FS2 Personalised Maths Learning Journey - Space and measure

Development Matters:

- To know that length, capacity and weight can all be measured
- To use non-standard units to measure length, weight and capacity.
- To make observations of and compare length, weight and capacity. Use non-standard units to measure.
- To be aware that length, weight and capacity can be measured using standard units.
- To say the days of the week in order.
- To begin to say the months of the year in order
- To read the time to O'Clock on a digital and analogue clock.
- To know that the long hand represents the minutes and the short hand represents hour
- To know that patterns are repeated designs.
- To continue, copy and recreate patterns.
- To use money during role play activities to buy items.
- To know that money can be used to buy items.
- To understand and use a range of prepositions in everyday contexts.

Resources/documents:

FS Progression maps, Development Matters, White Rose schemes of work.

Measuring resources (rulers, scales etc), clocks (digital and analogue), standard and non-standard units of measurement, money, daily calendar (with seasons, months, days of the week).

Real life discussion before teaching:

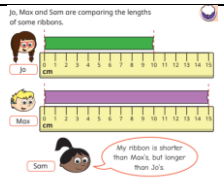
Relating to current topics and interests. Continuous provision will be carefully planned to practise new skills being taught, and to consolidate previous learning.

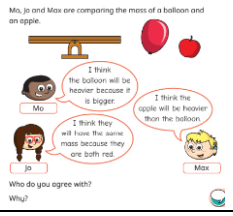
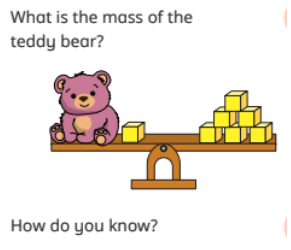
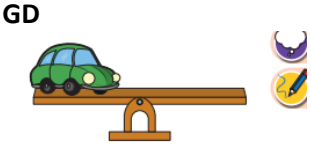
Pre- assessment	Assessment tasks	
Previous learning can be seen on the mathematics progression map.	Mini – quizzes Plenaries Interactions with children in provision Observations of children in provision Questioning during learning time Assessments half termly – knowledge focused on for the half term	
Teaching sequence	**Learning tasks**	**Language Focus**
WALT: To know that length, capacity and weight can all be measured	Focus on the three measurements separately Children need to learn that objects can be compared and ordered according to their size. Encourage children to use language such as big and little, large and small to describe a range of objects in the classroom. Encourage children to compare and order objects by length, capacity and weight in the different areas of provision and to use the vocabulary to explain what they notice.	Length, longest, shortest, capacity, full, nearly full, half full, nearly empty, empty, weight, heaviest, heavy, light, lightest
WALT: To use non-standard units to measure length, weight and capacity. To be aware that length, weight and capacity can be measured using standard units.	Focus on the three measurements separately **The sand and water provision** can be used to measure using non-standard units. For example, provide equipment in two sizes (a bug and little bucket for example). Encourage the children to compare the objects and explore how many scoops each will hold. They could also count how many large scoops and how many small scoops a container will hold. **Baking** can be used to explore weight and capacity. **Cubes** can be used to measure the length of objects and resources. **Use standard units** to measure length, weight and capacity. For example, rules, scales, measuring jugs.	

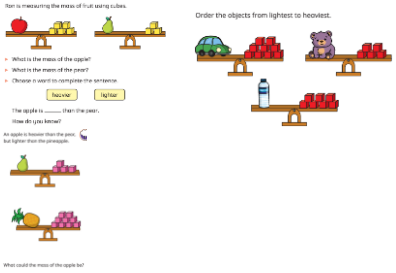
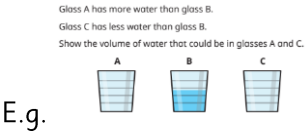
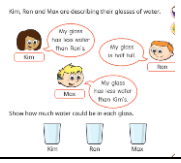
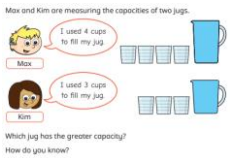
WALT: To make observations of and compare length, weight and capacity.	Focus on the three measurements separately **Compare objects and resources** based on their length, weight and capacity. For example, order the giant's footsteps from shortest to longest.	
WALT: To say the days of the week in order	**Morning calendar** will incorporate singing the days of the week song and discuss today's day. **The Very Hungry Caterpillar** can be used to focus on this WALT. **Children begin to measure time** in simple ways, for example, counting the number of sleeps to an important event. **Children talk about night and day and order key events** in their daily routines. They use language to describe when events happen, for example, day, nights, morning, afternoon, before, after, today, tomorrow.	Night, day, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, week, weekend
WALT: To begin to say the months of the year in order	**Morning calendar** will incorporate discussion of the months of the year. **Put a calendar into the home corner** for birthdays, important events etc **Birthday display** to support discussion surrounding months of the year.  e	January, February, march, april, may, june, july, august, September, October, novemeber, December, month, year
WALT: To read the time to O'Clock on a digital and analogue clock. To know that the long hand represents the minutes and the short hand represents hour	**Introduce the idea of time** playing an assortment of games. For example, what's the time Mr Wolf, what can you do in a minute? Allow children to use different timers. **Use teaching clocks** to practise reading O'Clock times. Discuss what happens at the different times during the school day. **Draw the hands onto clocks**, focusing on the long hand representing the minutes and the short hand representing the hour. **Enhance areas** with a variety of clocks to allow children to explore using and reading them.	Time, hands, analogue, digital, clock, timer
WALT: To know that patterns are repeated designs	**Provide opportunities to explore** AB patterns in a range of context (shapes, colours, sizes, actions and sounds) Build patterns both horizontally and vertically **Demonstrate simple patterns** using movements too. For example, knees, clap, knees, clap.	Pattern, repeat, continue
WALT: To continue, copy and recreate patterns	**Children copy, continue and create** their own simple repeating patterns. It is important to provide patterns with at least three full units of repeat.  **Make simple patterns** in a variety of contexts. For example, using fruit, maths resources (cubes, peg boards), outdoor natural materials.  **Make mistakes** for children to spot and correct. They might swap the items around which means they will need to continue amending the pattern until the end of the line. 	

