

Year 5- Autumn 1 2017

Mental and Oral focus			Weekly arithmetic focus – Matched to strand where possible				
<ul style="list-style-type: none"> • Rounding numbers to nearest 10, 100 and 1000 • Ordering and comparing numbers • Greater than, less than, equal to symbols • Counting forwards and backwards in steps of powers of 10 • Rounding decimals to the nearest whole number and tenth (1dp) • Dividing mentally • Comparing decimal numbers 	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
	Teach &Test	Teach &Test	Teach &Test	Teach &Test	Teach &Test	Teach &Test	Teach &Test
	Dividing by 10 and 100	+ & - fractions	Written method for subtraction	Square numbers	Multiplying by 10, 100 & 1000	Division with remainders	Written method for addition
KPIs and PIs	Vocabulary	Learning journey			Big Problem		

5.2 - read write order and compare numbers to 1000000

5.3 - determine the value of each digit up to 1000000

5.6 - interpreting negative numbers in context (count forwards and backwards)

5.1 counting forwards and backwards in steps of 10

5.5 - round numbers up to 1m to the nearest 10, 100, 1000, 1000000

5.4 - read Roman numerals to 1,000 and recognise years

5.7 - I can solve number problems and practical problems with the above

Hundreds
Thousands
Ten Thousands
Millions
tenths
hundredths
thousandths
Place Value
Order
Compare
Numerals
Position
Estimate
Positive
Negative
Round
Rounding
Nearest
Decimals
Decimal place
Integer
Roman
Numerals
500 D
1000 M

Conceptual Understanding– Carousel of activities at different tables. Questions linked to place value. What each digit represents, size of digits depending on position in a number etc. Use equipment and possibly a photo.

Topic / Skill: Read and recognise Roman numerals to 1,000 using their position

Conceptual – Where might we see Roman Numerals? Why do you think we learn about them? Key questions, table discussions.

Fluency – Match the roman numeral to the number in digits. Next, Roman numeral to number, then number to Roman numeral. Working out the calculations using a number line.

Reasoning –

True or false?

There is no Roman numeral symbol for 0	
Roman numerals cannot represent numbers larger than 100	
Some Roman numerals are still used today	
V represents the number 5	

Solve

$CCCL + CL =$

How many calculations, using Roman Numerals, can you write to get the same total?

Possible answers:
 $CD + C = D$
 $M - II = D$
 $C + CC + CC = D$
 $C \times V = D$

Problem Solving –

Here is part of a Roman Numeral hundred square.

Complete the missing values.

XLIV	XLV		XLVII
		LVI	LVII
LXIV		LXVI	LXVII

What patterns do you notice?

Topic / Skill: Determine the value of a digit using its place value

Conceptual – Is the position of a digit important in a number? Why?

Fluency –

1 Match the diagram to the number.

4,005 4,500 4,050

Partition 5, 6 and 7-digit numbers.

Here are three ways of partitioning 27,650

27 thousands, 650 ones
 27 thousands, 5 hundreds and 150 ones
 27 thousands and 65 tens

Write three more ways

Possible answers:
 27 thousands, 6 hundreds and 5 tens
 27 thousands, 7 thousands and 650 ones
 20 thousands, 7 thousands and 650 ones

Children to underline the digit that represents the ones, tens, thousands, hundred thousand etc.

Reasoning –

Another, another, another:
 For example: Give me a seven-digit number which has 9 hundred, 7 million and 4 ten thousand

Which diagram is the odd one out?

...Convince me

Problem Solving –

The bar models are showing a pattern.

Draw the next three.

Create your own pattern of bar models for a partner to continue.

Place value problem

Which number belongs to which teacher?

Teacher A: You would say my number if you counted in 100s from 4,500	Teacher B: My number has 8 hundreds, 4 ten thousands and 2 ones
Teacher C: If you rounded my number to the nearest thousand, it would round to 4,5,000	Teacher D: I have the smallest number
Teacher E: I have the largest number	Teacher F: My number isn't in the list but can you write it using these clues? (write it in roman numerals) My number is 100 more than 52

44,821
 919,784
 44,823
 4,860
 10,453

Negative numbers problem



Well, here's a pretty scene, the underwater creatures and the tall lighthouse joined by a seagull and a cloud in the sky.

