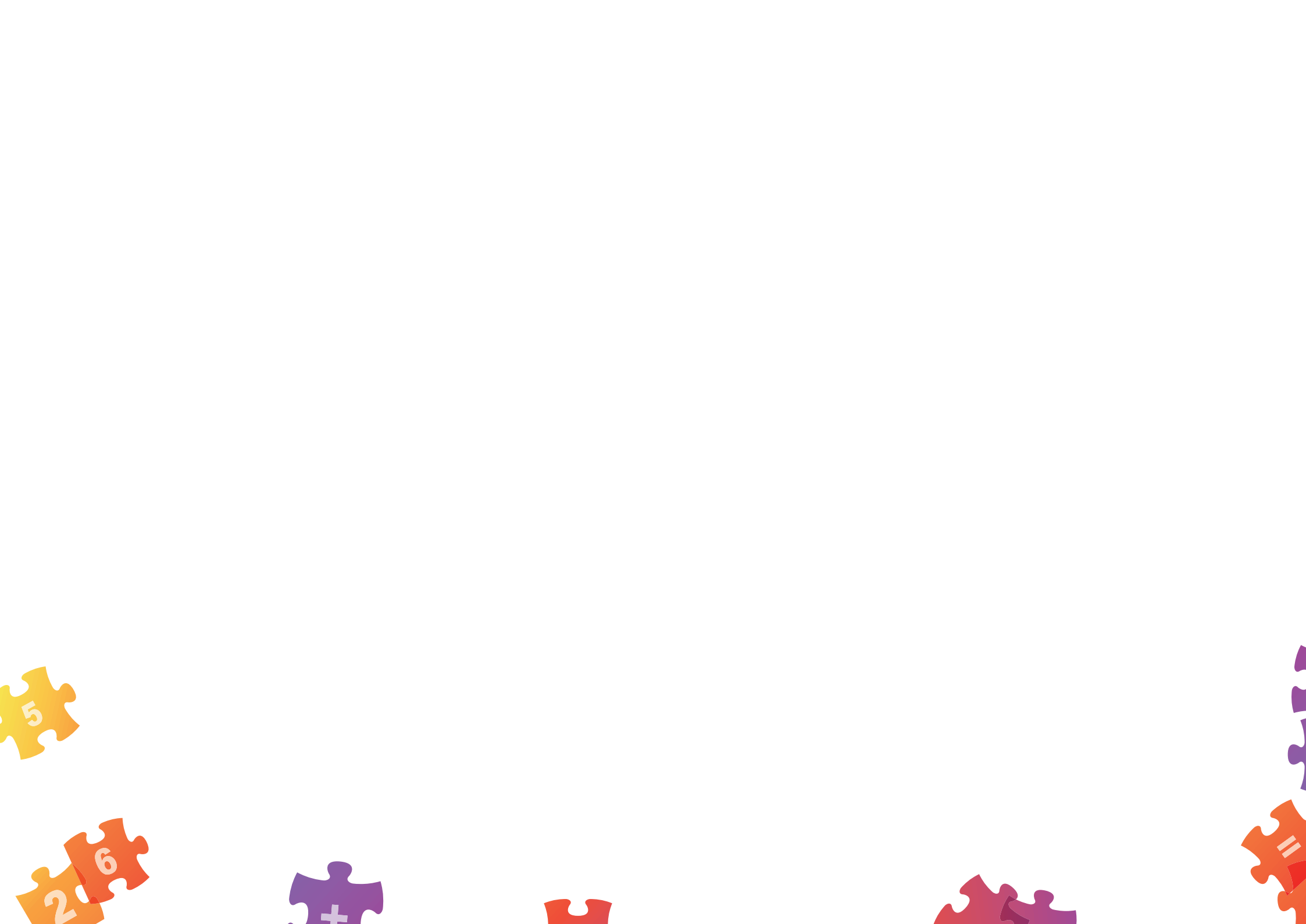
School Improvement
Liverpool

Maths Plans

Year 3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Contents

Introduction

The Liverpool Maths team have developed a medium term planning document to support effective implementation of the new National Curriculum.

In order to develop fluency in mathematics, children need to secure a conceptual understanding and efficiency in procedural approaches.

Our materials highlight the importance of making connections between concrete materials, models and images, mathematical language, symbolic representations and prior learning.

There is a key focus on the teaching sequence to ensure that children have opportunities to practise the key skills whilst building the understanding and knowledge to apply these skills into more complex application activities.

For each objective, there is a breakdown which explains the key components to be addressed in the teaching and alongside this there are a series of sample questions that are pitched at an appropriate level of challenge for each year group.

An additional section provides a list of key, basic skills that children must continually practise as they form the building blocks of mathematical learning.

Using the plans

This is not a scheme but it is more than a medium term plan
The programme of study has been split into four domains:

- **Number**
- **Measurement**
- **Geometry**
- **Statistics**

As a starting point, we have taken these domains and allocated them into five half terms:

Year 3	
Autumn 1	**Number** - number and place value - addition and subtraction
Autumn 2	**Number** - multiplication and division - fractions
Spring 1	**Measurement**
Spring 2	**Geometry** - properties of shapes - position and direction
Summer 1	**Statistics**

These allocations serve only as a guide for the organisation of the teaching. Other factors such as term length, organisation of the daily maths lesson, prior knowledge and cross-curricular links may determine the way in which mathematics is prioritised, taught and delivered in your school.

Using the plans

Within each half term, are some new objectives and some continuous objectives:

Year 3		
	New objectives	**Continuous objectives**
Autumn 1	7	3
Autumn 2	8	5
Spring 1	7	5
Spring 2	4	5
Summer 1	2	5

The new objectives vary in length but cover the new learning for that half term, they will not appear again in their entirety.

If the objective is in italics, it has been identified as an area that, once taught, should be re-visited and consolidated through basic skills sessions as these key skills form the building blocks of mathematical learning (see appendix 1).

The continuous objectives build up as you move through each half term. These objectives cover all the application aspects in mathematics. It is crucial that they are woven into the teaching continually during the year, so that once fluent in the fundamentals of mathematics, children can apply their knowledge rapidly and accurately to problem solving.

As before, the timings allocated and the organisation and frequency of delivery of these continuous objectives is flexible and will vary from school to school.

Please note that Summer 2 has deliberately been left free for the testing period traditionally carried out at the end of summer 1. This also allows the flexibility to allocate time in Summer 2 to target specific areas identified through the assessment process as needing additional teaching time.

There are 2 appendices attached:

Appendix 1 - List of key basic skills with guidance notes

Appendix 2 - Progression through the domains across the key stages


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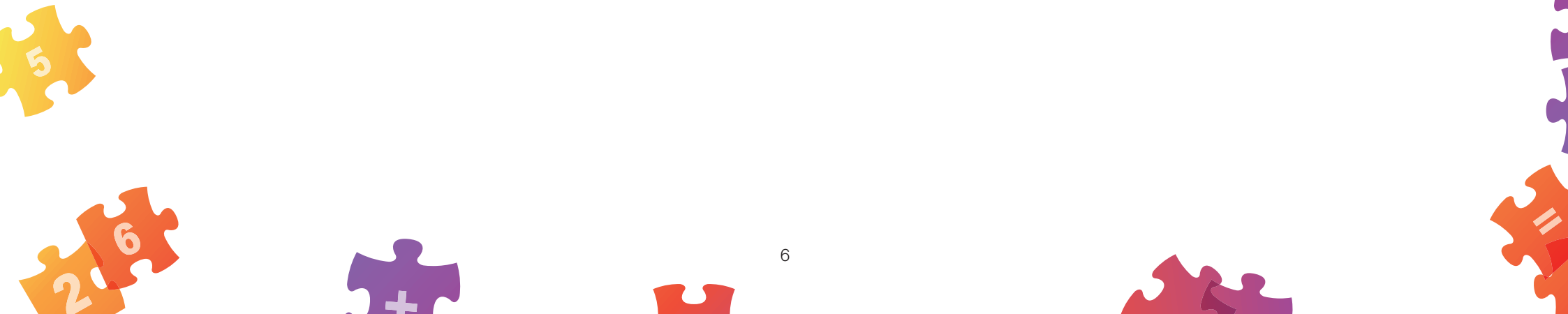
Autumn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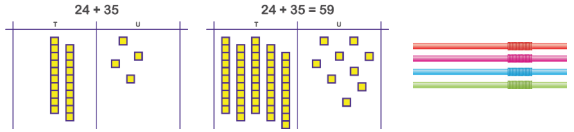
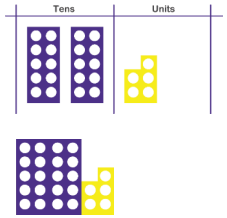
YEAR 3 PROGRAMME OF STUDY			
DOMAIN 1 – NUMBER			
NEW OBJECTIVES – AUTUMN 1			
NUMBER AND PLACE VALUE			
Objectives (statutory requirements)	What does this mean?	Example questions	**Notes and guidance (non-statutory)**
Count from 0 in multiples of 4,8,50 and 100; finding 10 or 100 more or less than a given number	Count out loud forwards and backwards from different starting points and in steps of different sizes Be presented with any two-digit or three-digit number and be able to say the number that is 10 or 100 more or less	Tell me all the multiples of 4 between 28 and 60 If I count in steps of 8 from zero, how many numbers will I have said by the time I get to 56? Tell me which multiples of 10 are between 386 and 421 How many multiples of 50 are there between 250 and 600? What is 10 more than 27? What is 100 less than 508?	Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100 They use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, 146 = 100 + 40 and 6, 146 = 130 + 16) Using a variety of representations, including those related to measure, pupils should continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000
Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Have an understanding of the number system up to three-digit numbers Understanding of zero as a place holder Make the links between the place value columns using apparatus to support (i.e. 100 is ten times bigger than 10) and understand the effects of multiplying by 10 and 100	Give three digit cards (for example 3, 8, 0) can they make a number bigger than, smaller than, in between? Look at these numbers (for example 352, 405, 65, 511) tell me what the 5 digit represents in each 13 x 10 = 130 2cm x 100 = 200cm	