WALT: To know that money can be used to buy items. To use money during role play activities to buy items.	**Provide opportunities** to use money in role play activities both indoors and outdoors. **Role play experiences** can include shops, cafes, hairdressers. Children could **use money to pay for snack.** **Use of coins** - support children in identifying the different coins of the UK and making simple amounts with coins.	Money, coins, pay, pennies, pounds
WALT: To understand and use a range of prepositions in everyday contexts.	**Positional language can be modelled and practised** on a daily basis with the children through play. Tidy-up time in particular is full of opportunities to use positional language for a real purpose. For example, put the bricks into the basket. **Model and encourage** the use of positional language as the children play in the small world. For example, the dog is on the chair beside the window. **Set up an obstacle course outdoors**. Ask the children to work in pairs, one giving directions to their partner. For example, go over the bridge, through the tunnel and around the cones. **Set up a treasure hunt** providing a series of pictorial clues. As the children go to each place in the pictures, they can hunt for the next clue. Prompt them to use positional language to explain where they need to go. Children can design their own treasure hunts.	Under, over, next to, inside, behind, across, on

Y1 Personalised Learning Journey Date: WB:		
NC Objective: Length and Height		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs.		
Pre- assessment	Assessment tasks	Language Focus
Teaching sequence	Learning tasks	Language Focus
1. WALT: Compare lengths and heights	**WILF:** I can compare by saying things are longer / shorter / taller than each other. Compare caterpillars Real life: people x is taller than x / x is shorter than x Objects (pencils etc.) x is shorter than x Line objects up well to check for comparison.	Long Short Length Height Longer Shorter Measure Tall
2. WALT: Measure length using objects	**WILF:** I can measure length / height of things by using cubes to state how long or tall something is Use cubes - x is x cubes long / tall **WILF**: I can use drawings to measure length / height of things to state how tall or long something is. Pictures in books and use squares in books to colour in – x is x squares long / tall	Tall Long Short Measure Cubes Squares Length
3. WALT: measure length in centimetres	**WILF:** I can measure objects using a ruler and state how many centimetres they measure. Measure real life objects – fill in the measurement table to state what each measures **WILF**: I can measure images using a ruler and state how many centimetres they measure Use a ruler to measure pictures of things and state in cm how long / tall they are. **Apply**: Spot the mistake **GD**:	Ruler Centimetres Measure Accurate

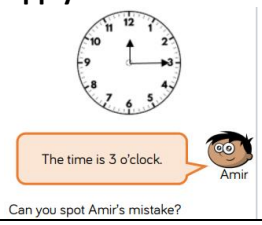
	Jo, Max and Sam are comparing the lengths of some ribbons.  How long could Sam's ribbon be?	

Y1 Personalised Learning Journey Date: WB:		
NC Objective: Mass and Volume		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs.		
Pre- assessment	Assessment tasks	Language Focus
Teaching sequence	Learning tasks	Language Focus
1. WALT: Compare weight	**WILF:** I can compare weight by saying if objects are heavier or lighter than each other Weighing scales – compare objects and state which is heaviest / lightest **Apply**  	Heavy Light Compare
2. WALT: Measure mass	**WILF:** I can measure mass of given objects by stating how many cubes they weigh Weighing scales and cubes How many blocks do different things weigh? e.g. the apple weight 9 cubes. Table – complete the table with the objects and the amount of cubes it takes to make it equal to see how much each weighs. **Apply**  **GD**  The toy car is heavier than 5 cubes, but lighter than 9 cubes. Draw cubes on the scales to show what the mass of the car could be.	Weigh Cubes Mass Heavy Equal Scales

3. WALT: Compare mass	WILF: I can compare mass of various everyday objects by stating which is heavier, lighter or if they are equal weight judging by the amount of cubes they weigh. 	Light Heavy Equal Compare Lighter Heavier Amount More Less
4. WALT: Discuss full and empty	WILF: I can describe volume as full, empty, nearly full and nearly empty using water and containers Containers: jugs, cups, bottles etc. with different amounts of water in each. Children to label them correctly. Children to fill up to given amounts.	Full Empty Nearly full Nearly empty Half full Amount How much
5. WALT: Compare volume	WILF: I can compare the amount of volume in containers by saying if each has more or less than each other. Compare physical containers with amounts of water. Use pictures to compare. Draw lines on images of cups to make statements true. E.g.  	Full Empty Nearly full Nearly empty Half full Amount How much Compare
6. WALT: Measure capacity	WILF: I can measure the capacity of different containers by finding out how many cubes each holds. Practical activity – chn to fill up different containers with cubes and measure the amount taken to fill each up.	Capacity Cubes How many? Altogether Containers
7. WALT: Compare capacity	WILF: I can compare capacity by saying which container holds more, less or equal  Compare amounts that can fill the capacity of different containers to be able to state which has the most capacity.	Compare Capacity How much Containers More Less Equal Amount

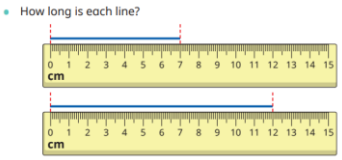
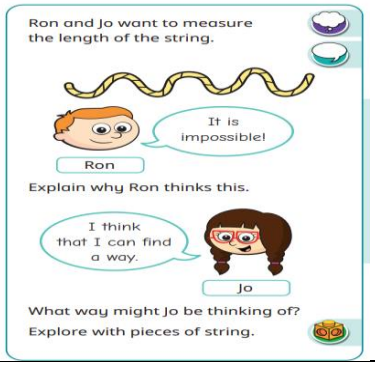
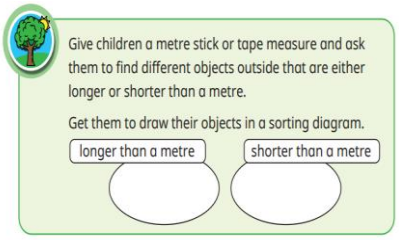
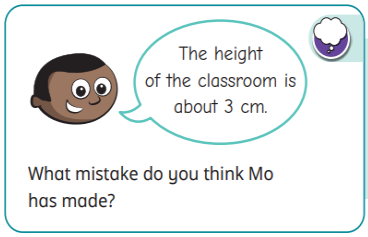
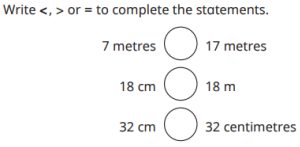
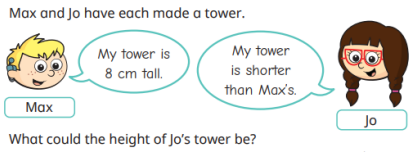
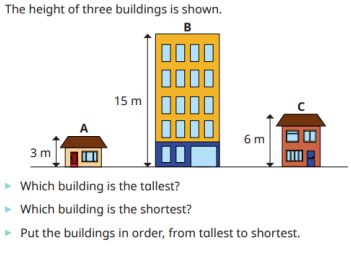
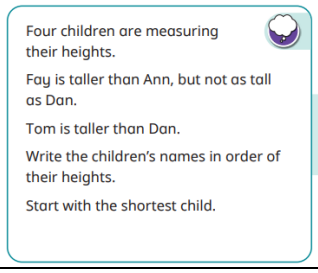
	 Apply	

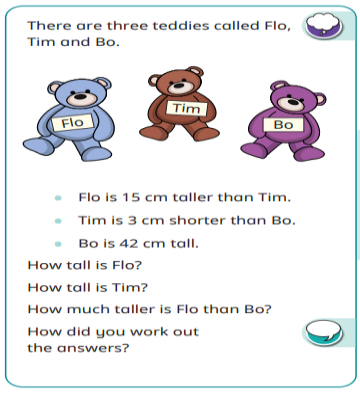
Y1 Personalised Learning Journey Date: WB:		
NC Objective: Money		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs.		
Pre- assessment	Assessment tasks	Language Focus
Teaching sequence	Learning tasks	Language Focus
1. WALT: Understand the value of coins and notes	**WILF:** I state what each coin and note is worth and it's value Look at all different notes and coins and notes – explore what each is worth. Match the value to the coin	Coin Money Note Amount
2. WALT: Make various amounts using coins and notes.	**WILF**: I can take into consideration the value of notes and coins to make amounts. Model counting in 1, 2, 5, 10 to create amounts using 1p, 2p, 5p, 10p, £1, £2 coins, £5 and £10 notes. Circle the correct coins to make certain amounts. Fill the piggy banks with the correct values using certain coins and notes. Shop – given coins / notes, what can you buy? **Apply** Odd one out **GD** Multiple ways to make different amounts. – how can I use the least amount of notes / coint?	Coin money Note Amount Total
3. WALT: Answer worded questions around money	**WILF**: I can answer worded questions around money. X visits the shop for some milk. (Show amount in his pocket) Does he have enough to buy x? How much more would he need? How many x's can x afford with given amount?	Coin money Note Amount Total