There are black markings all the way up the lighthouse and on the support for the lighthouse going down to the sea bed. These markings are 1 metre apart. I have left the numbering for you to do.

The sea level is of course '0' and then positive numbers going up and negative numbers going down to the sea bed.

If we think about the mouths of the creatures then we can see how much deeper they are from each other, or what distance they are apart.

For example the (mouth of) the fierce looking blue and white fish near the middle is 1 metre deeper than the (mouth of) the golden yellow fish.

- What number should be where the light shines from the lighthouse?
- What number should be where the (head of the) seagull is?
- What number should be where the (mouth of the) red crab, near the bottom, is?
- How far is it down from the (head of the) seagull to the (mouth of the) yellow fish?
- How far is it from the turtle, near the surface of the water, to the crab?
- There's a little brown sea-horse to the right of the lighthouse support. How far from the surface is it?
- How high above the sea level is the seagull flying?
- How far is the seagull from the sea-horse?
- How high is the pointed end of the cloud?

It would be interesting to know how you arrived at your answers. Did you write anything down to help you?

How about thinking up some questions of your own? Please do send them in - we would like to see your creative juices at work!

Topic / Skill: Order and compare numbers to 1,000,000 by understanding the value of each digit

Fluency –

Children to compare two numbers using < and > and =
Ordering a set of numbers. Beginning with obviously different numbers and then moving to numbers with very similar digits.

Reasoning –

Turn over digit cards 0-9 and select five.
Make the greatest number possible and the smallest number possible.
How do you know this is the greatest or smallest?

Totally dependent on what cards are chosen
e.g. 4, 9, 1, 3, 2
Smallest: 12,349
Greatest: 94,321

Problem Solving –

Simon says he can order the following numbers by only looking at the first three digits.

12,516 12,832
12,679 12,794
12,558

Is he correct?
Explain your answer.

He is incorrect because two of the numbers start with twelve thousand. One thousand therefore you need to look at the tens to compare and order.

Topic/ Skill: Count forwards or backwards in steps of powers of 10

Fluency – Finish the sequences (see old White Rose)
Fill in the missing numbers on the grid (old White Rose)

4523			
9000			6000
13,450	12,450		
102,342		100,342	

Spot the error:
289636, 299636, 300636, 301636, 302636

Reasoning – True or False? When I count in 10's I will say the number 12300.

What are the next three number sentences in the sequence?

345000-1000= 344000
344000-1000=343000
343000-1000=342000
Could you use the same numbers to write different number sentences?

Problem Solving –

Can you count back in 30's to find the trail through the grid?

1234567						
124132	124142	124152	124162	124172	124182	124192
124118	124128	124138	124148	124158	124168	124178
124172	124182	124192	124202	124212	124222	124232
124248	124258	124268	124278	124288	124298	124308
124324	124334	124344	124354	124364	124374	124384
124390	124400	124410	124420	124430	124440	124450
124464	124474	124484	124494	124504	124514	124524

Topic / Skill: Round numbers up to 1,000,000 using knowledge of place value (2 lessons to complete journey)

Conceptual Understanding – How do you know when to round up and down? What would you see appear after the number?

Fluency – Create grid. Children to round the same number to the nearest 10, 100, 1000. Do this with 6-7 different numbers. Repeat same activity when rounding to nearest 10,000 and 100,000

Round these populations to the nearest 100,000

City	Population	Rounded to the nearest 100,000
Leeds	720,492	
Durham	87,599	
Sheffield	512,827	
Birmingham	992,000	

Reasoning –

A number rounded to the nearest 1000 is 54000. What is the largest possible number this could be?

Problem Solving –

Two five-digit numbers have a difference of 5
 When they are both rounded to the nearest thousand, the difference is 1,000
 What could the numbers be?