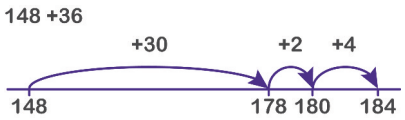
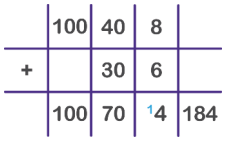
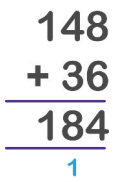
Notes

Compare and order numbers up to 1000	Be able to talk about the relative size of numbers, a number bigger than, less than, between Order consecutive and non-consecutive numbers in ascending and descending order with a particular focus on crossing boundaries Repeating this with units of measure and money Present number lines in different ways and in different contexts (horizontal number line, vertical scale etc.) and place random numbers between two demarcations on a number line Using any number up to three digits, be able to round numbers to the nearest 10 and 100	Place 368 on a number line from 100 to 500 Order these numbers from smallest to largest and largest to smallest 102, 98, 101, 100, 99 Order these numbers from smallest to largest and largest to smallest 211, 193, 301, 209, 299 Order these lengths from smallest to largest and largest to smallest 101cm, 1m, 100cm, 100mm, 1m and 10cm On a number line with 300 and 500 marked, place the number 450 accurately Is 847 nearer to 800 or 900? Explain how you know Tell me all the numbers that round to 340 as the nearest 10 Tell me any three numbers that round to 700 as the nearest 100	

Notes

Identify, represent and estimate numbers using different representations	Have an understanding of the number system up to four-digit numbers in different contexts Children can build on place value knowledge by practising exchange (for example ten bundles of 10 for one 100) Be able to recognise and record numbers in words and figures	Using apparatus such as Numicon, bundles of straws, Deines and place value counters, be able to estimate a number and then identify it  Children can work with apparatus to represent numbers accurately 	
Read and write numbers up to 1000 in numerals and in words	Be able to recognise and record numbers in words and figures	Listen to the numbers that I say and write them Alternate writing the figures and the words (e.g. 101, two hundred and fifteen, 300, ninety three)	

Notes

NEW OBJECTIVES – AUTUMN 1			
ADDITION AND SUBTRACTION			
Add and subtract numbers mentally, including • ***a three-digit number and ones*** • ***a three-digit number and tens*** • ***a three-digit number and hundreds***	• HTU + U • HTU + multiples of 10 • HTU + multiples of 100 Building on knowledge of place value, identifying which digits will be changing Remember, this is a mental strategy, and although it may include informal jottings but would not be seen in books as a written calculation	375 + 7 = 427 + 30 = 208 + 300 = Include similar questions for subtraction	Pupils practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100 Pupils use their understanding of place value and partitioning, and practice using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent (see Mathematics Appendix 1)
Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Teaching to be in line with school Calculation Policy **Methods:** • Number line • Expanded columnar • Column	Number line  Expanded columnar  Column  	

Notes

Progression shown through:

HTU + TU (no bridging)

HTU + TU (bridging 10)

HTU + TU (bridging 100)

HTU + TU (bridging 10 and 100)

HTU + HTU (no bridging)

HTU + HTU (bridging 10)

HTU + HTU (bridging 10 and 100)

Same progression as above for subtraction

Refer to the calculation sequence in the continuous objectives section to ensure children are given opportunities to apply these calculation skills

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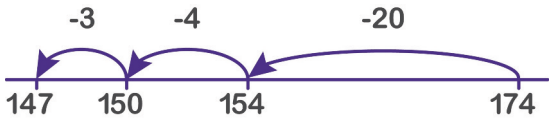

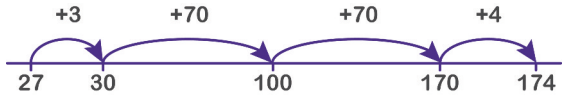

	100	60 70	1 4
=		20	7
	100	40	7

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Notes

CONTINUOUS OBJECTIVES – AUTUMN 1			
Solve number problems and practical problems involving the ideas from number and place value	Be able to answer word and reasoning problems linked to place value **Be able to use known facts in order to explore others:** Include commutativity and inverse and other relationships between numbers (for example 4 x 8 is also 2 x 16 because one side of the multiplication is halved, the other side is doubled)	Emma has used these digit cards to make the number 250  How many different numbers can you make? Can you put all the numbers in order? If you made the number that is ten less than Emma's, which digit cards would you need? If you know that 4 x 8 = 32, how many other number facts can you tell me?	

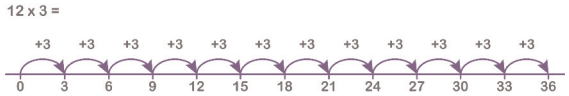
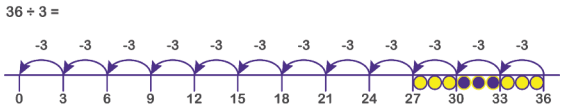
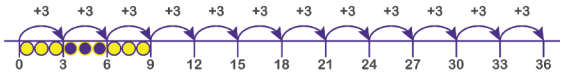
Notes

Estimate the answer to a calculation and use inverse operations to check answers **Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction**	Working with numbers up to three digits, ensure that children have opportunities to: • Estimate the answer • Evidence the skill of addition and/or subtraction • Prove the inverse using the skill of addition and/or subtraction • Practice calculation skill including units of measure (m, cm, mm, kg, g, l, ml, hours, minutes and seconds) • Solve missing box questions, including those where missing box represents a digit or represents a number • Solve problems including those with more than one step, for numbers and measures • Solve open-ended investigations	**Following the calculation sequence:** • Estimate 245 + 123 • Calculate 245 + 123 • Prove 368 – 123 = 245 • Calculate 368ml – 123ml • 368cm - ☐ = 245cm • I have 245ml of water in one jug and 123ml in another jug, how much do I have altogether? I drink 200ml, how much is now left? ☐☐☐+☐☐=☐☐☐ • Using the digit cards 1 to 9, make the smallest/biggest answer, an answer that is odd/even, divisible by 10 etc.	

Notes

YEAR 3 PROGRAMME OF STUDY			
DOMAIN 1 – NUMBER			
NEW OBJECTIVES – AUTUMN 2			
MULTIPLICATION AND DIVISION			
Objectives (statutory requirements)	What does this mean?	Example questions	**Notes and guidance (non-statutory)**
Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	Include chanting of multiplication tables both consecutively and non-consecutively Explore commutativity of multiplication Identify of multiples of 3, 4 and 8 Recall related division facts and explore the inverse relationship of multiplication and division Know that to multiply by 4, double and double again and that doubling this total is the same as multiplying by 8 and that the opposite is true for division	4 x 8 = This is the same as 8 x 4 = 32 is a multiple of 4 and 8 (and 2 as it is an even number) If 8 x 4 = 32, then 32 ÷ 4 = 8 To find 8 x 4, double 8 and double again, for example 8, 16, 32 4) (make sure the children understand they are multiplying by 4) To find 32 ÷ 4, halve 32 and halve again, for example 32, 16, 8 (make sure the children understand they are dividing by	Pupils continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables. Pupils develop efficient mental methods, for example, using commutativity and associativity (for example, 4 × 12 × 5 = 4 × 5 × 12 = 20 × 12 = 240) and multiplication and division facts (for example, using 3 × 2 = 6, 6 ÷ 3 = 2 and 2 = 6 ÷ 3) to derive related facts (for example, 30 × 2 = 60, 60 ÷ 3 = 20 and 20 = 60 ÷ 3).

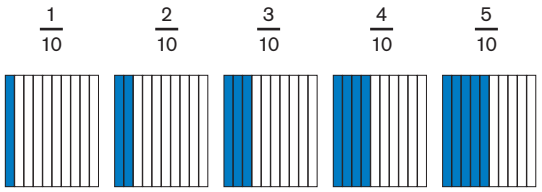
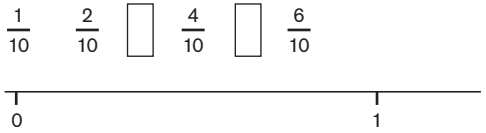
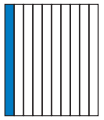
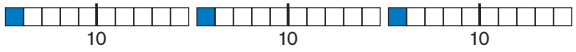
Notes

Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing into formal written methods	Ensure that children: • Understand that multiplication is the same as repeated addition • Understand that multiplication is commutative • Write inverse statements • Can derive and write related facts • Can factorise in order to use known facts Teaching to be in line with school Calculation Policy **Methods for X:** • Grouping on a number line to show progression from repeated addition • Expanded (grid) • Short **Progression shown through:** TU x U **Methods for ÷:** • Grouping on a number line to show progression from repeated subtraction • Grouping on a number line to show links with multiplication • Short **Progression shown through:** TU ÷ U Refer to the calculation sequence in the continuous objectives section to ensure children are given opportunities to apply these calculation skills	• If 5 x 4 = 20 then 20 ÷ 5 = 4 and 20 ÷ 4 = 5 • If 5 x 4 = 20, then 5 x 40 = 200 and 50 x 4 = 200 • The factors of 20 are 1, 2, 4, 5, 10 and 20  Grouping x | 10 | 2 | 3 | 30 | 6 | 36 Expanded (grid) 12 x 3 36 Short  Grouping (repeated subtraction)  Grouping (using addition) 12 3 | 36 Short	Pupils develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division. Pupils solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts, (for example, four times as high, eight times as long etc.) and correspondence problems in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).