Y1 Personalised Learning Journey Date: WB:		
NC Objective: Measures - Time		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs. Natural objects, 2d + 3d shapes, every day objects		
Pre- assessment	Assessment tasks	Language Focus
Teaching sequence	Learning tasks	Language Focus
1. WALT: Tell time to the hour.	**WILF:** I can tell time to the hour and make given times to show o'clock. Match the times to the clocks Use clocks to make given times Draw given times onto clock faces **Apply**  	Time O'clock Minute Hour Hands
2. WALT: Tell the time to a half hour.	**WILF:** I tell time to half past the hour and make given times to show o'clock and half past. Match the times to the clocks Use clocks to make given times Draw given times onto clock faces Insert the correct times into stories / sentences – drawings and selecting correct clock **Apply** Spot the difference (half past and o'clock)	Time O'clock Minute Hour Hands Half Half past
3. WALT: Appropriately measure time.	**WILF:** I can measure time in seconds, minutes and hours and state which is most appropriate for different activities. Explore different methods of measuring time – sand timers, stop watch, clock – what does each measure? How many seconds in a minute? Think of different activities that are measured in various ways. How many times can you do an activity in 20 seconds / then a minute / 3 minutes – to explore the difference in timeframes. Measure each other in seconds – running races Measure each other in minutes – walking around the field Measure things in hours – time lord's job throughout the day	Measure Second Minute Hour

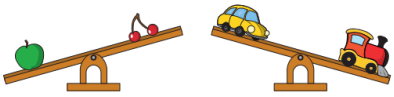
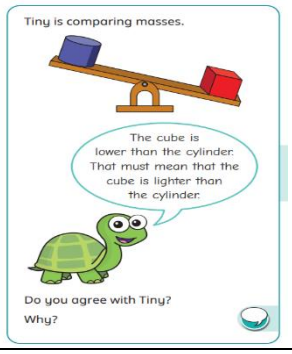
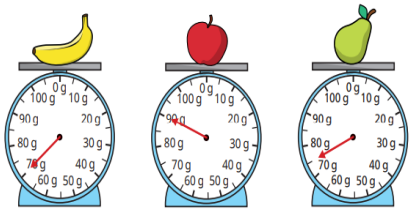
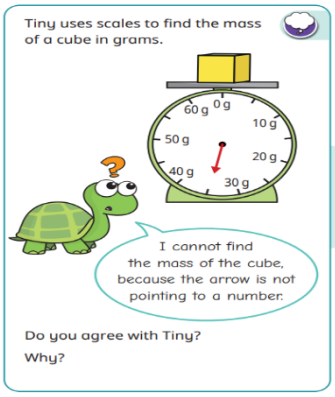
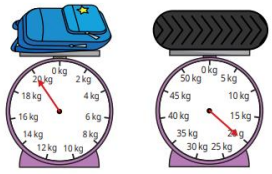
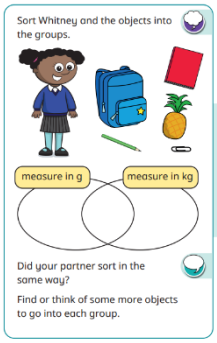
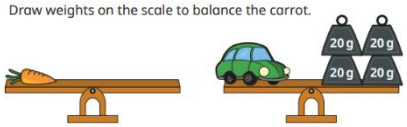
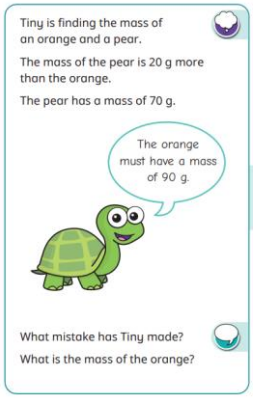
	Match activities to the most appropriate time measurement. **Apply** True or false: I can write my name more times in 3 seconds than in 3 minutes.	

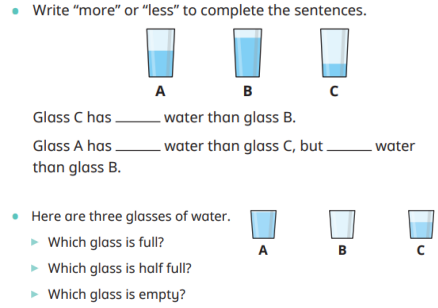
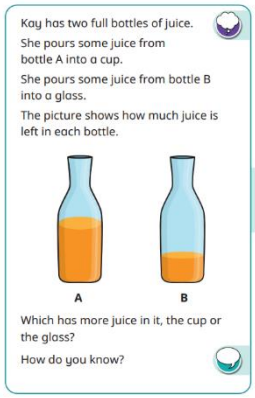
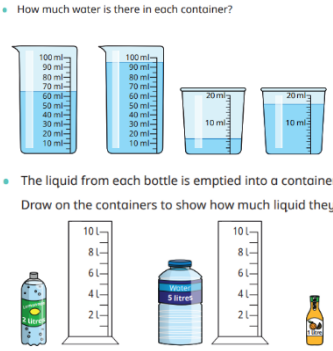
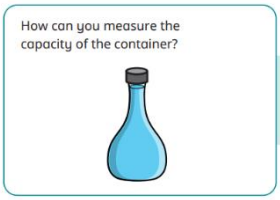
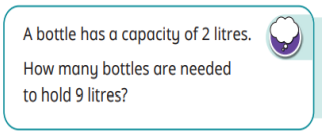
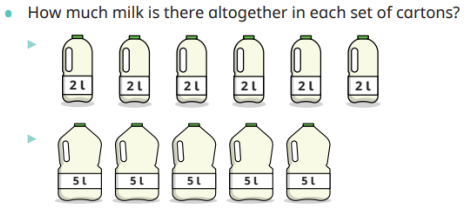
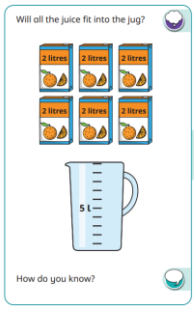
Y2 Personalised Learning Journey Length and Height		
NC Objective: • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm);		
Resources/documents: White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Garry Hall.org.uk		
Real life discussion before teaching: Brainstorm where we use measurements in everyday life – when buying furniture, knowing own height		
Pre-assessment	Assessment tasks	Language Focus
	White rose assessment task	
Teaching sequence	Learning tasks	