Two numbers with a difference of two where the last three digits are between 495 and 504 e.g. 52,498 and 52,503

Topic/ Skill: Count forwards and backwards through zero and interpret negative numbers

Conceptual – When do we see and use negative numbers in the real world? Discussion: The numbers furthest to the left are of smaller value, numbers on the right are of a larger value.

Fluency – Complete empty/half empty number lines by adding in both positive and negative numbers

Fill in the missing gaps for the sequences below:

5, 4, 3, 2, 1, 0, , -2,

8, 6, 4, 2, 0, , -4,

- Charlie recorded the temperature at 7am each morning in a table. Which was the warmest/coldest day?
 What was the difference between the warmest and coldest day?
 Order the temperatures from coldest to warmest.

Day	Temp
Mon	-1
Tues	2
Wed	0
Thurs	-3
Fri	-4
Sat	-2
Sun	1

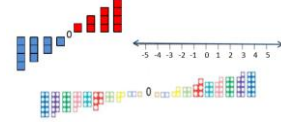
Estimate and label where 0, -12 and -20 will be on the number line.



Jane visits a zoo.
 The rainforest room has a temperature of 32°C
 The artic room has a temperature of -24°C
 Show the difference in the room temperatures on a number line.

Reasoning –

Here are three representations for negative numbers.



What is the same and what is different about each representation?

True or False?

- The temperature outside is -5 degrees, the temperature inside is 25 degree. The difference is 20 degrees.
- Four less than minus six is minus two.
- 15 more than -2 is 13

Explain how you know if each statement is true or false.

False - the difference is 30 degrees because it is 5 degrees from -5 to 0. Added to 25 totals 30
 False - it is minus 10 because the steps are going further away from zero

True
 Children may use concrete or pictorial resources to explain.

Problem Solving –

Put these statements in order so that the answers are from smallest to greatest

The difference between -24 and -76	52
The even number that is less than -18 but greater -22	-20
The number that is half way between 40 and -50	-5
The difference between -6 and 7	13
	Ordered: -20, -5, 13, 52

Solve Big Problem

5.8 - add and subtract numbers mentally (more than 4 digits)

5.9 - add and subtract using formal written methods (more than 4 digits)

5.10 – use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy

5.11 - addition and subtraction multi step problems in context

5.21 - solve problems involving addition and subtraction

add and more make sum total altogether score double one more two (ten) more plus equals hundred ten one exchange column digit columnar addition

Conceptual Understanding –

What happens to numbers when we add/subtract?
What other words do we know for add and subtract? (collect vocab for working wall)
Check children’s understanding of methods. Writing on tables when adding and subtracting. Focus on exchanging for subtraction and carrying to next column for addition – linking to place value.

Frayer model to be completed and stuck in books.

Topic/ Skill: Add 4 digit numbers mentally

Fluency – Give the children calculations. Using partitioning, children to answer the questions. Encouraging them to make jottings, not the formal method.

Reasoning –

True and False. Fred says ‘.....’ Is he correct? Explain your answer.

Captain Conjecture says, ‘When working with whole numbers, if you add two 2-digit numbers together the answer cannot be a 4-digit number.’
Do you agree? Explain your reasoning.

Problem Solving –

If 2541 is the answer, what’s the question? - Can you create three addition calculations? Did you use a strategy?

Topic/ Skill: Add numbers with more than 4 digits using column method

Conceptual – How does the position of the digit in the column affect the calculation/answer that you get?

Fluency – Children to complete calculations, adding 4, 5 and maybe 6 digit numbers. T to plan for misconceptions and ensure children are setting out their calculations appropriately.
Word problems to be completed so children can see the calculations presented in a different way. (see old white rose for examples)

Reasoning –

Prove it: $5617 - 2458 = 2709$

Spot the error: Give children a calculation whereby the child has forgotten to add the tens carried over.