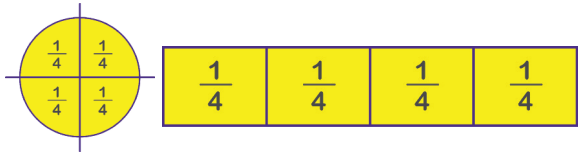
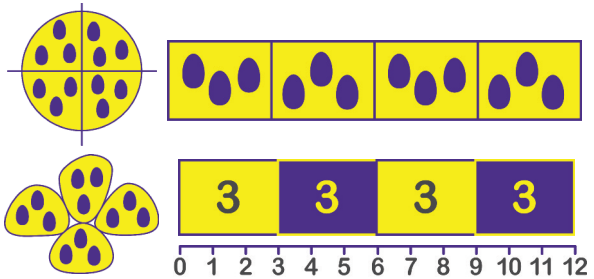
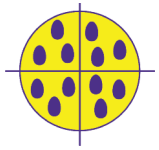
Notes

NEW OBJECTIVES – AUTUMN 2

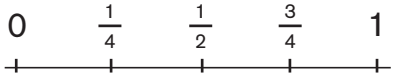
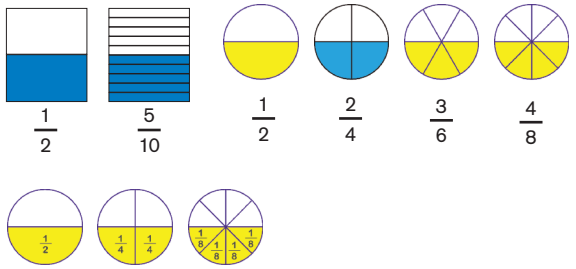
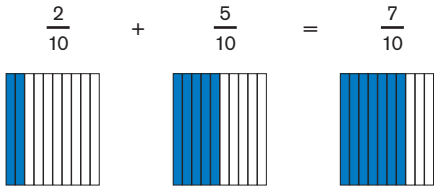
FRACTIONS

Count up and down in tenths; **recognise that tenths arise from dividing an object into 10 equal parts and dividing one-digit numbers or quantities by 10**	Include different starting points, count forwards and backwards within 0 to 1, use the images as support From images, children can say what fraction is shaded Children can place fractions on a 0 – 1 number line and know which fractions are missing in a sequence (use fractions with the same denominator) Children understand that $\frac{1}{10}$ is the same as dividing by 10 and the explicit link of fractions with division, use visual representations to support this Children understand that when dividing a single digit by 10, the answer will always be in tenths (for example $3 \div 10 = \frac{3}{10}$)	 As the children count, show images to support understanding Using different shapes that are divided into tenths, ask questions such as, 'How many tenths are shaded here?'   We have divided this shape into ten sections and shaded $\frac{1}{10}$ of it, this shows that dividing by 10 is the same as finding $\frac{1}{10}$  This image represents three bars of chocolate each divided by ten or $3 \div 10 = \frac{3}{10}$	Pupils connect tenths to place value, decimal measures and to division by 10 They begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0,1] interval, including relating this to measure Pupils understand the relation between unit fractions as operators (fractions of), and division by integers They continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity Pupils practice adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency

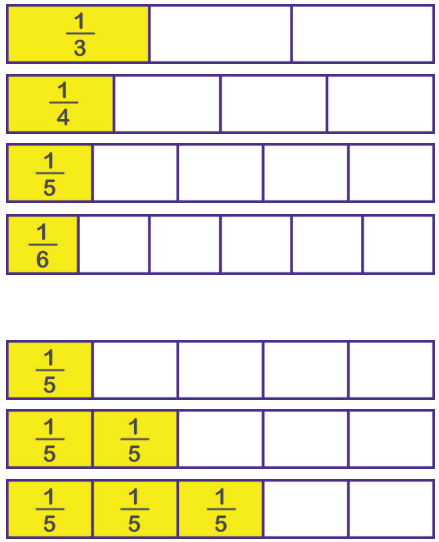
Notes

Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	**Children understand fractions in different contexts:** • Fractions as part of the number system • Fractions as part of a whole • Fractions of a quantity Use the same fraction to illustrate this concept (e.g. $\frac{1}{4}$) When finding fractions of quantities, ensure questions include those relating fractions to measure and money. When finding non unit fractions of a quantity, children do so practically or pictorially, building on their knowledge gained when finding a unit fraction of a whole.	**Fraction as part of the number system:**  Children can place fractions on a number line demarcated 0 - 1 **Fractions as part of a whole:** whole shape divided into quarters  **Fractions of a quantity:** 12 divided into 4 groups or $\frac{1}{4}$ of 12 or 12 ÷ 4  Children should be able to answer questions such as, 'What is one quarter of 12cm?' and 'What is one fifth of £1?'  From an image like this, children use their knowledge that if $\frac{1}{4}$ equals 3 then $\frac{3}{4}$ must equal 9.	

Notes

Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	Understand the place value of fractions in the number system (work with denominators 2, 3, 4, 5, 8 and 10 to build on work covered during the teaching of multiplication and division) From a set of fractions, children show knowledge of place value to position them accurately on a 0 – 1 number line, understanding the relationship between them	 Start to introduce units of measure and include numbers greater than one, for example, 'Place $\frac{2}{3}$ of a metre or $1\frac{1}{2}$ metres on a number line'	
Recognise and show, using diagrams, equivalent fractions with small denominators	Using fraction bars (or any visual representation that shows fractions of a shape) children can identify fractions and can find pairs of equivalent fractions		
	Children should start to explore the links between fraction families Build on the relationship between tenths and hundredths to show common fraction equivalents		

Notes

Compare and order unit fractions, and fractions with the same denominators	From a group of unit fractions with a denominator up to 10, children can compare the size of fractions and order them From a group of fractions with the same denominator, children can compare the size and order them		

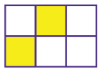
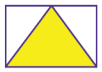
Notes

CONTINUOUS OBJECTIVES – AUTUMN 2			
Solve number problems and practical problems involving the ideas from number and place value	Be able to answer word and reasoning problems linked to place value **Be able to use known facts in order to explore others:** Include commutativity and inverse and other relationships between numbers (e.g. 4 x 8 is also 2 x 16 because one side of the multiplication is halved, the other side is doubled)	Emma has used these digit cards to make the number 250  How many different numbers can you make? Can you put all the numbers in order? If you made the number that is ten less than Emma's, which digit cards would you need? If you know that 4 x 8 = 32, how many other number facts can you tell me?	
Estimate the answer to a calculation and use inverse operations to check answers **Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction**	Working with numbers up to three digits, ensure that children have opportunities to: • Estimate the answer • Evidence the skill of addition and/or subtraction • Prove the inverse using the skill of addition and/or subtraction • Practice calculation skill including units of measure (m, cm, mm, kg, g, l, ml, hours, minutes and seconds)	Following the calculation sequence: • Estimate 245 + 123 • Calculate 245 + 123 • Prove 368 – 123 = 245 • Calculate 368ml – 123ml	

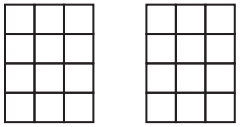
Notes

	• Solve missing box questions, including those where missing box represents a digit or represents a number • Solve problems including those with more than one step, for numbers and measures • Solve open-ended investigations	• 368cm - ☐ = 245cm • I have 245ml of water in one jug and 123ml in another jug, how much do I have altogether? I drink 200ml, how much is now left? ☐☐☐+☐☐=☐☐☐ • Using the digit cards 1 to 9, make the smallest/biggest answer, an answer that is odd/even, divisible by 10 etc.	
Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects	Working with numbers including up to two-digit multiplied by one-digit, ensure that children have opportunities to: • Estimate the answer • Evidence the skill of multiplication and/or division • Prove the inverse using the skill of multiplication and/or division • Practice calculation skill including units of measure (m, cm, mm, kg, g, l, ml, hrs, minutes and seconds) • Solve missing box questions including those where missing boxes represents a digit or represents a number	**Following the calculation sequence:** • Estimate 32 x 3 • Calculate 32 x 3 • Prove 96 ÷ 3 = 32 • Calculate 32cm x 3 • 96cm ÷ ☐ = 32cm	

Notes

	• Solve problems including those with more than one step • Solve open-ended investigations Solve correspondence problems (where there is a given relationship between the given variables) including finding all possibilities / combinations Use skills of doubling and halving to scale up and down to solve problems	• Three children each have 32ml of water, how much water is there altogether? □□ ÷ □ = □□ • Using the digit cards 1 to 9, make the smallest/biggest answer, an answer that is odd/even etc. If there are 4 chocolate bars, how can I share them equally between 8 children? I have 3 skirts, and 5 tops, how many different outfits can I make? If 2 pizzas feed 3 children, how many pizzas are needed for 6 children?	
Solve problems involving fractions	Building on the fraction work covered above, apply this knowledge into problem solving	Which is bigger, $\frac{1}{3}$ or $\frac{1}{6}$? Find a fraction that is bigger than $\frac{1}{2}$, smaller than $\frac{4}{6}$, between $\frac{1}{3}$ and $\frac{1}{2}$, equivalent to $\frac{1}{3}$ A  B  C  D  Which two of these diagrams show fractions that are equivalent?	

Notes



Shade these diagrams to show that $\frac{8}{12} = \frac{2}{3}$

What fraction of this shape is shaded?