WALT: Measure in cm	Teach measuring lengths and heights using a ruler, with a specific focus on measuring in centimetres. Remind ch the abbreviation for centimetres is "cm" and that they should record this with their written answers. Stress importance of starting from zero when measuring, and that not lining their ruler up correctly will lead to incorrect answers.  	What do the numbers on the ruler mean? Where do you need to start measuring from? What number does the start/end of the object line up with? How long/tall is the object? What is "cm" short for? Why do you need to start measuring from zero?
WALT: Measure in m	Begin to practically measure lengths and heights using metre sticks and tape measures, with a specific focus on measuring in metres. Introduce 'm' as abbreviation. No converting between m and cm but ch should know a metre is bigger than a cm so m are used for measuring longer objects.  	What do the numbers on the tape measure mean? How long is a metre stick? Why do you need to start measuring from zero? What number does the end of the object line up with? How long/tall is the object? What is "m" short for? Is a metre longer or shorter than a centimetre?
WALT: Compare lengths and heights	Children compare the lengths and heights of objects using language such as "longer than", "shorter than" and "taller than". They also revisit the inequality symbols covered earlier in the year as a way of comparing lengths and heights. Children only compare the lengths and heights of pairs of objects  	Which object is longer? How do you know? Which object is taller? How do you know? Which object is shorter? How do you know? Which is longer, 1 cm or 1 m? What is the difference between "longer" and "taller"?
WALT: Order lengths and heights	Begin to order lengths and heights. New language: "shortest", "longest" and "tallest", but they also continue to use "shorter", "longer" and "taller" when describing the order of the objects. They order lengths from longest to shortest, heights from tallest to shortest and vice versa. Children order given lengths and heights, as well as objects that they have measured themselves  	Which object is longest? How do you know? Which object is tallest? How do you know? Which object is shortest? How do you know? Which is longer, 1 cm or 1 m? What is the difference between "longest" and "tallest"?
WALT: Solve problems with lengths and heights (4 calculations)	Solve both one-step and two-step problems relating to lengths and heights. They use concrete and pictorial representations to support them in understanding the questions, and in calculating efficiently. It is important that children understand that when adding and	What do you need to do first? How do you know? Is the length/height

	subtracting with lengths and heights, the units that they are working with need to be the same. At this stage, they are not required to calculate with mixed units. • Ben has a toy train, a toy plane and a toy car. ▸ The train is 28 cm long. The plane is 16 cm longer. How long is the plane? ▸ The train is double the length of the car. How long is the car?  	longer/shorter? How do you know? Is taller or shorter than ? How do you know? Do you need to add or subtract? Do you need to multiply or divide? Are you working with centimetres or metres?

Y2 Personalised Learning Journey Mass and Capacity & Temperature		
NC Objective: choose and use appropriate standard units to estimate and measure mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels		
Resources/documents: White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Garry Hall.org.uk		
Real life discussion before teaching: Brainstorm where we use measuring in real life – buying liquids, taking temperature, weighing produce		
Pre-assessment	Assessment tasks	Language Focus
	White rose assessment task	
Teaching sequence	Learning tasks	

WALT: Compare mass	Practical weighing activities Children use the language “heavier” and “lighter” alongside the inequality symbols to compare mass. • Complete the sentences for each picture.  The _____ is heavier than the _____ The _____ is lighter than the _____ 	What does “heavier” mean? What does “lighter” mean? What does “< / > / =” mean? How do you use a balance scale? Which object is heavier/lighter? How do you know? Which object has the greater/smaller mass? How do you know?
WALT: Measure in grams	Introduce standard unit of measurement. Give ch experience of handling objects of a similar mass eg 1g, 10g, 100g Use • What is the mass of each object?  How are these scales different from balance scales? How are they similar? balance scales and circular scales 	What is mass? What objects can you find the mass of? What object do you think has a similar mass to 1 g/10 g/100 g? How do you find the mass of an object using balance scales?
WALT: Measure in kg	Children move on to measure mass in kilograms. Be aware of the types of items that have a mass typically measured in kilograms and those that have a mass typically measured in grams. Give children experience of picking up and feeling kilogram weights and thinking about comparing these to everyday objects. Children should realise that a kilogram is heavier than a gram (they do not need to know that there are 1,000 g in 1 kg) Read the scales to find the mass of each object.  	What is mass? Which is greater, a kilogram or a gram? What types of objects would you measure in kilograms? What object do you think has a similar mass to 1 kg/10 kg? How can you find the mass of an object using balance scales?
WALT: Use four operations with mass	Multi-step problem with four operations supported by bar models / equipment • The carrot is 40 g lighter than the car. Draw weights on the scale to balance the carrot.  	Do you need to add or subtract to solve the problem? How can you write this as a number sentence? How can you represent this using a bar model/ part-whole model? Is there more than one way to solve the problem? What do you need to do first? How do you know?

WALT: Compare volume with capacity	Ensure children know the difference between capacity and volume; discussion of the other uses of the word "capacity" in everyday life, such as a sports stadium, may support this. Children compare the volume/capacity of different containers. Model language such as "full", "half full", and "empty" before comparing the amounts using "greater" and "less" and then the symbols.  	What is volume/capacity? What is the difference between volume and capacity? Which container has the greater/smaller capacity? How do you know? Which container is holding the greater/smaller volume? Which symbol should you use, or =? How do you know?
WALT: Measure in l and ml	practical resources to measure in variety of containers. Read in ml and l   	How can you measure the volume of this container? How are litres and millilitres different? How much water do you estimate is in this container? What strategy did you use to read the scale? Is there a more efficient way? Where do you need to draw a line on the scale? How do you know? Would you measure the capacity of this container in litres or millilitres?
WALT: Use four operations with volume and capacity	Children use the skills they have learnt so far to answer questions involving the four operations. Children complete a range of one-step problems initially, identifying the operation needed to complete the calculation. They could do this by recognising key words, writing a number sentence or using a bar model. They need to be able to read scales accurately to complete the calculations  	Which operation should you use for this question? How could you write this as a number sentence? How could you represent this using a bar model? Is there more than one way to work this out? What mistake do you think some people may make? What did the question ask you to find? How do you know you have found it?
WALT: Use a scale to measure temperature	Introduce temperature, thermometers and the unit "degrees Celsius", written °C, Discuss the language of temperature such as "hot", "warm", "cold" and so on. Encourage children to compare places they have visited/differences in seasons to support this. Children recognise that the temperature is higher when the weather is warmer. (They may also have heard of negative numbers in this context, but this does not need to be covered in Year 2) Children use their skills from previous small steps to read scales and to colour thermometers to represent temperatures, making links with number lines.	What is temperature? What words do you use to describe temperature? What does "°C" stand for? What does the scale show? How do you know that you have read the temperature correctly? How do you

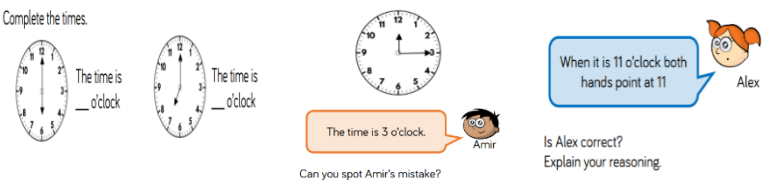
	Mr Trent is cooking pasta. He measures the temperature of the water three times. What temperatures do the thermometers show?  What could have been happening at each stage when Mr Trent measured the temperature?	Sam measures the temperature at 1 pm and at 5 pm. There is a difference of 7 °C. What could the temperatures be? Compare answers with a partner.	know that you have shown the correct temperature on the thermometer scale?

