from 0 in multiples of 100 & 50 Count from 0 in multiples of 4 & 8 Count in 5s from any given number, forwards and backwards, crossing boundaries Count in 4s from any given number, forwards and backwards, crossing boundaries Count in 3s from any given number, forwards and backwards, crossing boundaries Find 10 or 100 more / less than a given number Understand the value of H, T & U	x4 x3 x8 x50 x100 Children recognise that multiples of even times tables are all even	Understand the = sign in balancing equations Use and understand < and > signs Understand missing number calculations Know all number bonds to 100 Visualise number bonds to 100 on a number line Find patterns within number bonds to 100	Know doubles of all whole numbers to 20 Know halves of all whole numbers to 20 Know doubles of all multiples of 10 to 500 Know halves of all multiples of 10 to 500 Know doubles of all multiples of 100 to 5000 Know halves of all multiples of 100 to 5000	Know all addition and subtraction facts for multiples of 100 to 1000 Know all addition and subtraction facts for multiples of 5 with a total of 100 Know all addition and subtraction facts for number pairs that total 100 Add and subtract mentally: • A three digit number and ones • A three digit number and tens • A three digit number and hundreds	Know the number of seconds in a minute Know the number of days in each month, year and leap year Understand am and pm; noon and midnight Recognise right angles
4	Count from 0 in multiples of 25 and 1000 Count from 0 in multiples of 6, 9, 7, 11 and 12 Understand the value of Th,H,T&U Find 1000 more / less than a given number Count backwards through 0 to include negative numbers	x6 x9 x7 x11 x12 x25 x1000 All multiplication tables up to 12 x12 should be known by the end of Y4 Children recognise that multiples of even times tables are all even	Understand the = sign in balancing equations Use and understand < and > signs Understand missing number calculations Recognise and use factor pairs and commutativity in mental calculations Know all pairs of multiples of 50 with a total of 1000	Know doubles and halves of all whole numbers to 50 Know doubles and halves of all multiples of 5 to 1000 Know doubles and halves of all multiples of 50 to 5000	Add and subtract pairs of two digit numbers Add and subtract 9/19/29 etc. to two digit numbers Add and subtract 11/21/31 etc. to two digit numbers	Read Roman Numerals to 100 Know the number of weeks in a year Know: • m in km • cm in m • 90˚ in a right angle
5	Count forwards and backwards from any given number, in any steps, crossing boundaries and into negative numbers Count forwards and backwards in steps of powers of 10 for any given number up to 1 000 000 Count forwards and backwards through 0 with positive and negative numbers Understand the value of HTh,TTh,Th,H,T&U	Continue to rehearse all multiplication tables up to 12 x 12 Know and apply the tests of divisibility: x2 x3 x5 x9 x10 Recall prime numbers up to 19 Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	Understand the = sign in balancing equations Use and understand < and > signs Understand missing number calculations Know all addition and subtraction facts for decimals that total 1 (one DP) Find patterns within number bonds to 1 Know all addition and subtraction facts for decimals that total 10 (one DP) Find patterns within number bonds to 10 Find all the factor pairs of a number	Know doubles and halves of all whole numbers to 100 Know doubles and halves of all multiples of 10 to 1000 Know doubles and halves of all multiples of 100 to 10,000 Know the doubles and halves of all two-digit numbers	Add and subtract numbers mentally with increasingly large numbers	Read Roman Numerals to 1000 Know: • mm in cm • ml in a l • g in a kg • angles of a triangle • angles at a point
6	Count forwards and backwards from any given number, in any steps, crossing boundaries and into negative numbers Know the decimal and percentage equivalents of the fractions ½, ¼, ¾, ⅕, ⅗, tenths and fifths Calculate mentally using brackets Understand the value of M,HTh,TTh,Th,H,T&U	Continue to rehearse all multiplication tables up to 12 x 12 Know and apply the tests of divisibility: x4 x6 x8 Know all square numbers to 12 x 12 Know all square roots to 10 x 10 Know the square roots to 15 x 15 Know all prime numbers within 50 Know the prime numbers within 100	Understand the = sign in balancing equations Use and understand < and > signs Know the addition and subtraction facts for two place decimal complements of 1 Find patterns within number bonds to 1 (two DP) Link two decimal place number bonds to 1, to number bonds to 100 Know the addition and subtraction facts for three place decimal complements of 1 Find patterns within number bonds to 1 (three DP) Link three decimal place number bonds to 1, to number bonds to 100	Know doubles and halves of one digit decimals Know doubles and halves of two digit decimals Know the doubles and halves of all multiples of 10 to 10,000 Know the doubles and halves of all multiples of 1000 to 100,000	Perform mental calculations, including with mixed operations and large numbers	Know: • Angles on a straight line Illustrate and name parts of a circle, including radius, diameter and circumference and know that the diameter is twice the radius