Problem Solving –

$$\begin{array}{r} 6 \square 0 2 \square \\ + 5 \square 5 1 \\ \hline \square 9 1 8 0 \end{array}$$

Topic/ Skill: Subtracting mentally

Fluency – Give the children calculations. Using partitioning, children to answer the questions. Encouraging them to make jottings, not the formal method.
Children follow a series of instructions to find a mystery number (using learning from previous lesson on mental addition).
E.g. Start with 100. Add 5000. Take away 400. Add 20. Subtract 750. What number have you got?

Reasoning –

Rachel has £10. She spends £6.49 at the shop. Would you use columnar subtraction to work out the answer? Explain why.

Problem Solving –

Using 0-9 dice roll 3 at the same time to create a number. Your partner needs to do the same. Who can add them together correctly first? Who can subtract the smallest from the largest correctly first? Use a calculator to check.

It’s the end of term and the teachers in our local area are planning an End of Term Community Party. However, they aren’t sure how many supplies they will need.

Miss Green suggests that they find out how many children there are in all of the schools first to find out the maximum, and then subtract the children who are unable to attend to find the answer.

Use the table below to help you find the totals for if all children could attend, and the actual total.

Class	Whole class	Number disqualified
Reception	230	14
Year 1	190	26
Year 2	348	17
Year 3	259	38
Year 4	231	26
Year 5	330	34
Year 6	232	25
TOTAL:		

2. For each child attending the Green Party, the teachers will need to buy: 3 slices of pizza, 4 balloons, 3 bouncy balls, and 4 glow sticks.

- How many of each item would the teachers have to buy if all children were attending the party? How many items would this be in total?
- How many items will the teachers need to buy for the actual amount of children attending the party? How many items is this in total?

For whole school	Item	Actual amount
	3 slices of pizza	
	4 balloons	
	3 bouncy balls	
	4 glow sticks	
	TOTAL	

c. What is the difference between these two amounts?

Topic/Skill: Subtract numbers with more than 4 digits using column method

Fluency – Children to complete calculations, subtracting 4, 5 and maybe 6 digit numbers. T to plan for misconceptions (what happens when zeros are involved?) and ensure children are setting out their calculations appropriately. Focus on exchanging accurately when digit on top is smaller.

Reasoning –

There are mistakes in the following calculations. Explain the mistake and then make a correction to find the correct answer.

$$\begin{array}{r} 2451 \\ +562 \\ \hline 8071 \end{array} \qquad \begin{array}{r} 782 \\ -435 \\ \hline 353 \end{array}$$

Problem Solving –

- Find the missing numbers in these calculations.

$$\begin{array}{r} 34\boxed{}1\boxed{} \\ - \boxed{}482 \\ \hline 292\boxed{}4 \end{array}$$

Solve Big Problem

Topic/Skill: Use rounding to check answers to calculations

Possible upfront needed/mental and oral starter to round decimals to nearest whole number as many questions from white rose are linked to rounding decimals.

Fluency – Calculations and word problems whereby children need to round up or down to the nearest ten or hundred to find their answer.

Reasoning –

Always, sometimes, never?

When you add up four even numbers, the answer is divisible by four.

Martin is measuring his room for a new carpet. It has a width of 2.3m and a length of 5.1m. He rounds his measurements to the nearest metre. Will he have the right amount of carpet? Explain your reasoning.

(May want to change from decimals to whole numbers if children cannot access decimals)

Problem Solving –

True or false?

4999-1999 = 5000-2000 Explain how you know using a written method.

5.12 – I can identify multiples and factors, including finding all factor pairs or a number and common factor pairs of two numbers

5.20 – I can solve problems involving multiplication and division including using knowledge of factors, multiples, squares and cubes

5.22 - I can solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates

5.15 – recognise and use square numbers and cube numbers with the notation.

5.16 - multiply and divide numbers mentally drawing on known facts.

5.17 – multiply and divide whole numbers and those involving decimals by 10, 100, 1000.

5.18 I can multiply numbers up to 4 digits by a 1-digit or 2-digit number using a formal written method, including long multiplication

how many more?
leave less
fewer
difference
between
equals
is the same as
number sentence
calculate
estimate
inverse
operation
check
multiply
product
array
grid
long
multiplication
expanded method
partition

Conceptual Understanding to begin x unit – What happens to numbers when we multiply them together?