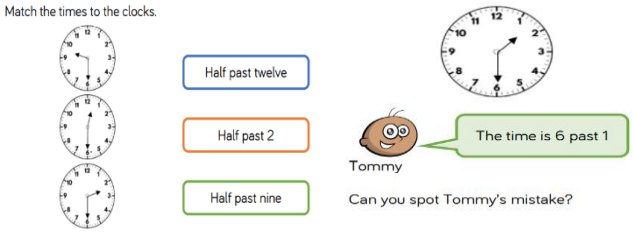
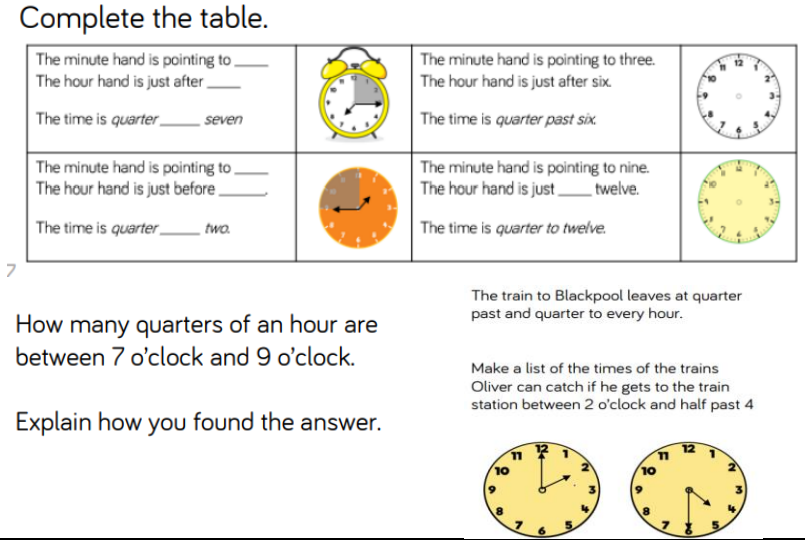
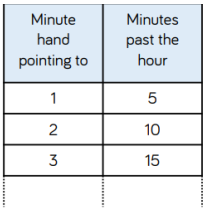
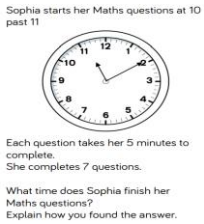
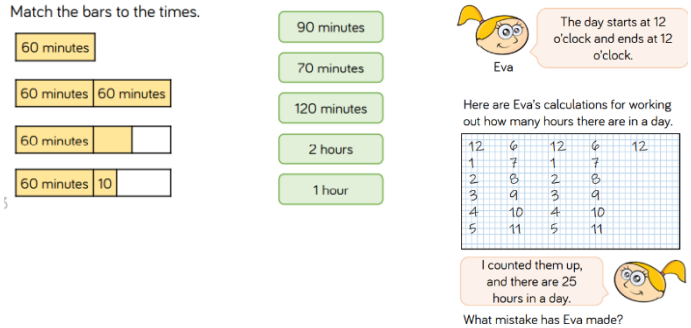
Y2 Maths Personalised Learning Journey	**Measurement: Money**	
NC Objective: • Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. • Find different combinations of coins that equal the same amounts of money. • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Primary Stars Maths, money Tens frames, counters, base 10, whole-part model, bar model, number cards		
Real life discussion before teaching: Where do we use money in real life? Why do we need it? Why is it important? Collect examples for WW.		
Pre- assessment	Assessment tasks	Language Focus
Recap: Recognising coins & notes	Recap: Display – Coins and notes - Ensure cards are shuffled. Children must match the coins and notes to their written form. Children will progress to Activity – Matching coins and notes.	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
Teaching sequence	Learning tasks	Language Focus
1: WALT: Count money: pence	This block introduces the £ and p symbols for the first time. In this step, they will explore pence (not pounds). Remind children what each coin looks like (shape, size, colour) and explain that coins sometimes change in appearance over time (e,g, £1 coin which will be looked at in the next lesson) Children will count in 1p, 2p, 5p and 10p coins. Because of related facts, children will also be able to count in 20p coins. Children are not required to convert between pounds and pence at this stage, therefore children will not count in 50p coins. *Ask questions such as:* *What is different about the coins you have counted? What do you notice about the totals? Are silver coins always worth more than copper coins?* *What different ways can you count the coins? Which is the quickest way?*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
2.	Children will continue counting but this time it will be in pounds not pence. The £ symbol will be introduced. Make children aware that both coins and notes are used for	money, pounds, pence, penny, notes, coins,

WALT: Count money: pounds	pounds. Children will count in £1, £2, £5, £10 and £20s. As children work within 100 in Year 2, they will not count in £50s. *Ask questions such as:* *Which is the hardest to count? Which is the easiest? Why?* *What do you notice about the amounts? Does it matter which side the equals sign is?* *Can you find the total in a different way? What was your method for counting in ___ ?*	price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
3. WALT: Count money: notes and coins	In this step, children will build on counting by bringing pounds and pence together. Decimal notation is not used until KS2 therefore children will write the total using 'and' e.g. £5 and 30p rather than £5.30. Children will not count across £1. They will count the pounds and pence separately before putting them together. *Ask questions such as:* *How did you work out the missing amount?* *What strategy did you use to count the money? Explain what to do when the pounds and pence are mixed up.*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
4 WALT: Select money	Children will select coins to make an amount given to them. They will use these practically, draw them and write the abstract amounts. They will continue to use both pounds and pence to embed previous learning. Children will continue to work on recognising money by selecting the correct coins or notes from a wide range. *Ask questions such as:* *Is your answer the same as your partner? How and why are your answers different?* *Does it matter if you say pence or pounds first? Does this change the total? Can you show this amount in a different way?* *What is the least amount of coins you can use to show this amount?*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
5. WALT: Make the same amount	Children will explore the different ways of making the same amount. As previously, pence coins will not cross into the pounds. Model examples where pounds and pence are together but children need to continue to be encouraged to count the pounds and pence separately. *Ask questions such as:* *Is it easier to count the pounds and pence separately? Why is this? How is your way different to a partner? Can you swap a coin/note for others and still make the same amount? What is the smallest amount of coins you can use to make ____?* *How many ways can you make _____?*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
6. WALT: Compare money	Children will compare two different values in either pounds or pence. Examples will be used with both pounds and pence, but children will only focus on one of these and the other must be the same. E.g. £3 and 10p > £2 and 10p. Children will recap comparing vocabulary such as greater/less than and use the inequality symbols. *Ask questions such as:* *Do you notice anything about the amounts you have compared?*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare,