$\frac{1}{6} + \frac{2}{6} = \square$ $\frac{2}{3} + \square = 1$ $\frac{1}{6} - \square = \frac{4}{6}$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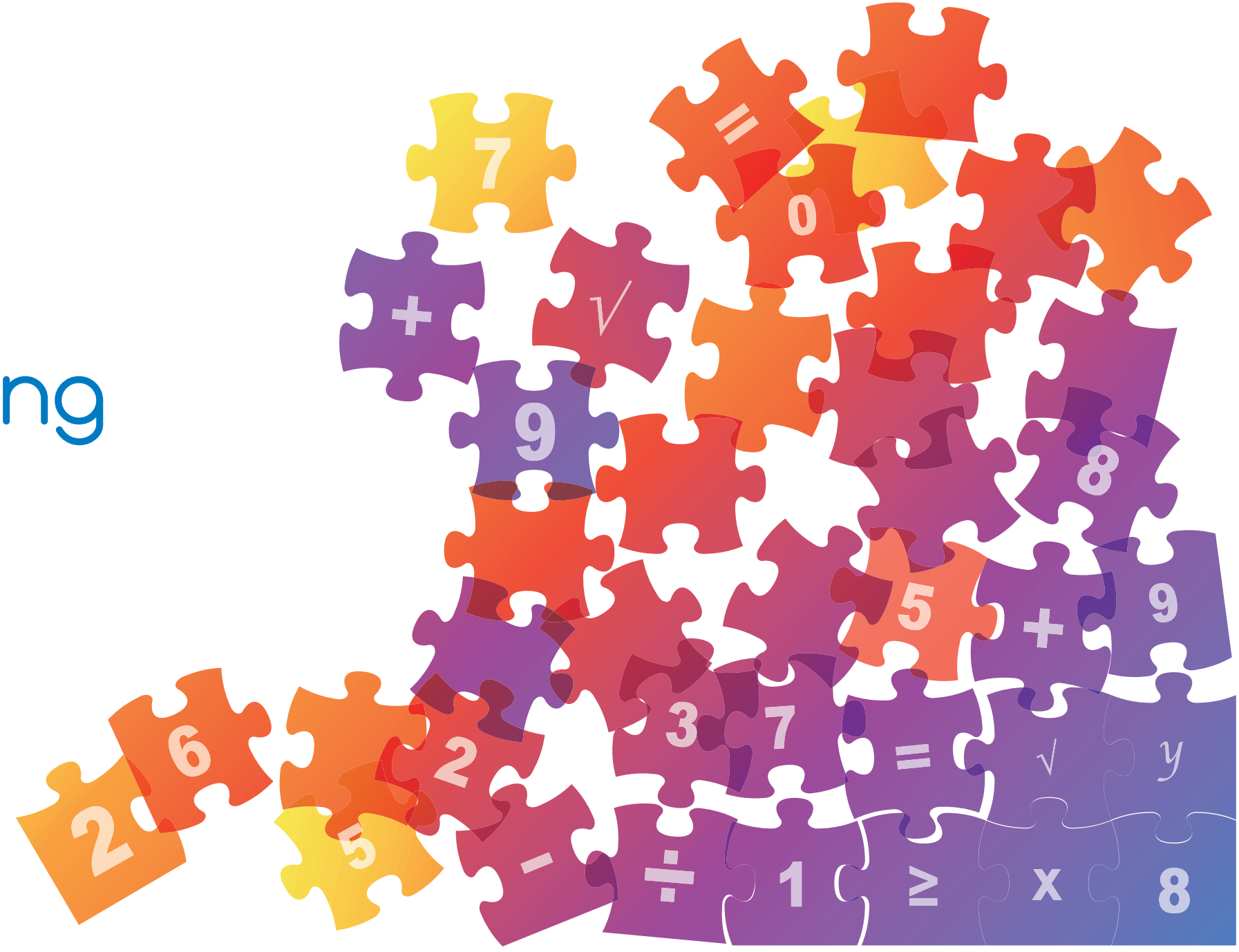

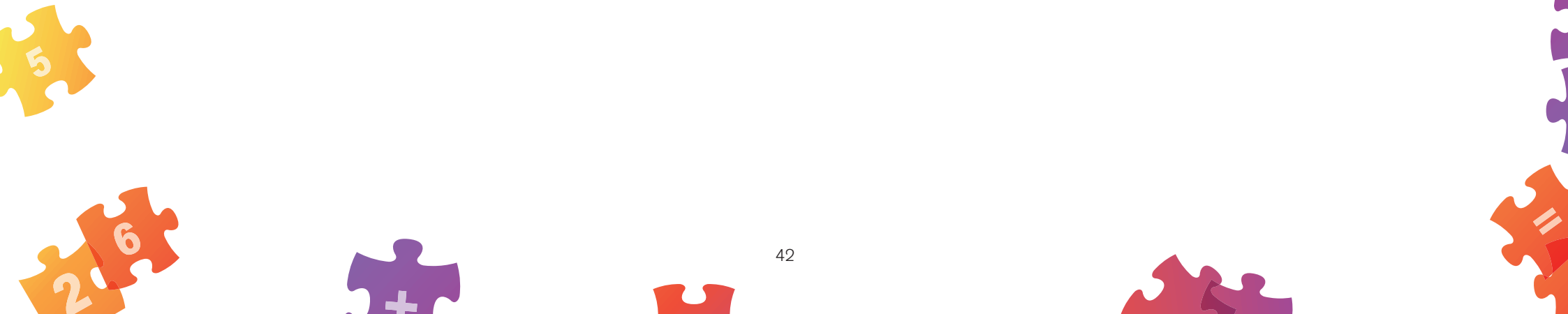
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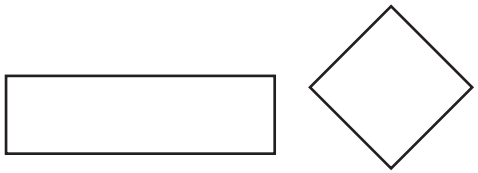
YEAR 3 PROGRAMME OF STUDY DOMAIN 2 – MEASUREMENT NEW OBJECTIVES - SPRING 1			
Objectives (statutory requirements)	What does this mean?	Example questions	**Notes and guidance (non-statutory)**
Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	Choosing appropriate units of measurement for the task	Two of these sentences could be true, tick the two sentences that could be true: • Adam's pencil is 12cm long • Leah is 12 metres tall • Katie's sister weighs 12kg • Jake's glass holds 12 litres of milk	Pupils continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple equivalents of mixed units (for example, 5m = 500cm). The comparison of measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or five times as high) and this connects to multiplication. Pupils continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They record £ and p separately. The decimal recording of money is introduced formally in year 4. Pupils use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in year 4.
	Practical measuring to appropriate degrees of accuracy	What would I use to measure the length of the hall?	
	Record measurements in writing using correct units of measurement and compare them	Weigh these items and write down their weight in order from smallest to largest	
	Knowing relationships and simple equivalents between given units for length, mass and volume/capacity	How many metres are there in four and a half kilometres? What fraction of a litre is 500ml?	
	Solve addition and subtraction calculations involving measure keeping the size of numbers in line with the progression outlined in the objective for addition and subtraction	In January, John was 105cm tall, he grew by 17cm, how tall is he now?	

Notes

	Start with same units of measurement progressing to different units of measurement (but not to include decimals) Compare measurements including scaling up and down	Jane has 356cm of ribbon, Sally has 311cm of ribbon, how much more ribbon does Jane have than Sally? If there is 1litre 20 millilitres of water in one jug and 1litre 35 millilitres of water in another jug, how much water is there altogether? A glass holds 25ml of liquid, a jug holds five times as much liquid, how much does the jug hold?	
Measure the perimeter of simple 2-D shapes	Perimeter is a continuous line forming the boundary of a closed geometric figure and its length can be measured Calculate a shape's perimeter by measuring its sides accurately and expressing the answer in centimetres Measurement can be by using a cm ruler accurately or a single length of string which can then be measured	 Use a ruler to find the perimeter of these shapes in centimetres	
Add and subtract amounts of money to give change, using both £ and p in practical contexts	Solve addition and subtraction calculations keeping the size of numbers in line with the progression outlined in the objective for addition and subtraction. Pounds and pence are recorded separately (i.e. no decimal point) Start with same units of money progressing to mixed units of money	If crisps cost 55p and cola costs 65p, what is the total cost? (recording the answer as 120p or £1 and 20p)	

Notes

	Calculate change from given amount using number line method Make sure examples are from whole pounds, using the method of counting on to find the difference	A newspaper cost 70p and a chocolate bar cost 50p, John paid with a £2 coin, how much change did he get? John had £10, he spent £2 and 35p, how much money did he have left? Bridge up to £3 and then on to £10 (65p + £7 = £7 and 65p)	
Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	From an analogue clock displaying either numbers 1 to 12 or Roman numerals I to XII, can read the time out loud and write it in words From a digital clock displaying 12-hour clock notation, tell and write the time Introduce the concept of a 24-hour clock linking it to 24 hours in a day	 Using this visual, ensure clock face is labelled with both numbers and Roman numerals and ask children to read and write the time  Using this visual, children can say that the time is 'Six fifty five' moving towards saying 'Five to seven'	

Notes

***Estimate and read time with increasing accuracy to the nearest minute;* record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as am/pm, morning, afternoon, noon and midnight**	From a range of clock displays, children can read the time to the nearest minute When given a range of times with the same units or mixed units and using the vocabulary given, children can compare and order them	 From a range of clock displays, children can answer questions such as: What time is it? Is it am or pm? Which clock shows noon or midnight? Order these time durations from the shortest to the longest: 65 minutes, I hour 15 minutes, 1 ½ hours and fifteen minutes 2 minutes, 180 seconds, 45 seconds and 1 ½ minutes	
Know the number of seconds in a minute and the number of days in each month, year and leap year	Permanent display for reference and linked to mental skills or basic skills to enable continuous practice	Children can answer a range of questions and examples may be: How many seconds in two minutes? How many days in October? How many days in two leap years?	
Compare duration of events, for example to calculate the time taken by particular events or tasks	When given the start and finish time, children can calculate how long something has taken Using this method, children can gather information to compare different time durations	Katie left the house for a walk at 10:05 and returned at 10:40, for how long was she out? Mark got into the swimming pool at 3.30pm, he got out at 4.15pm, for how long was he in the pool? Who did more exercise? How many minutes more did he/she do?	