Topic/ Skill: multiply and divide numbers by 10, 100 and 100 using place value knowledge.

Conceptual – What are zeros used for when multiplying or dividing by 10, 100 and 1000?

Fluency –
Solve:

	x10	x100	x1000
78			
356			
8722			

Solve:

	÷10	÷100	÷1000
25,000			
156, 000			
275,400			

Solve the following multiplication and division calculations:

0.018 x 1000 90, 246 ÷ 10 2,421.5 ÷ 100
7,020 x 100 23,400 ÷ 1000 0.004 x 10

• Fill the gaps:

3790 x = 379000

3790 + = 379

 X 1000 = 497200

Reasoning –

- Claire says 'When you multiply a number by 10 you just add a nought and when you multiply by 100 you add two noughts.'

Do you agree? Explain your answer.

- 6 x 7 = 42

How can you use this fact to solve the following calculations?
4200 ÷ 70 =
0.6 x 0.7 =

Problem Solving –

Here are the answers to the questions. Can you write three different questions that could make these numbers by multiplying and dividing by 10, 100 or 1000?
5890, 40, 67000, 2000

Topic/ Skill: Identify multiples and factors using times tables knowledge.

Conceptual – What is a factor? What are factor pairs?

Children to use cubes to make calculations and label the different factor pairs.

Fluency –

Write down:

- The first 5 multiples of 8.
- All the factors of 20.
- Find a common factor of 36 and 12.

Reasoning –

Explain why 6 is a common factor of 18 and 24.

Rob and James are talking about multiples and factors.
Rob says '0 is a multiple of every whole number.'
James says '0 is a factor of every whole number.'
Who is correct?

Problem Solving –

- Sally is thinking of a number. She says 'My number is a multiple of 3. It is also 3 less than a multiple of 4.'
Find three different numbers that could be Sally's number.

Topic/ Skill: multiply 4-digit numbers by a 1-digit number using column method.

Conceptual – When we multiply a 4 digit number by a 1 digit number, does it matter which number is at the top? Children's explanations in books.

for 2-digit numbers.

Fluency –

Complete these calculations using column method.

$3,241 \times 2$ $4,632 \times 5$ $6,346 \times 7$ $3,674 \times 6$

Word Problems, for example: A lorry driver drives 479 miles a day. How many miles does he drive in a week?

Reasoning –

Miss Glover says I have made a mistake in my working out here. Is she right? Convince me.

$$\begin{array}{r} 3,561 \\ \times \quad 7 \\ \hline 21,427 \end{array}$$

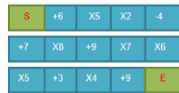
Can I use a multiplication calculation to find the missing digit in this calculation? Prove it!

$$14 \square 4 \div 7 = 212$$

Problem Solving –

Mo Farrah has been running 1,346 miles a year for 6 years. Usain Bolt has been running 975 miles a year for 7 years. What is the difference between their total distances?

- Start with 0; choose a path through the maze. Which path has the highest/ lowest total?



Topic/Skill: multiply a 4-digit number by a 2 digit number using column method.

Conceptual Understanding –

Create your own mnemonic to help you remember the four steps of multiplying by a 2-digit number.

e.g. Most Zebras Munch Apples (children to draw images to support mnemonic)

Fluency –

Complete these calculations using column method.

$6,421 \times 32$ $6,832 \times 46$ $1,743 \times 59$ $3,264 \times 74$

Reasoning –

- Laura thinks that a 4 should be placed in the empty box. Do you agree?

$$\begin{array}{r} \square 47 \square \\ \times \quad \square 23 \\ \hline 1 \square 9 \square 2 \end{array}$$

Problem Solving –

Find the missing digits:

$$\begin{array}{r} \square \square \square \\ \times \quad \square \square \square \\ \hline \square \square \square \square \square \\ \square \square \square \square \square \square \end{array}$$

Solve Big Problem

Conceptual Understanding to begin ÷ unit – What is division? Exploring the idea of division using known method. Linking to sharing, grouping, number lines and bus stop. Using a range of concrete objects. Photograph of children and frayer model to be stuck in books.