	What's the same? What's different? *Can you add a value that will go in between the greatest and the least?*	difference, £, p, greater than, less than, equal.
7. WALT: Find the total	Children will build on their knowledge of addition to add money including: 2-digit and 2-digit, 2-digit and ones, 2-digit and tens and 3-single digits. Children will be encouraged to use different methods to add such as count on, partitioning and regrouping. *Ask questions such as:* *Was your method different to a friend?* *What is the most efficient method? Why?* *Can you write a worded question for a friend? What was the greatest amount you found?*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
8. WALT: Find the difference	Children will expand their knowledge of addition and subtraction strategies by specifically finding the difference between two amounts. Both counting on and counting back need to be modelled in this step. Children need to discuss which is the most efficient for different questions. *Ask questions such as:* *How many more? What's the difference? How much less? How many fewer? What method did you use to work this out?* *Is this different to a partner? How?*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
9. WALT: Find change	Children build on their subtraction skills by finding change. They need to identify the amounts from coins given, write the calculations and choose efficient methods. In this step, children will be introduced to converting £1 to 100p to be able to subtract from £1. This links to their number bond knowledge to 100. *Ask questions such as:* *Can you write a calculation for this? Why is it important to use the £ or p symbol? What strategy did you use to find the change? Did you use concrete objects to help?*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
10. WALT: solve two-step problems	Children draw together all of the skills they have used in this block and consolidate their previous addition and subtraction learning. Scaffolding may need to be given to children to see the different steps. Bar modelling is really useful to see the parts and wholes, and supports children in choosing the correct calculation. *Ask questions such as:* *Here is a one step problem. Can you think of a second step?* *Did you use a concrete or pictorial representation to help you?* *Which method is the easiest?*	money, pounds, pence, penny, notes, coins, price, count, cost, change, total, how much?, pay, spend, spent, compare, difference, £, p, greater than, less than, equal.
Assessment	Ideas: Quiz Mini test – WRM, Primary stars Challenge lesson	

	Children independently use resources if they need to. These should be available for children to access independently. Any misconceptions and gaps must be picked up at this point and intervention given.	

Y2 Personalised Learning Journey Time		
NC Objective: • compare and sequence intervals of time • 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 • know the number of minutes in an hour and the number of hours in a day.		
Resources/documents: White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Garry Hall.org.uk		
Real life discussion before teaching: Brainstorm where we use time in everyday life – seasons, months ,years, daily timetables, reading watches and clocks		
Pre-assessment	Assessment tasks	Language Focus
	White rose maths assessment	
Teaching sequence	Learning tasks	
WALT: Recap telling the time to the hour	Introduce telling the time to the hour using an analogue clock. Learn language of o'clock and understand the hour hand is the shorter hand and the minute hand is the longer hand. Children read the time to the hour and know when the minute hand is pointing upwards to the number 12 it is an o'clock time, and understand that they need to look at the hour hand to see which hour it is. 	There are two hands on the clock. What is the same about each hand? What is different about each hand compared to the other? Looking at all three clock faces, what is the same about the hands? What is different about them? Where will the hour hand be at ____? Where will the minute hand be at ____? Can you show me _____
WALT: Recap telling the time to the half hour	Introduce telling the time to the half hour. Learn the language half past. They understand that, at half past the hour, the minute hand has travelled half way around the clock from the twelve and is pointing at the six and the hour hand is	Where does the minute hand point to at half past? Can you see that the minute hand has travelled halfway around the

	half way between the hours e.g. half way between one and two or half way between nine and ten. 	clock? Could you show this to your partner? Can you show me _____?
WALT: Recognise ¼ past and ¼ to	Read and draw the times 'quarter to' and 'quarter past'. They use their knowledge of fractions and turns to identify quarter past and quarter to. Children should recognise that the hour hand moves along with the minute hand. Therefore when the time is quarter past the hour, the hour hand will be just past the hour and when the time is quarter to, the hour hand will be just before the hour.  	Where are the hands pointing to? Can we divide the clock face into four equal parts? Can we link this to fractions? If the minute hand is pointing at 3, how many minutes have passed the hour? If the minute hand is pointing at 9, how many minutes until the next hour? Show me quarter past/to….
WALT: Tell the time to 5 mins	Read and show analogue time to 5-minute intervals. Children should be confident at counting from 0 to 60 in steps of 5 so they can then apply this to counting around the clock in fives and use this method to work out what time is shown. Children need to recognise that once the minute hand gets past 6 the time is described as 'to' the next hour, rather than 'past' the hour Using a demonstration clock, ask the children to count round in minutes. When the minute-hand is pointing to a number, record how many minutes have passed the hour in a table. What do they notice? Will this pattern continue?  	How many minutes are there between each pair of numbers on a clock? How many different ways can you count round the clock? Where will the minute hand be at _____? Where will the hour hand be at _____? How do we know whether it is a 'past' or a 'to' time? Can you show _____ past/to _____?
WALT: recognise and use hours and minutes	Teach: there are 24 hours in a day and 60 minutes in an hour. Children use clocks to convert minutes to hours and minutes. Children should be encouraged to use their knowledge of counting in fives to help them convert. 	How many hours are there in a full day? How many minutes are in an hour and a half? How could we calculate this? Could we count in half an hours? How many half an hours are in one hour? How many half an hours will there be in two hours?
WALT: Find durations of time	Children identify the start and end time of an event. They use these times to work out how long an event lasted. Children should understand this is the duration of an event. Children use individual clocks and number lines to help them work out the duration of an event. They can count in steps of 5 minutes to help them.	What is the start time? What is the end time? How can we show this on the clock? How long did the event last? How did you work out the duration? Are there any other methods for working out duration?

<table>
<tr>
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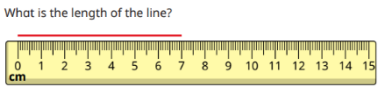
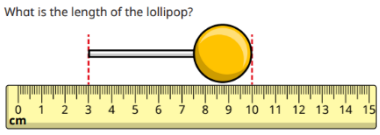
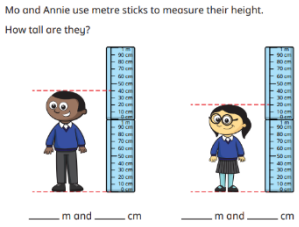
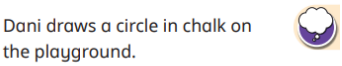
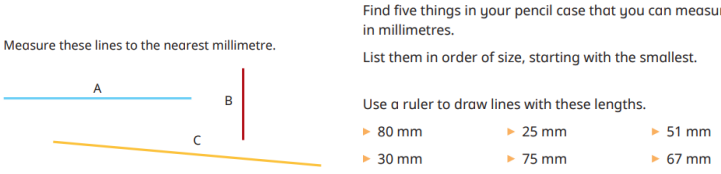
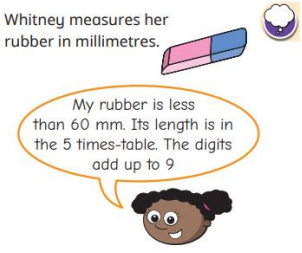
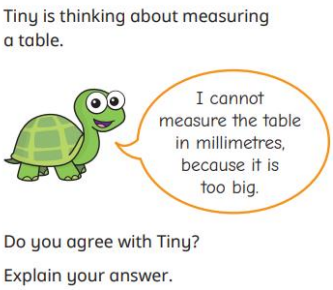
How much time has passed from the start to end time?
Start Duration End

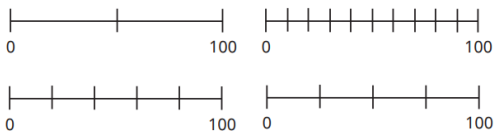
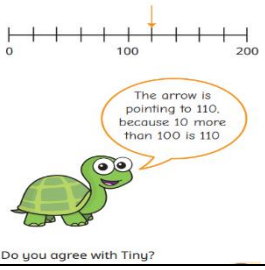
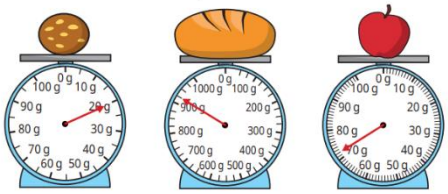
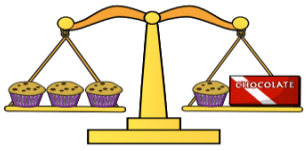

Aimee is planning her birthday. She wants to plan something to do from 9am to 5pm.