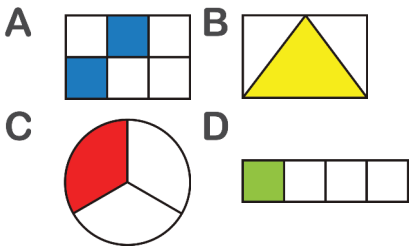
Notes

CONTINUOUS OBJECTIVES – SPRING 1			
Solve number problems and practical problems involving the ideas from number and place value	Be able to answer word and reasoning problems linked to place value **Be able to use known facts in order to explore others:** Include commutativity and inverse and other relationships between numbers (e.g. 4 x 8 is also 2 x 16 because one side of the multiplication is halved, the other side is doubled)	Emma has used these digit cards to make the number 250  How many different numbers can you make? Can you put all the numbers in order? If you made the number that is ten less than Emma's, which digit cards would you need? If you know that 4 x 8 = 32, how many other number facts can you tell me?	
Estimate the answer to a calculation and use inverse operations to check answers **Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction**	Working with numbers up to three digits, ensure that children have opportunities to: • Estimate the answer • Evidence the skill of addition and/or subtraction • Prove the inverse using the skill of addition and/or subtraction • Practice calculation skill including units of measure (m, cm, mm, kg, g, l, ml, hours, minutes and seconds)	Following the calculation sequence: • Estimate 245 + 123 • Calculate 245 + 123 • Prove 368 – 123 = 245 • Calculate 368ml – 123ml	

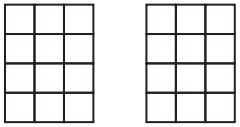
Notes

	• Solve missing box questions, including those where missing box represents a digit or represents a number • Solve problems including those with more than one step, for numbers and measures • Solve open-ended investigations	• 368cm - ☐ = 245cm • I have 245ml of water in one jug and 123ml in another jug, how much do I have altogether? I drink 200ml, how much is now left? ☐☐☐+☐☐=☐☐☐ • Using the digit cards 1 to 9, make the smallest/biggest answer, an answer that is odd/even, divisible by 10 etc.	
Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects	Working with numbers including up to two-digit multiplied by one-digit, ensure that children have opportunities to: • Estimate the answer • Evidence the skill of multiplication and/or division • Prove the inverse using the skill of multiplication and/or division • Practice calculation skill including units of measure (m, cm, mm, kg, g, l, ml, hrs, minutes and seconds) • Solve missing box questions including those where missing box represents a digit or represents a number	Following the calculation sequence: • Estimate 32 x 3 • Calculate 32 x 3 • Prove 96 ÷ 3 = 32 • Calculate 32cm x 3 • 96cm ÷ ☐ = 32cm	

Notes

	• Solve problems including those with more than one step • Solve open-ended investigations	• Three children each have 32ml of water, how much water is there altogether? □ □ ÷ □ = □ □ • Using the digit cards 1 to 9, make the smallest/biggest answer, an answer that is odd/even etc.	
	Solve correspondence problems (where there is a given relationship between the given variables) including finding all possibilities / combinations	If there are 4 chocolate bars, how can I share them equally between 8 children? I have 3 skirts, and 5 tops, how many different outfits can I make?	
	Use skills of doubling and halving to scale up and down to solve problems	If 2 pizzas feed 3 children, how many pizzas are needed for 6 children?	
Solve problems involving fractions	Building on the fraction work covered above, apply this knowledge into problem solving	Which is bigger, $\frac{1}{3}$ or $\frac{1}{6}$? Find a fraction that is bigger than $\frac{1}{2}$, smaller than $\frac{4}{6}$, between $\frac{1}{3}$ and $\frac{1}{2}$, equivalent to $\frac{1}{3}$  Which two of these diagrams show fractions that are equivalent?	

Notes



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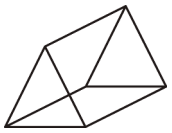
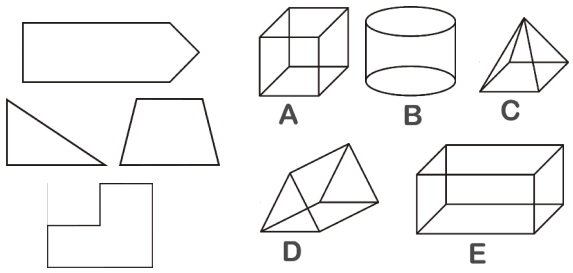
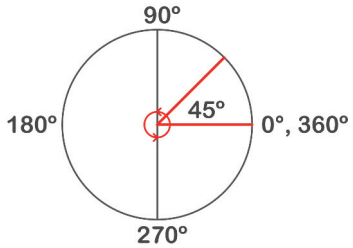
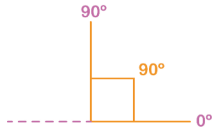
What fraction of this shape is shaded?

$\frac{1}{6} + \frac{2}{6} = \square$ $\frac{2}{3} + \square = 1$ $\frac{1}{6} - \square = \frac{4}{6}$

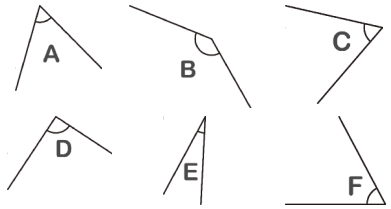
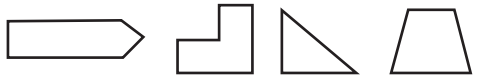
Notes

YEAR 3 PROGRAMME OF STUDY			
DOMAIN 3 – GEOMETRY			
NEW OBJECTIVES - SPRING 2, PROPERTIES OF SHAPE			
Objectives (statutory requirements)	What does this mean?	Example questions	**Notes and guidance (non-statutory)**
Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	A polygon is a 2-D shape with straight sides. If all sides and angles are the same, it is a regular polygon When drawing 2-D shapes, rulers are used and lines are drawn with accuracy to a given length in cms Children work practically to construct 3-D shapes (with straws, polydron etc.) Building on the knowledge of the properties of shapes introduced in Year 2 (such as sides, edges, vertices and faces) children explore symmetry and use this knowledge to enable them to classify 2-D and 3-D shapes according to these criteria	Draw a square where each side measures 4cm Children can construct shapes like this using modelling materials   When presented with these shapes, children can classify them to satisfy a range of criteria	Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra. Pupils extend their use of the properties of shapes. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle. Pupils connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.
Recognise that angles are a property of shape or description of a turn	An angle is the space (usually measured in degrees) between two intersecting lines. The angle measures the amount of turn between these lines		

Notes

	Children understand the definition of an angle Children understand that angles measure the amount of turn Children can identify angles in 2-D shapes	  When presented with these shapes, children can identify and mark the angles	
Identify right angles,* recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn; *identify whether angles are greater than or less than a right angle	Identify right angles in 2-D shapes and know that a right angle measures 90˚ Practically investigate turns and the right angles within them so that the children see the link between a quarter turn and a right angle Children can identify right angles from real-life photographs or the environment Through movement, children can make quarter turns, half turns, three quarter turns and full turns, match their movements to the number of right angles each represents and the corresponding measure in degrees (e.g. a half turn equals 180˚)	 When presented with these shapes, children can identify and mark the right angles   Face the window, make a half turn clock-wise: Where are you facing now? How many right angles have you turned through? How many degrees have you turned through?	

Notes

	When presented with a set of angles, children can classify them into bigger than, smaller than or equal to a right angle		
Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	Within 2-D drawings of shapes, children can identify horizontal and vertical lines and use this vocabulary with confidence Within 2-D and 3-D shapes, children can identify perpendicular and parallel lines and use this vocabulary with confidence	 Identify the horizontal and vertical lines in these 2-D shapes  Identify the perpendicular and parallel lines in these pictures and photographs	

Notes

CONTINUOUS OBJECTIVES – SPRING 2			
Solve number problems and practical problems involving the ideas from number and place value	Be able to answer word and reasoning problems linked to place value **Be able to use known facts in order to explore others:** Include commutativity and inverse and other relationships between numbers (e.g. 4 x 8 is also 2 x 16 because one side of the multiplication is halved, the other side is doubled)	Emma has used these digit cards to make the number 250  How many different numbers can you make? Can you put all the numbers in order? If you made the number that is ten less than Emma's, which digit cards would you need? If you know that 4 x 8 = 32, how many other number facts can you tell me?	
Estimate the answer to a calculation and use inverse operations to check answers **Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction**	Working with numbers up to three digits, ensure that children have opportunities to: • Estimate the answer • Evidence the skill of addition and/or subtraction • Prove the inverse using the skill of addition and/or subtraction • Practice calculation skill including units of measure (m, cm, mm, kg, g, l, ml, hours, minutes and seconds)	Following the calculation sequence: • Estimate 245 + 123 • Calculate 245 + 123 • Prove 368 – 123 = 245 • Calculate 368ml – 123ml	

Notes

	• Solve missing box questions, including those where missing box represents a digit or represents a number • Solve problems including those with more than one step, for numbers and measures • Solve open-ended investigations	• 368cm - ☐ = 245cm • I have 245ml of water in one jug and 123ml in another jug, how much do I have altogether? I drink 200ml, how much is now left? ☐☐☐+☐☐=☐☐☐ • Using the digit cards 1 to 9, make the smallest/biggest answer, an answer that is odd/even, divisible by 10 etc.	
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Notes

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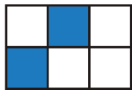
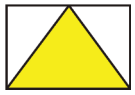
Solve problems involving fractions	Building on the fraction work covered above, apply this knowledge into problem solving	Which is bigger, $\frac{1}{3}$ or $\frac{1}{6}$? Find a fraction that is bigger than $\frac{1}{2}$, smaller than $\frac{4}{6}$, between $\frac{1}{3}$ and $\frac{1}{2}$, equivalent to $\frac{1}{3}$ A  B  C  D  Which two of these diagrams show fractions that are equivalent?	