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KS2 national assessments

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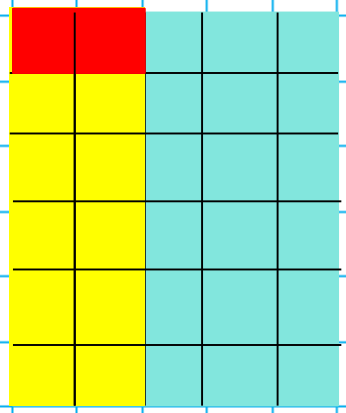
Year 6

6 $\frac{1}{6} \times \frac{2}{5} =$



1 mark

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Year 6

8 $18 \times 3 = 2 \times \square$

1 mark

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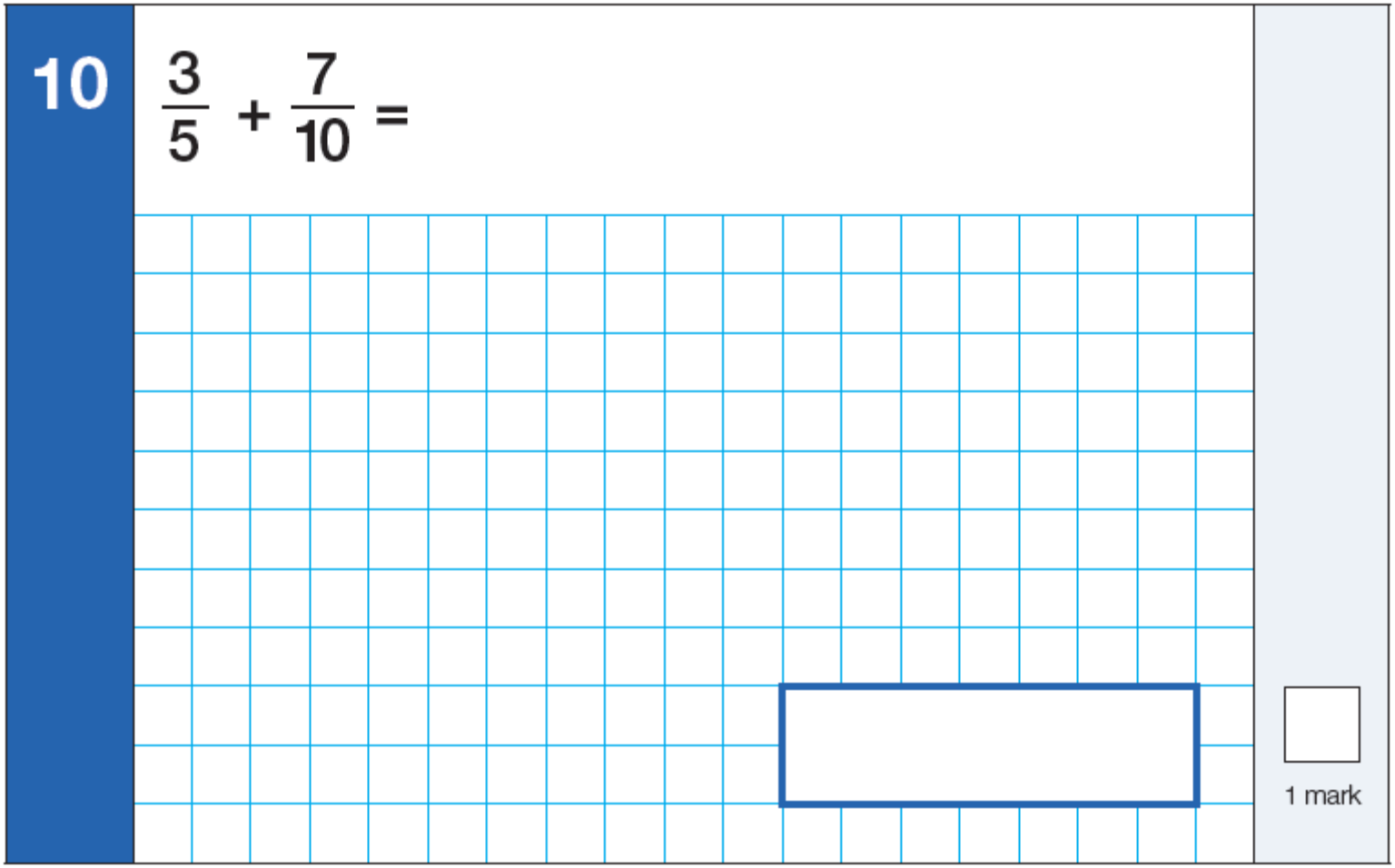
Year 6