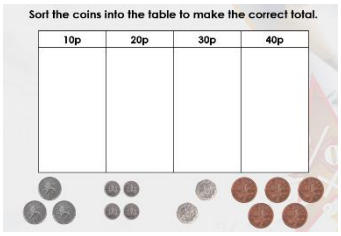
Here are the things she wants to do:
• Visit the zoo (3 hours)
• Go to Pizza Palace (1 hour and a half)
• Have breakfast (half an hour)
• Play party games (1 hour)
• Watch a film (2 hours)
</td>
<td></td>
</tr>
<tr>
<td>WALT:
Compare durations of time</td>
<td>
Children compare times using ‘longer’ and ‘shorter’. They order times from longest to shortest and vice versa. Children then compare durations of time taken by particular events. They could explore ways to work out durations of time most efficiently, including using empty number lines and using their knowledge that there are 60 minutes in an hour

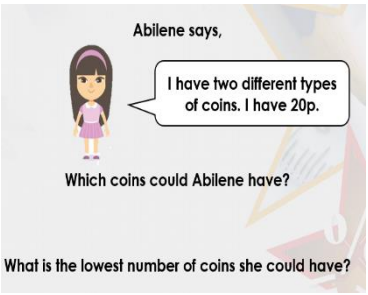
Circle the longest time.
1 hour | 40 minutes | Half an hour
55 minutes | Three quarters of an hour | 35 minutes
Can you order the times from longest to shortest?

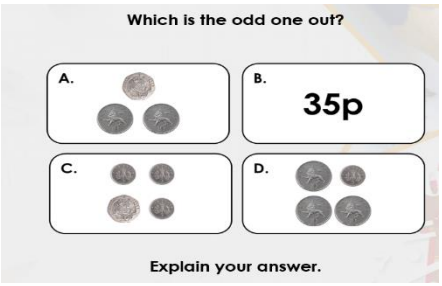
Rosie has an hour for her lunch break. If she takes 10 minutes to eat her lunch, does she have enough time to complete all of the playground activities?
<table>
<tr><th>Activity</th><th>Duration</th></tr>
<tr><td>Skipping</td><td>7 minutes</td></tr>
<tr><td>Ball skills</td><td>10 minutes</td></tr>
<tr><td>Treasure hunt</td><td>21 minutes</td></tr>
<tr><td>Trim trail</td><td>19 minutes</td></tr>
</table>
</td>
<td>Which is longer 2 minutes or 1 hour? How can you order the times? How many minutes does each TV show last? How can we count the minutes efficiently? How much longer is ……. than ……?</td>
</tr>
</table>

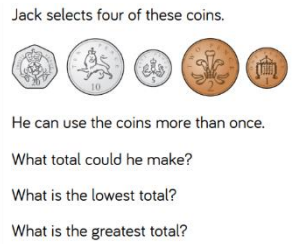
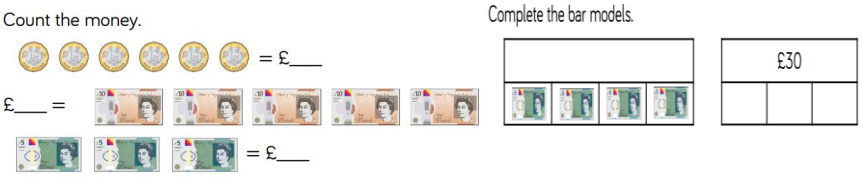
Y3 Personalised Learning Journey Length and Perimeter		
NC Objective: • measure, compare, add and subtract: lengths (m/cm/mm) • measure the perimeter of simple 2-D shapes		
Resources/documents: White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Garry Hall.org.uk		
Real life discussion before teaching: fitting carpets, furniture, marking out playing fields		
Pre- assessment	Assessment tasks	Language Focus
	White rose maths assessment	
Teaching sequence	Learning tasks	
WALT: Measure in metres and centimetres	In Year 2, children used either metres or centimetres to measure the length of objects. Revise skills using a ruler to measure objects in centimetres. They then combine both units of measurement, such as 1 m and 20 cm (Children do not need to convert between metres and centimetres at this stage, and as they have not yet been introduced to decimals, lengths should remain in the format m and cm.) Provide opportunities for children to use different measuring equipment, including rulers, tape measures, metre sticks and trundle wheels.    	Where should you start measuring from on your ruler? What is the length of in centimetres? What is the length of in metres? What is the length of in metres and centimetres? Would you measure the length of the classroom in centimetres or metres? Why?
WALT: Measure in millimetres	Children need to understand that 1 mm is smaller than 1 cm and that millimetres can be used to measure lengths that are not an exact number of centimetres. Allow children time to explore a ruler with millimetre markings to see that there are 10 mm in 1 cm. Children could be encouraged to count in 10s and add on the remaining 1s when finding lengths. (For example, when measuring a line that is 8 cm and 3 mm long, they can count in 10s to 80 mm and then add on the extra 3 mm to give a total length of 83 mm) Children are not required to formally convert between centimetres and millimetres.   	How many intervals are there between 0 and 1 cm? So how many millimetres are there in 1 cm? Where is the 5 mm mark on your ruler? What is the same and what is different about measuring a length in centimetres and measuring a length in millimetres?

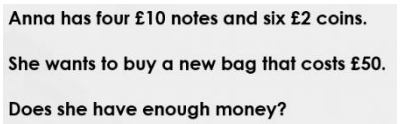
Y3 Personalised Learning Journey Mass and Capacity		
NC Objective: • measure, compare, add and subtract: mass (kg/g); volume/capacity (l/ml)		
Resources/documents: White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Garry Hall.org.uk		
Real life discussion before teaching: baking ingredients, measures on supermarket products		
Pre- assessment	Assessment tasks	Language Focus
	White rose maths assessment	
Teaching sequence	Learning tasks	
WALT: Use scales	In Year 2, children began using grams and kilograms when exploring mass. In this block, children continue to explore mass in kilograms and grams before moving on to capacity. Give children chance to become more familiar with using scales to read measurements. The focus is on dividing 100 into 2/4/5/10 equal parts using number lines, before applying this skill in various contexts later in the block. By working out what the interval gaps are on a number line, children become more experienced at reading scales in the context of measurement. They learn what size groups are made when 100 is split into equal parts, then extend this learning to other multiples of 100 • Label the number lines.   	What is the value at the start of the number line? What is the value at the end of the number line? How many equal parts is the number line split into? What is the value of each interval on the number line? What is the value of each part if 100 is divided into equal parts?
WALT: Measure mass in grams	Children measure mass in grams only. This builds on their learning from Key Stage 1, but with masses now going up to 1,000 grams. Give children a variety of objects to weigh using scales, so that they can understand what a given number of grams can look or feel like. Give children a chance to read a variety of different scales, and compare this to the number lines they used in the last step. When reading scales, children need to work out missing intervals between numbers. They should recognise that they still need to consider the start and end point, as well as the number of intervals on the scale. What is the mass of each object?  The chocolate bar has a mass of 100 g. What is the mass of one muffin?  Nijah takes the muffins and the chocolate bar off the scales. She puts 10 muffins on one side. How many chocolate bars will she need to balance the scales? How did you work it out?	What does “mass” mean? What units do you use to measure mass? What is the start/end value on the scale? How many equal intervals are there on the scale? How do you know what the missing numbers are? If the measurement is halfway between two marks, how can you work out what it is?