Topic/ Skill: Divide 4-digit numbers by a 1 digit number using standard method.

Conceptual – What is the difference between multiplication and division?

Fluency –

Complete these calculations using the short division (bus stop) method.

$$366 \div 4 \quad 478 \div 6 \quad 697 \div 3 \quad 145 \div 5$$

Reasoning –

Can I do $51 \div 6$? How? (children to articulate that they need to show remainders)

Fluency –

Complete these calculations using the short division (bus stop) method.

$$1343 \div 4 \quad 7256 \div 6 \quad 1323 \div 7 \quad 7271 \div 6$$

Reasoning –

What number goes in the box?

$$323 \times \square = 13243$$

Prove it.

Problem Solving –

I am thinking of a number. When it is divided by 9, the remainder is 3.
When it is divided by 2, the remainder is 1.
When it is divided by 5, the remainder is 4.
What is my number?

Topic/ Skill: solve division problems using standard method.

Fluency –

Large pizzas cost £8.50. Small pizzas cost £6.75. Five children buy 1 large pizza and 3 small pizzas and share the cost equally between themselves.

How much does each child pay?

Reasoning –

Correct the errors in the calculation below. Explain the error.

$$\begin{array}{r} 73r1 \\ 5 \overline{) 23616} \end{array}$$

Each of the numbers below has one or more missing digits. Add the digit needed to make the statements true. For some of the numbers, more than one choice of digit would work.

a $54___$ is divisible by 4.

b $2___5$ is divisible by 9.

c $235___$ is divisible by 3.

d $34___8$ is divisible by 8.

e $4567___$ is divisible by 10.

f $6789______$ is divisible by 100.

g $15684___$ is divisible by 8.

h $54______$ is divisible by 5.

Problem Solving –

The answer to the division has no remainders. Find the missing numbers.

$$\begin{array}{r} 8 \square 2 \\ 7 \overline{) 589\square} \end{array}$$

Year 5 – Autumn 2 2017							
Mental and Oral focus		Weekly arithmetic focus – Matched to strand where possible					
<ul style="list-style-type: none"> • Rounding decimal numbers • Adding and subtracting fractions with different denominators • Dividing and multiplying by 10, 100 and 1000 • Mentally adding and subtracting three digit numbers • Recalling times tables up to 12x12 	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
	Teach & Test x using written method	Revisit KPIs and PIs	Teach & Test Division using bus stop method	Revisit KPIs and PIs	Teach & Test Doubling and halving	Revisit KPIs and PIs	
	KPIs and PIs	Key Vocabulary	Learning journey			Big Problem ideas	

5.26 - I can compare and order fractions whose denominators are multiples of the same number.

5.25 - I can identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.

5.27 - I can add and subtract fractions with the same denominator and denominators that are multiples of the same number.

fraction numerator denominator part whole proper fraction improper fraction mixed number convert equivalent value simplify equal compare order denominator numerator common denominator parts per hundred

Conceptual Understanding to begin unit – What is a fraction? Carousel of activities, practical equipment to be used to investigate what a fraction is in different representations. Link to part – whole model. Frayer model to be completed and photos to be stuck in books.

Topic/ Skill: Identifying equivalent fractions

Fluency – Children to find 3 equivalent fractions for a given fraction.

Common fractions to begin (1/2, 1/4 and 3/4)

Reasoning –

Which fraction is the odd one out? Is this the only option? Explain your answers.

$$\frac{4}{6} \quad \frac{16}{24} \quad \frac{9}{12} \quad \frac{12}{18} \quad \frac{20}{30}$$

Problem Solving –

Find the value of the symbol ★

$$\frac{1}{2} = \frac{1+5}{2+\star}$$

Topic/ Skill: Add and subtract fractions with the same denominators

Conceptual – Using practical equipment (fraction action cubes and strips, flat circular pieces) to begin lesson before moving into fluency.