10 $\frac{3}{5} + \frac{7}{10} =$



1 mark

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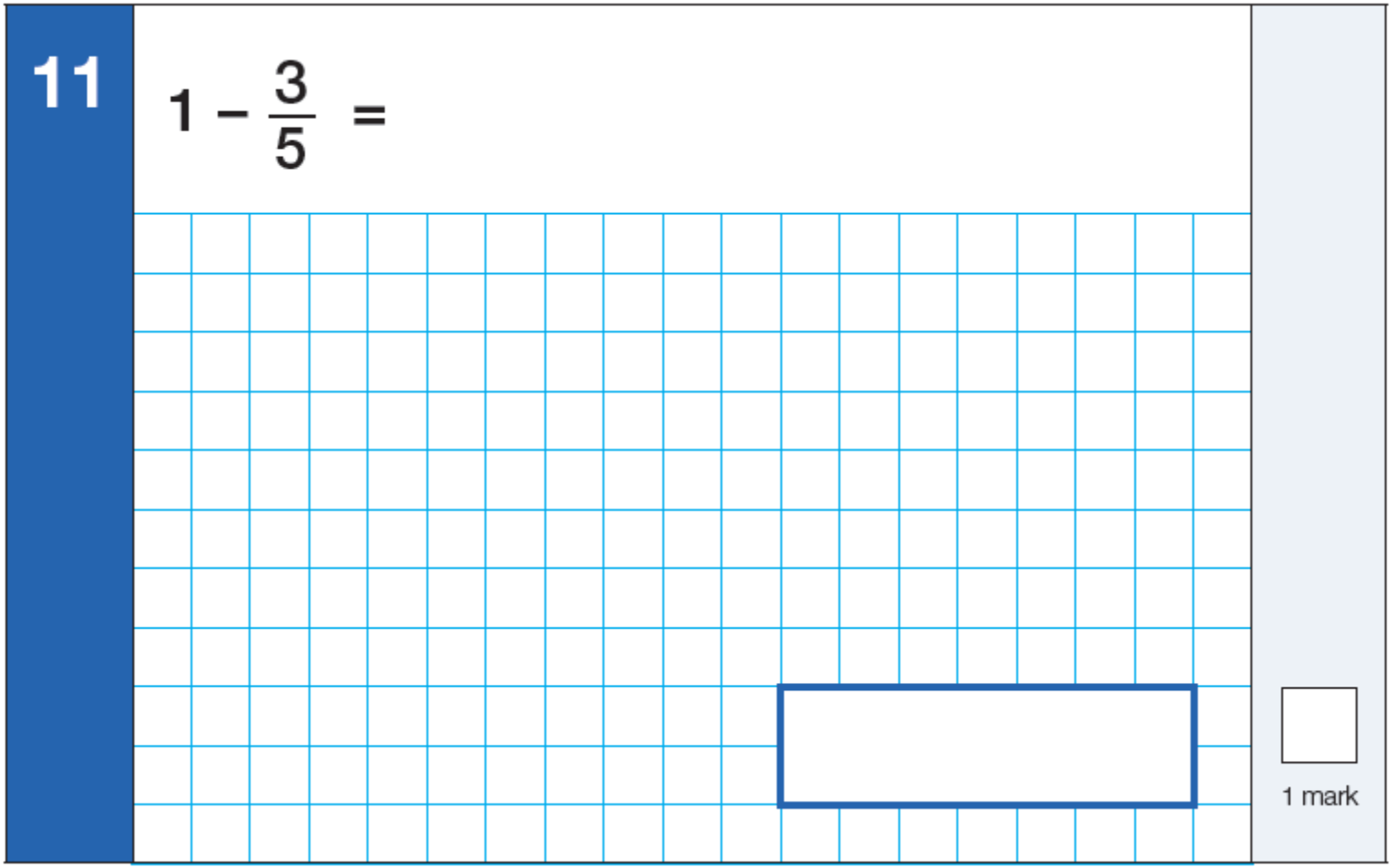
Year 6