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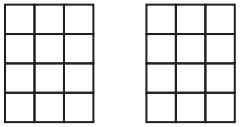

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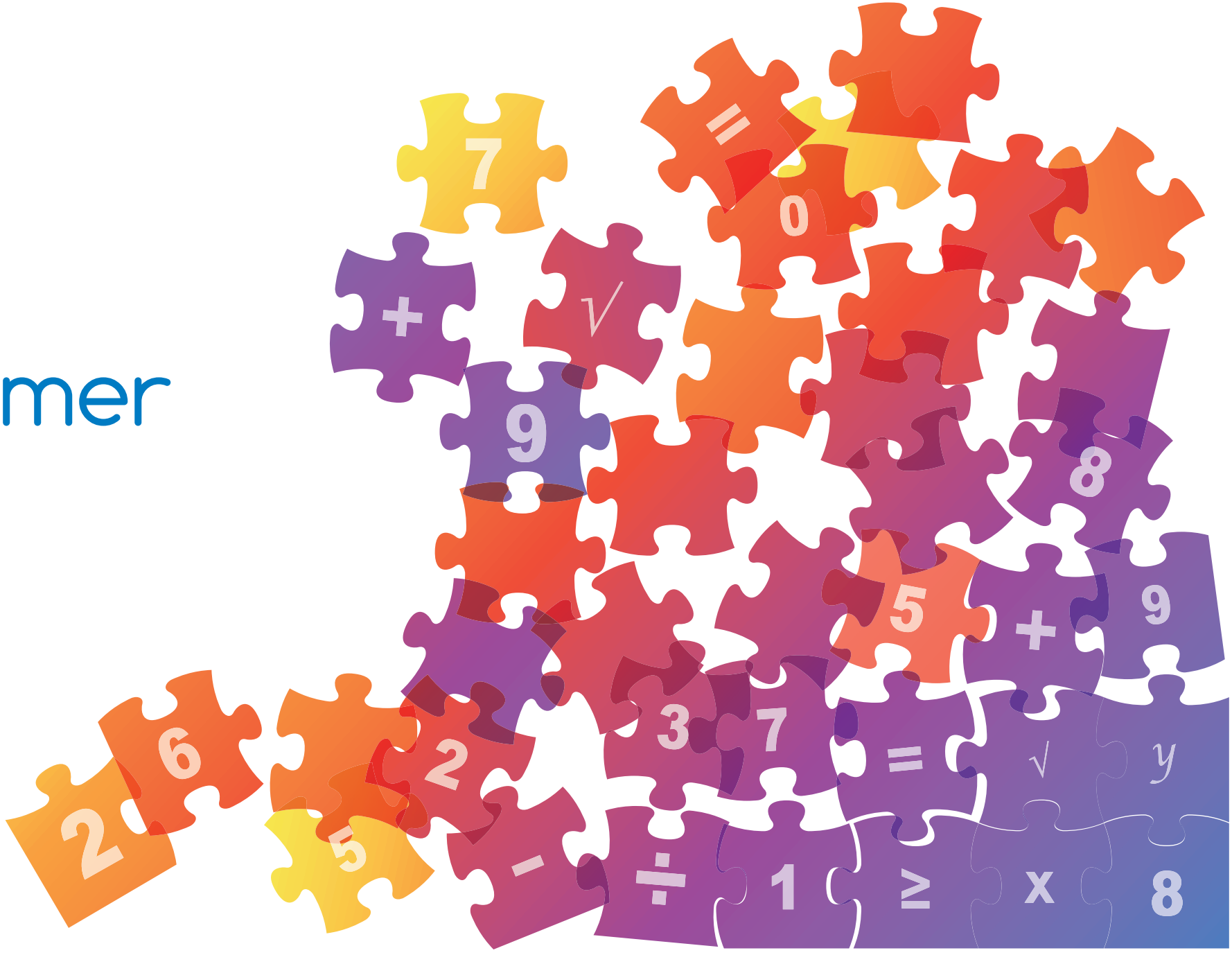
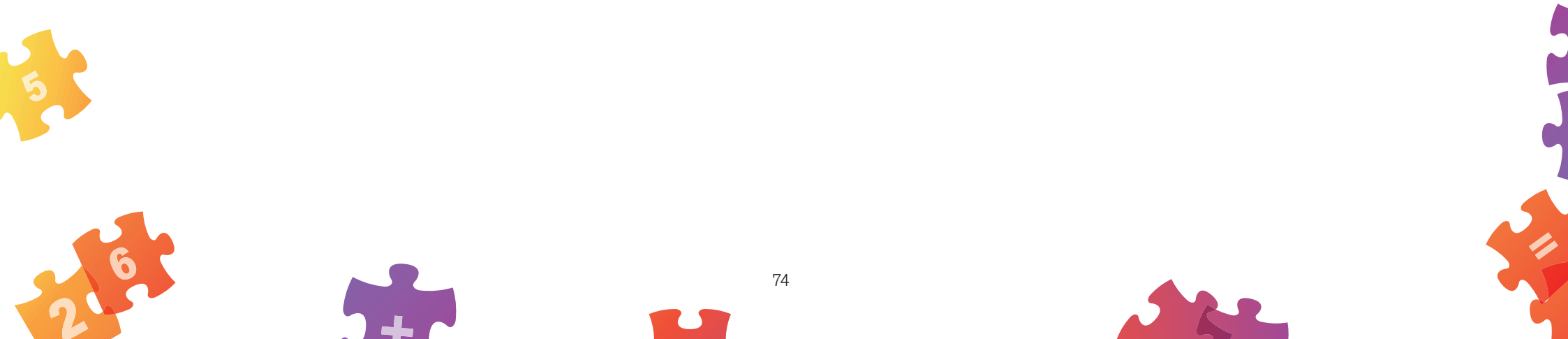
Summer

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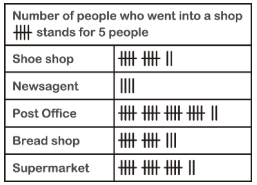
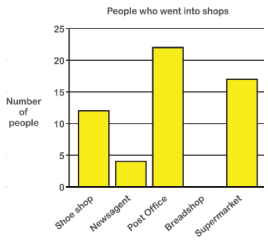
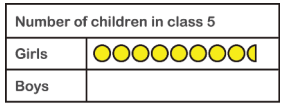
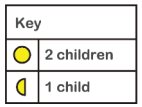
YEAR 3 PROGRAMME OF STUDY			
DOMAIN 4 – STATISTICS			
NEW OBJECTIVES - SUMMER 1			
Objectives (statutory requirements)	What does this mean?	Example questions	**Notes and guidance (non-statutory)**
Interpret and present data using bar charts, pictograms and tables	When given examples of constructed bar charts, children can identify the key features and answer simple questions (including examples where the scale is in increments of 2, 5 and 10) Using data given in a tally chart or frequency table, children can construct a bar chart with accurate labels and scaling (remember to include questions where the child is required to use scales in increments of 2, 5 and 10) Children should begin to understand which increments are the most appropriate for the data given and why When given examples of constructed pictograms, children can identify the key features and answer simple questions (including examples where one picture represents 4, 8, 50 and 100) Children can construct a pictogram adhering to one of the above criteria, moving towards selecting own scaling	 Number of people who went into a shop 𝍸 stands for 5 people Shoe shop: 𝍸 𝍸 || Newsagent: |||| Post Office: 𝍸 𝍸 𝍸 𝍸 || Bread shop: 𝍸 𝍸 ||| Supermarket: 𝍸 𝍸 𝍸 ||  How many people went into the supermarket? How many more people went into the post office than the shoe shop? Draw the missing bar in on the bar chart  Number of children in class 5 Girls: ○○○○○○○○◖ Boys:  Key ○ 2 children ◖ 1 child How many girls are in the class? There are 12 boys in the class, show this on the pictogram	Pupils understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy. They continue to interpret data presented in many contexts.

Notes

Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts, pictograms and tables	Building on understanding of bar charts, pictograms and tables, children apply these skills to answer questions	Colour of cars we saw colour / number of cars red 18 yellow 5 green 3 blue 4 white 7 silver 8 How many fewer green cars than silver cars were seen? What colour was the second highest number of cars? True or false? Twice as many silver cars were seen as blue	

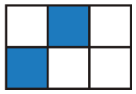
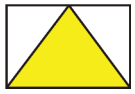
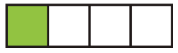
Notes

CONTINUOUS OBJECTIVES – SUMMER 1			
Solve number problems and practical problems involving the ideas from number and place value	Be able to answer word and reasoning problems linked to place value **Be able to use known facts in order to explore others:** Include commutativity and inverse and other relationships between numbers (e.g. 4 x 8 is also 2 x 16 because one side of the multiplication is halved, the other side is doubled)	Emma has used these digit cards to make the number 250  How many different numbers can you make? Can you put all the numbers in order? If you made the number that is ten less than Emma's, which digit cards would you need? If you know that 4 x 8 = 32, how many other number facts can you tell me?	
Estimate the answer to a calculation and use inverse operations to check answers **Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction**	Working with numbers up to three digits, ensure that children have opportunities to: • Estimate the answer • Evidence the skill of addition and/or subtraction • Prove the inverse using the skill of addition and/or subtraction • Practice calculation skill including units of measure (m, cm, mm, kg, g, l, ml, hours, minutes and seconds)	Following the calculation sequence: • Estimate 245 + 123 • Calculate 245 + 123 • Prove 368 – 123 = 245 • Calculate 368ml – 123ml	

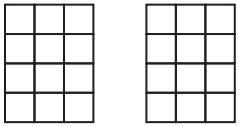
Notes

	• Solve missing box questions, including those where missing box represents a digit or represents a number • Solve problems including those with more than one step, for numbers and measures • Solve open-ended investigations	• 368cm - ☐ = 245cm • I have 245ml of water in one jug and 123ml in another jug, how much do I have altogether? I drink 200ml, how much is now left? ☐☐☐+☐☐=☐☐☐ • Using the digit cards 1 to 9, make the smallest/biggest answer, an answer that is odd/even, divisible by 10 etc.	
Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects	Working with numbers including up to two-digit multiplied by one-digit, ensure that children have opportunities to: • Estimate the answer • Evidence the skill of multiplication and/or division • Prove the inverse using the skill of multiplication and/or division • Practice calculation skill including units of measure (m, cm, mm, kg, g, l, ml, hrs, minutes and seconds) • Solve missing box questions including those where missing box represents a digit or represents a number	Following the calculation sequence: • Estimate 32 x 3 • Calculate 32 x 3 • Prove 96 ÷ 3 = 32 • Calculate 32cm x 3 • 96cm ÷ ☐ = 32cm	

Notes

	• Solve problems including those with more than one step • Solve open-ended investigations Solve correspondence problems (where there is a given relationship between the given variables) including finding all possibilities / combinations Use skills of doubling and halving to scale up and down to solve problems	• Three children each have 32ml of water, how much water is there altogether? □ □ ÷ □ = □ □ • Using the digit cards 1 to 9, make the smallest/biggest answer, an answer that is odd/even etc. If there are 4 chocolate bars, how can I share them equally between 8 children? I have 3 skirts, and 5 tops, how many different outfits can I make? If 2 pizzas feed 3 children, how many pizzas are needed for 6 children?	
Solve problems involving fractions	Building on the fraction work covered above, apply this knowledge into problem solving	Which is bigger, $\frac{1}{3}$ or $\frac{1}{6}$? Find a fraction that is bigger than $\frac{1}{2}$, smaller than $\frac{4}{6}$, between $\frac{1}{3}$ and $\frac{1}{2}$, equivalent to $\frac{1}{3}$ A  B  C  D  Which two of these diagrams show fractions that are equivalent?	