Fluency –

Children to add fractions that have the same denominator. Always remembering that the denominator doesn't change, only the numerators.

Reasoning –

Sarah thinks she has added these fractions successfully. Can you give Sarah a TP to help explain her error?
 $5/11 + 3/11 = 8/22$

Topic/ Skill: Add and subtract fractions with different denominators

Conceptual – Using the cubes, compare the sizes of the fractions to find its equivalent e.g. 1/2 is the same size as 2/4.

Fluency –

Children to complete 5 or 6 calculations. Some, where one of the denominators can be used and others where they must find a different lowest common multiple

Children then move onto filling in the missing fractions

Fill in the missing fractions:

$$\frac{11}{7} + \frac{\quad}{\quad} = \frac{18}{7}$$

$$\frac{18}{5} - \frac{\quad}{\quad} = \frac{9}{10}$$

$$\frac{\quad}{\quad} - \frac{4}{6} = \frac{1}{6}$$

Reasoning –

Joey eats 1/3 of a cake. Michael eats 2/6 of a cake. They think have eaten 5/6 in total. Do you agree? Explain your answer clearly

True or false?

$$1/4 + 3/5 = 19/20$$

$$7/8 - 1/6 = 17/24$$

$$2/7 + 1/3 = 15/21$$

Problem Solving –

The green rectangle has a perimeter of $\frac{22}{4}$. Work out the value of x.



Jessica wants to buy a bouquet of flowers for her friend's birthday. The table shows the types of flowers she chose to put in the bouquet and how much of the bouquet was made up of each type.

Daffodil	5/8
Tulip	1/4
Rose	1/6
Lily	2/6
Pansy	7/12



Which flower was used **most** in the bouquet? _____

Which flower was used **least** in the bouquet? _____

Show me what you did to find out the answer above

How many pansy's and roses were in the bouquet? _____

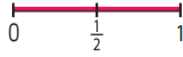
How many more daffodils were in the bouquet than tulips? _____

Topic/ Skill: Order and compare fractions with different denominators
(allow two lessons to cover all and to address misconceptions)

Conceptual – Does the size of the denominator determine the size of the fraction? Practical investigation to begin the lesson.

Fluency –
Use greater than and less than symbols to compare two fractions.
(Practical equipment to be used for LA if needed)

Mark and label on this number line where you estimate that $\frac{3}{4}$ and $\frac{3}{8}$ are positioned.



NCETM
resource

Children to then move onto ordering a set of fractions (4 or 5) from smallest to largest.

Reasoning –
Spot the mistake Georgie has made when ordering the fractions below from smallest to largest.
 $\frac{1}{9}$ $\frac{2}{6}$ $\frac{2}{9}$ $\frac{5}{6}$
Can you write them in the correct order?

Paul thinks denominators with larger numbers are larger fractions. Prove to him that $\frac{1}{4}$ is bigger than $\frac{1}{8}$
Use diagram/drawing/ concrete materials.

NCETM resource

Russell says $\frac{3}{8} > \frac{3}{4}$ because $8 > 4$.

Do you agree?

Explain your reasoning.

Solve Big Problem

5.54 – I can complete, read and interpret information in tables, including timetables

5.55 – I can solve comparison, sum and difference problems using information presented in a line graph

sum
total
altogether
difference
how many
more.../fewer...
line graph
table
row
column
heading
information
timetable
start time
end time
duration

Conceptual – What are statistics? How can information be presented and why might it be presented in different ways? Consider when statistics are used in everyday life. When do we use line graphs and timetables?

Topic/ Skill: Read and interpret information in tables and timetables

Fluency – Retrieving information using timetables to answer questions such as:

- 'What time is the third bus from Halifax?
- 'If the bus leaves Halifax at 07.10, what time does it get to Woodside?' (see old white rose for examples and table)
- Can you travel to Woodside on the 07:43 bus?

Reasoning – If you need to get to location A by a certain time, which time bus would be best to catch? Explain your answer.