11 $1 - \frac{3}{5} =$



1 mark

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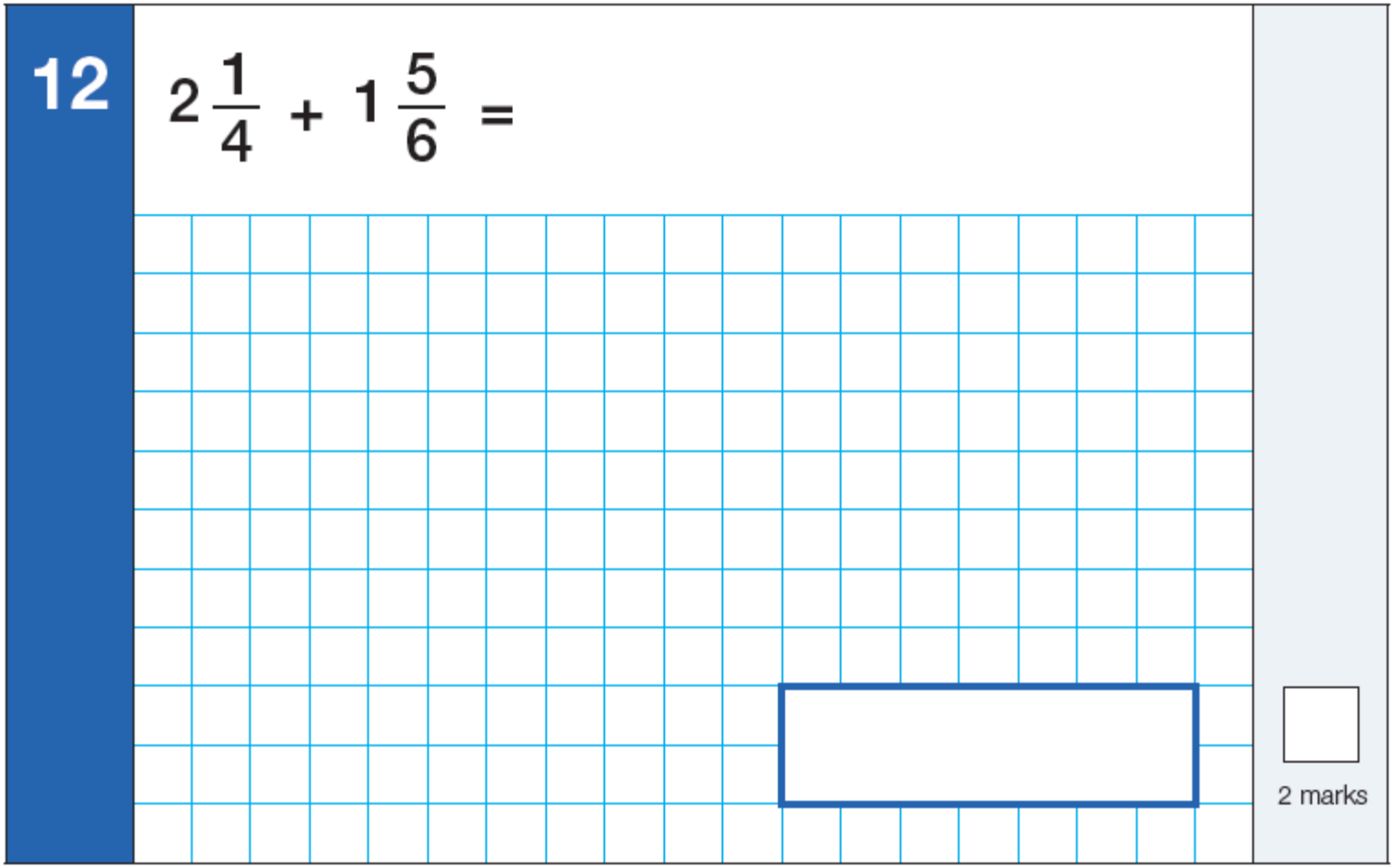
Year 6

12 $2\frac{1}{4} + 1\frac{5}{6} =$



2 marks

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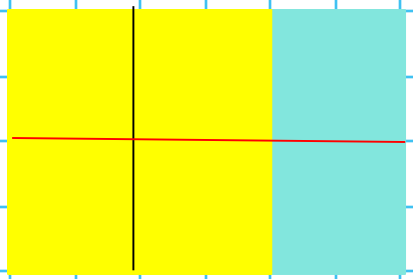
Year 6

15 $\frac{2}{3} \div 4 =$



1 mark

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How can you help at home?

How do you know?

Why is it that?

What do you notice if …?

Language / vocabulary development

Speak in full sentences

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How can you help at home?

Basic addition and subtraction facts

Number bonds, doubles, near doubles

NOT COUNTING IN 1s

KIRFs – basic fact fluency

Multiplication tables – by the end of Y4

What will NOT help …?

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"I was always rubbish at maths when I was at school."

"Dad does the maths and mum does the English."

"Maths is boring."

"There's no point learning your times tables."

Instead … the power of YET … regular practise … positive attitude … learn from mistakes

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Thank you for coming

Any questions?