Notes



Shade these diagrams to show that $\frac{8}{12} = \frac{2}{3}$

What fraction of this shape is shaded?

$\frac{1}{6} + \frac{2}{6} = \square$ $\frac{2}{3} + \square = 1$ $\frac{1}{6} - \square = \frac{4}{6}$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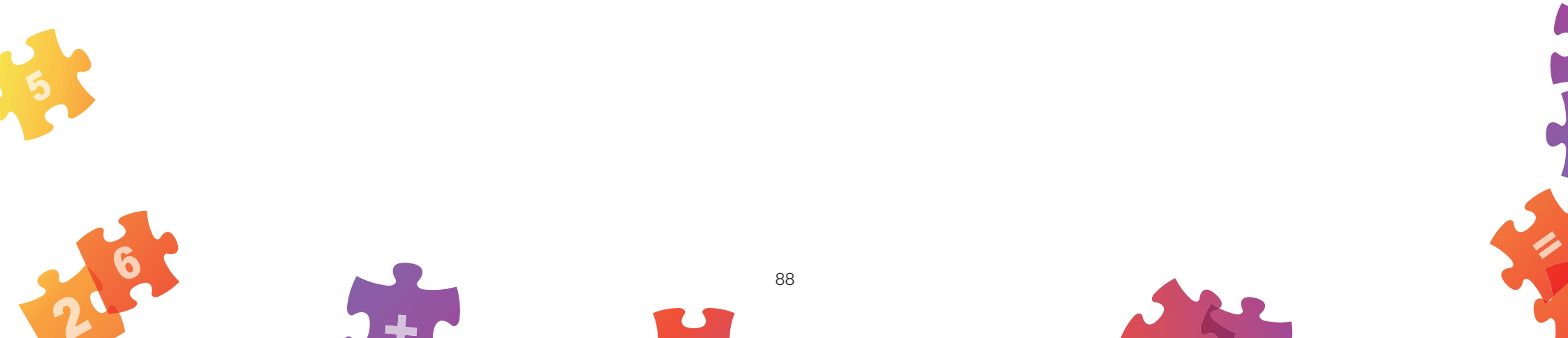
Basic Skills

Appendix 1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YEAR 3 - BASIC SKILLS	
SKILLS	**GUIDANCE NOTES**
Count from zero in multiples of 4, 8, 50 and 100 using bridging strategies as appropriate	If children are not secure in reciting their 8 times tables they should use a bridging strategy, e.g. (24 + 8 = 24 + 6 + 2)
Recall multiplication facts and related division facts for 3, 4, 8 times tables	Chanting forwards and backwards from different starting points as well as recalling random and non-consecutive multiplication and division facts
Add and subtract a series of one-digit numbers	Use skills such as number bonds, doubles, halves and near doubles e.g. 2 + 8 + 3, 8 – 4 – 2 and 6 + 7 + 6 + 5
Use knowledge of complements to 100 to find change from £1	Know that there are 100 pence in one pound, use this to calculate £1 – 60p, £1 – 35p etc.
Use knowledge of complements to 30 to calculate time within half an hour	Know that there are 30 minutes in half an hour, use this to calculate half an hour – 10 minutes etc.
Find 10 or 100 more or less than a given number	Use structured apparatus such as base 10 or bundles of straws to illustrate the concept, include measures and money as context
Read and write numbers up to 1000	Use structured apparatus and place value grid to support conceptual understanding of place value
Recognise the place value of each digit in a three-digit number	What is the value of the 5 digit in these three numbers, 105, 523 and 258? Play place value games to reinforce this concept (e.g. if I add 20 to the number 523, which digit would change, what would the new digit be?)
Compare and order numbers up to 1000	Comparing two three-digit numbers, children can say which is the bigger, the smaller, they also use the < and > signs. Children can order consecutive and non-consecutive numbers both forwards and backwards
Partition numbers into place value columns	Children can partition three-digit numbers (e.g. 364) 300 + 60 + 4
Partition numbers in different ways	364 is 300 + 60 + 4 and is also 200 + 150 + 14 etc.
Round any three-digit number to the nearest 10 and 100	234 + 68 is approximately 230 + 70, 295 + 132 is approximately 300 + 100

Notes

YEAR 3 - BASIC SKILLS	
SKILLS	**GUIDANCE NOTES**
Use rounding to support estimation and calculation	268 – 34 is approximately 270 – 30 so children can estimate the answer to be about 240
Use knowledge of place value to derive new addition and subtraction facts	If I know 7 + 8 = 15, I know 70 + 80 = 150, 700 + 800 = 1500
Use knowledge of inverse to derive associated addition and subtraction facts and check answers	If I know 15 + 5 = 20, then 20 – 5 must be 15, 18 + 8 = 26, 26 – 8 = 18
Double any number between 1 and 50 and find all corresponding halves	Use partitioning to double 35 so that it becomes double 30 + double 5. Halve 70 by partitioning it into 60 and 10 then halving 60, halving 10 and recombining
Add and subtract mentally HTU ± U, HTU ± T and HTU ± H	Children need to be secure with the skills of bridging, partitioning, doubling and know their number pairs up to ten to add and subtract mentally 236 + 4 236 + 40 236 + 400 236 + 7 236 + 70 236 + 700
Multiply any three-digit number by 10 and any two-digit number by 100 Divide any three-digit multiple of 10 by ten	Understand that when multiplying a number by ten, its digits move one place to the left (as that place value column is ten times bigger) and zero is used as a place holder and when multiplying a number by 100, its digits move two places to the left and zeros are needed as place holders Understand that when dividing a number by ten, its digits move one place to the right and why zero as the place holder is no longer needed (eg 120 ÷ 10 = 12)
Use knowledge of inverse to derive associated multiplication and division facts	If I know 4 × 8 = 32, I know 8 x 4 = 32, 32 ÷ 8 = 4, 32 ÷ 4 = 8
Use known facts to derive nearby facts	If I know 8 + 8 = 16, I know 8 + 9 = 17 If I know 5 × 8 = 40, I know 6 × 8 = 48
Use known facts to derive equivalent facts	If I know 8 + 8 = 16, I know 7 + 9 = 16 If I know 5 × 8 = 40, I know 5 × 2 × 4 = 40

Notes

YEAR 3 - BASIC SKILLS	
SKILLS	**GUIDANCE NOTES**
Count up and down in tenths	Children count forwards and backwards, from different starting points, consecutively and non-consecutively (e.g. $\frac{3}{10}$ $\frac{4}{10}$ $\frac{5}{10}$)
Recall fraction pairs to 1	For fractions with the same denominator, children can state the complement to 1 (e.g. $\frac{2}{5} + \frac{3}{5} = 1$)
Identify fractions greater or less than a half	Children can say whether fractions such as $\frac{2}{6}$ and $\frac{4}{6}$ are more or less than a half, they also use the < and > signs
Identify equivalent fractions with small denominators	Children see the links between fraction families and can say that $\frac{2}{4}$, $\frac{1}{2}$ and $\frac{4}{8}$ are equivalent
Order fractions with the same denominator	Comparing two fractions, children can say which is the bigger, the smaller, they also use the < and > signs. Children can order consecutive and non-consecutive fractions with the same denominator both forwards and backwards
Tell and write the time from a 12-hour analogue clock and a clock with Roman numerals and a digital clock display	Children can alternate between stating the time from a clock display and drawing or showing a clock display to match a given time
Convert between money and measures including time	Children can convert m to cm and cm to mm, kg to g, l to ml, hours to minutes and minutes to seconds using whole numbers as start points (i.e. no decimals)
Recognise right angles, straight angles, half and full turns and identify whether the turn is greater, less than or the same as a right angle	Children can identify simple angles from pictures or practical experiences they can also state the corresponding turns for these angles. Using pictures or working practically, children can compare two angles stating whether they are bigger or smaller than a right angle


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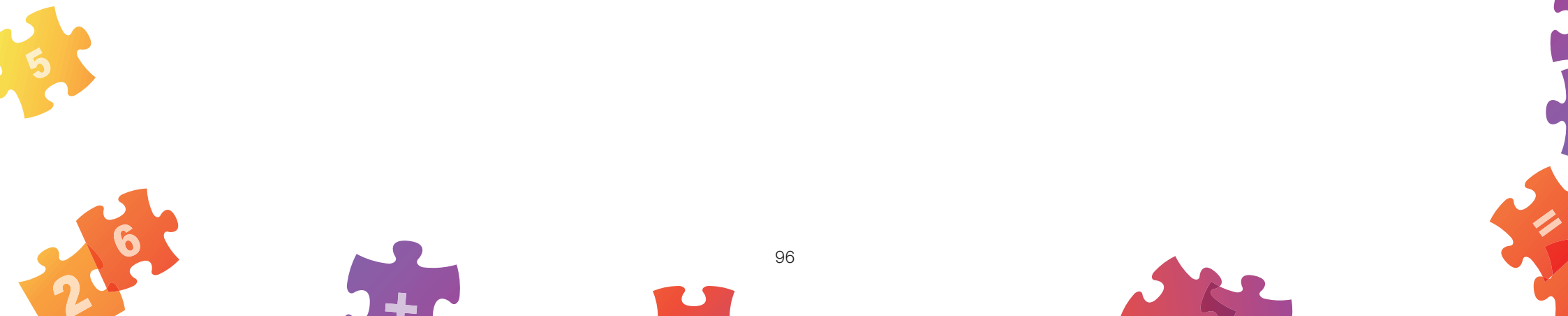
Progression