Problem Solving – Order the journey times on the timetable from longest to shortest. Can you explain why you think the buses take different lengths of time?

Topic/ Skill: Complete tables and timetables

Fluency – Give children questions which will allow them to complete tables and time tables. For example:

2. This timetable is for four buses going from Charles Street to the pier. The time between stops is 10 minutes.
Fill in the gaps in the table.

Charles Street	9.15	10.20		11.30
Station				
Swimming Pool		10.50	11.30	
Town Centre				
Pier				

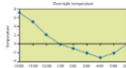
Reasoning –

Problem Solving –

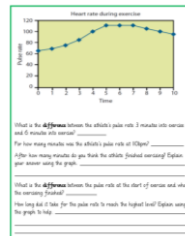
Topic/ Skill: Solve comparison, sum and difference problems using information in a line graph

Fluency –

Use the line graph to answer the following questions:

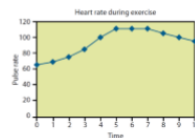


- What was the highest/lowest temperature? What time did they occur?
- What is the difference between the highest and lowest temperature?
- How long did the temperature stay at freezing point or less?



Gary Hall Primary maths/ NCETM
Other line graphs and questions available

Reasoning –

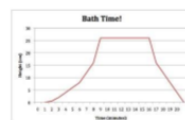


Look at the line graph above. When do you think the person stopped exercising? Convince me.

How long did it take for the pulse rate to reach the highest level? Explain using the graph to help.

Problem Solving –

Here is a line graph showing a bath time. Can you write a story to explain what is happening in the graph?

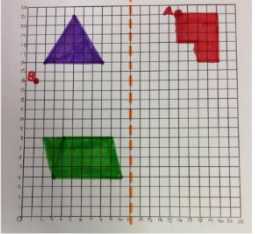


Big Problem

Miss Green has a very important meeting in London tomorrow. She needs to get the train from Birmingham New Street to London Euston. She would like to leave on Saturday and arrive in London before 7pm as the meeting starts at 7pm. Also, she has a nail appointment very early Sunday morning so, therefore would like to leave London no later than 7pm.

So a thing to think about:
Possible departure times
Cost of Miss Green's ticket
Total travel time

Which trains could she catch?
Which would you suggest and why?

<p style="text-align: center;">Autumn 2 Position and Direction (1 week)</p>	<p>KPIs</p> <p>N/A</p> <p>5.53 – I can identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed</p>	<p>transformation object image coordinate point vertex axes x-axis y-axis origin reflection mirror line line of reflection translation congruent</p>	<p>Conceptual – Outline conceptual lesson for start of unit.</p> <p>Topic/Skill: Translation Fluency – Children given coordinates to translate shapes. Also, they are given degrees and directions to turn (clockwise and anticlockwise) when translating (see white rose)</p> <p>Reasoning – Amy reasoning question (white rose)</p> <p>Problem Solving – A rectangle is translated 3 squares up and two squares to the left. Three of the coordinates of the translated rectangle are: (5, 7) (10, 14) (10, 7). What are the co-ordinates of the original rectangle?</p> <p>Topic/Skill: Reflection Fluency – Children given images and a mirror line to create the reflection of the shape they see.</p> <p>Reasoning – Joe’s teacher has asked him to draw the reflection of the shape below. On the right-hand side is Joe’s answer. Do you agree? Explain your answer.</p> <p>True or False? Reflecting a shape changes the dimensions.</p> <p>Problem Solving –</p> <p>Children given a range of images (some where the shape has been reflected, some translated). Children to identify which one has happened.</p>	<p>Harry Potter and his friends want to get into the underground chamber. They must complete a set of challenges, one that involves correctly moving wizarding symbols. Hermione found a set of clues to help them. Use the below to help move the symbols and enter the chamber.</p>  <ol style="list-style-type: none"> Translate the triangle 5 squares down and 8 to the right. Draw the reflection of the parallelogram. Translate the irregular hexagon so that point A becomes point B. <p>Create your own symbol. Move it to a new position and explain how you (using either reflection or translation).</p>
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