Appendix 2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PROGRESSION THROUGH THE DOMAINS		
NUMBER AND PLACE VALUE		
Y2	**Y3**	**Y4**
count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	**count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number**	count in multiples of 6, 7, 9, 25 and 1000
recognise the place value of each digit in a two-digit number (tens, ones)	**recognise the place value of each digit in a three-digit number (hundreds, tens, ones)**	find 1000 more or less than a given number
identify, represent and estimate numbers using different representations, including the number line	**compare and order numbers up to 1000**	count backwards through zero to include negative numbers
compare and order numbers from 0 up to 100; use <, > and = signs	**identify, represent and estimate numbers using different representations**	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
read and write numbers to at least 100 in numerals and in words	**read and write numbers up to 1000 in numerals and in words**	order and compare numbers beyond 1000
use place value and number facts to solve problems.	**solve number problems and practical problems involving the ideas from number and place value**	identify, represent and estimate numbers using different representations round any number to the nearest 10, 100 or 1000 solve number and practical problems that involve all of the above and with increasingly large positive numbers and place value read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value

Notes

PROGRESSION THROUGH THE DOMAINS		
ADDITION AND SUBTRACTION		
Y2	**Y3**	**Y4**
solve problems with addition and subtraction: • using concrete objects and pictorial representations, including those involving numbers, quantities and measures • applying their increasing knowledge of mental and written methods recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 add and subtract numbers using concrete objects, pictorial representations, and mentally, including: • a two-digit number and ones • a two-digit number and tens • two two-digit numbers • adding three one-digit numbers show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	**add and subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds** **add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction** **estimate the answer to a calculation and use inverse operations to check answers** **solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction**	add and subtract numbers with up to four digits using formal written methods of columnar addition and subtraction where appropriate estimate and use inverse operations to check answers to a calculation solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

Notes

PROGRESSION THROUGH THE DOMAINS		
MULTIPLICATION AND DIVISION		
Y2	**Y3**	**Y4**
recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	**recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables**	recall multiplication and division facts for multiplication tables up to 12 × 12
calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	**write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods**	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	**solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects**	recognise and use factor pairs and commutativity in mental calculations
solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts		multiply two-digit and three-digit by a one-digit number using formal written layout
		solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Notes

PROGRESSION THROUGH THE DOMAINS		
FRACTIONS (INCLUDING DECIMALS Y4)		
Y2	**Y3**	**Y4**
recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity write simple fractions for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	**count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and dividing one-digit numbers or quantities by 10** **recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators** **recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators** **recognise and show, using diagrams, equivalent fractions with small denominators** **add and subtract fractions with the same denominator within one whole** **compare and order unit fractions, and fractions with the same denominators** **solve problems involving fractions**	recognise and show, using diagrams, families of common equivalent fractions count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten. solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number add and subtract fractions with the same denominator recognise and write decimal equivalents of any number of tenths or hundredths recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths round decimals with one decimal place to the nearest whole number compare numbers with the same number of decimal places up to two decimal place solve simple measure and money problems involving fractions and decimals to two decimal places

Notes

PROGRESSION THROUGH THE DOMAINS		
MEASUREMENT		
Y2	Y3	Y4
choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	**measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)**	Convert between different units of measure measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
compare and order lengths, mass, volume/capacity and record the results using >, < and =	**measure the perimeter of simple 2-D shapes**	find the area of rectilinear shapes by counting squares
recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value	**add and subtract amounts of money to give change, using both £ and p in practical contexts**	estimate, compare and calculate different measures, including money in pounds and pence
find different combinations of coins that equal the same amounts of money	**tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks**	read, write and convert time between analogue and digital, 12 and 24-hour clocks
solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	**estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight**	solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days
compare and sequence intervals of time	**know the number of seconds in a minute and the number of days in each month, year and leap year**	
tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times	**compare durations of events, for example to calculate the time taken by particular events or tasks**	
Know the number of minutes in an hour and the number of hours in a day		

Notes

PROGRESSION THROUGH THE DOMAINS		
GEOMETRY		
Y2	**Y3**	**Y4**
Properties of shapes identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces identify 2-D shapes on the surface of 3-D shapes, for example a circle on a cylinder and a triangle on a pyramid compare and sort common 2-D and 3-D shapes and everyday objects **Position and direction** order and arrange combinations of mathematical objects in patterns and sequences use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)	**Properties of shapes** **draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them** **recognise that angles are a property of shape or a description of a turn** **identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle** **identify horizontal and vertical lines and pairs of perpendicular and parallel lines**	**Properties of shapes** compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes identify acute and obtuse angles and compare and order angles up to two right angles identify lines of symmetry in 2-D shapes presented in different orientations complete a simple symmetric figure with respect to a specific line of symmetry **Position and direction** describe positions on a 2-D grid as coordinates in the first quadrant describe movement between positions as translations of a given unit to the left/right and up/down plot specified points and draw sides to complete a given polygon

Notes

PROGRESSION THROUGH THE DOMAINS		
STATISTICS		
Y2	**Y3**	**Y4**
interpret and construct simple pictograms, tally charts, block diagrams and simple tables ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity ask and answer questions about totalling and comparing categorical data	**interpret and present data using bar charts, pictograms and tables** **solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables**	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

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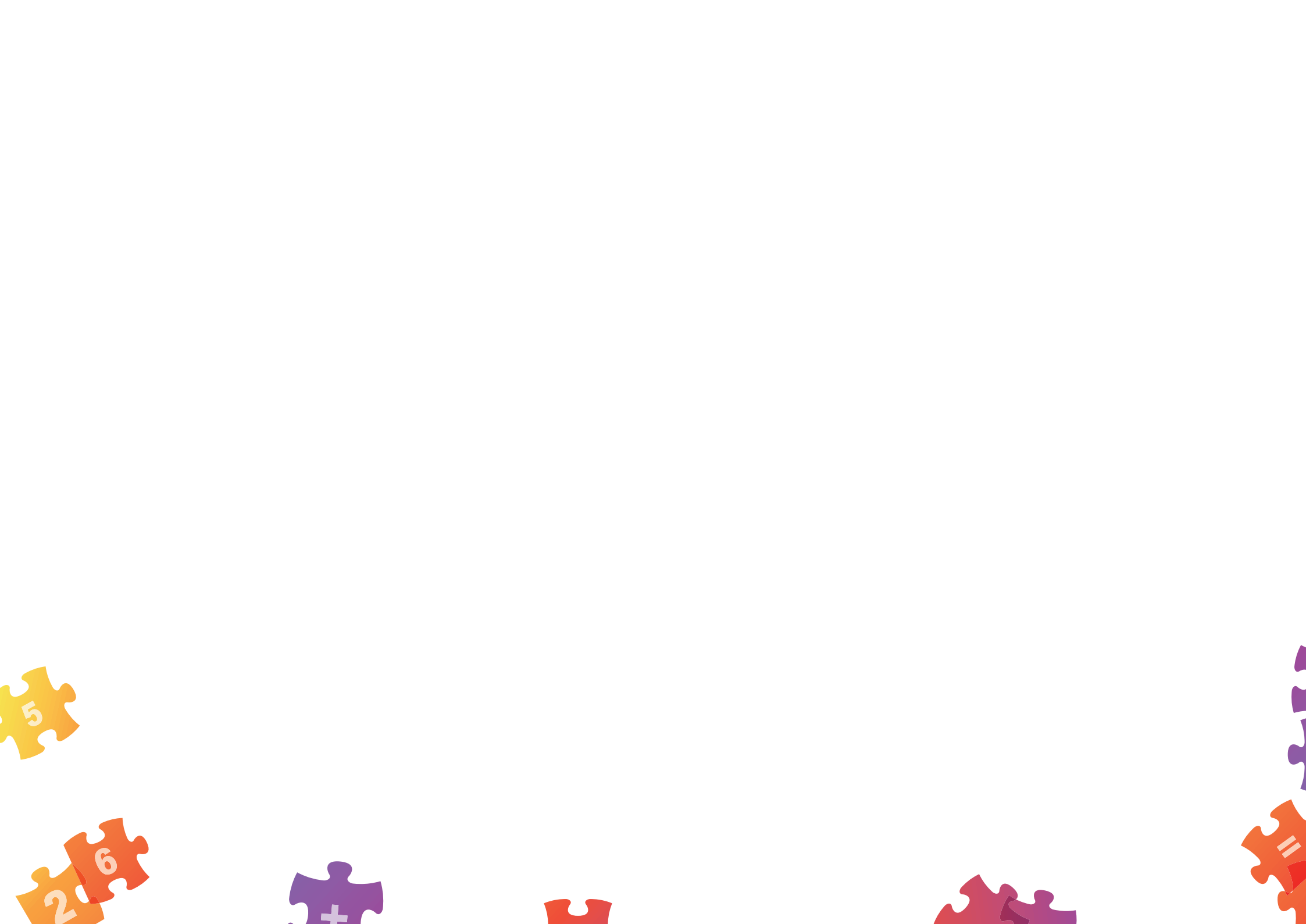
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