<table>
<tr><th colspan="3">Y3 Personalised Learning Journey
Money</th></tr>
<tr><td colspan="3">NC Objective:
• add and subtract amounts of money to give change, using both £ and p in practical contexts</td></tr>
<tr><td colspan="3">Resources/documents: White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Garry Hall.org.uk</td></tr>
<tr><td colspan="3">Real life discussion before teaching: Set in context of real life – calculating amounts, spending money, shopping, bills,</td></tr>
<tr><td>Pre- assessment</td><td>Assessment tasks</td><td>Language Focus</td></tr>
<tr><td></td><td>White Rose assessment block – ch need to recap some calculation work from Y2 when counting £ and p</td><td></td></tr>
<tr><td>Teaching sequence</td><td>Learning tasks</td><td></td></tr>
<tr><td>WALT: Count money in pence</td><td>Practical counting of coins in different representations. Children will count in 1 p, 2 p, 5 p and 10 p coins. Children can also use related facts to count in 20 p coins. Children do not convert between pounds and pence, therefore children will need to recognise the 50 p coin but they will not count up in 50 p coins.
 

 
</td><td>Is the group with the most coins always the biggest amount? Why?
What do you notice about the totals?
Are silver coins always worth more than copper coins?
What different ways can you count the coins?
Which is the quickest way?</td></tr>
<tr><td>WALT: Count money in pounds</td><td>Children will continue counting but this time it will be in pounds, not pence.. Children must be aware that both coins and notes are used to represent amounts in pounds. Children will count in £1, £2, £5, £10 and £20s.
 

Problem solving:
 
</td><td>Do the notes have a greater value than the coins? Which is the hardest to count? Which is the easiest? Why? What do you notice about the amounts? Does it matter which side the equals sign is? Can you find the total in a different way?</td></tr>
</table>

Y3 Personalised Learning Journey

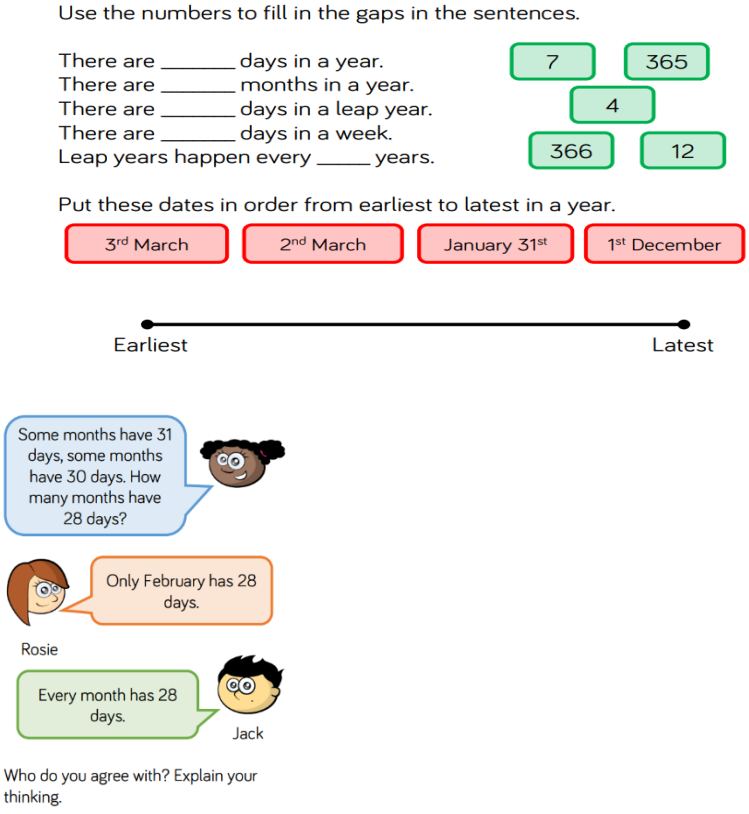
Time

NC Objective:

- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight
- know the number of seconds in a minute and the number of days in each month, year and leap year
- compare durations of events

Resources/documents: White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Garry Hall.org.uk

Real life discussion before teaching: using a watch, roman numerals on clock faces, calendars, diaries, timetables

Pre- assessment	Assessment tasks	Language Focus
	White rose maths assessment	
Teaching sequence	Learning tasks	
WALT: Understand the concept of months and years	Children look at the concept of years and months. They are introduced to leap years and how they are different from a non-leap year. Children should explore years using calendars to investigate the number of days in each month. Use rhymes and songs to help children remember the number of days in each month. Children should spend time exploring a real calendar. They sort the months into groups, by the number of days in each month, for both a year and a leap year. Children can use the groups to compare - what is the same and what is different?  	When is your birthday? What other significant dates are there during the year? Are they the same every year? Which month comes before _____? Which month comes after _____? Which month changes when there is a leap year? Are there any other months that change length? Is this year a leap year? When will the next one be? When was the last one?

Y4 Personalised Learning Journey

Measure

NC Objectives:

Year 3

Pupils should be taught to:

- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
- measure the perimeter of simple 2-D shapes
- add and subtract amounts of money to give change, using both £ and p in practical contexts
- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight
- know the number of seconds in a minute and the number of days in each month, year and leap year
- compare durations of events [for example, to calculate the time taken by particular events or tasks]

Year 4

Pupils should be taught to:

- convert between different units of measure [for example, kilometre to metre; hour to minute]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares
- estimate, compare and calculate different measures, including money in pounds and pence
- read, write and convert time between analogue and digital 12- and 24-hour clocks
- solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days

Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation, deepening understanding resources Policies (Use of concrete), NCETM mastery assessment docs, past SATs questions. Deepening Understanding TTRS Prodigy Maths Classroom secrets

Numicon, Hundred squares, Multiplication cards, timetable fact cards, multiplication games, Base 10. Place value counters. Unifex (SEN), rulers, metre, ruler, weighing scales, trundle wheel, measuring jug, tape measure

Real life discussion before/, during teaching: Where do we use measure in real life:

EG: Measurements are used in baking to weigh out ingredients. Measurements are taken for clothing and to measure the size of a house/ plot of land/ interior for decorating and design. Measure your height and weight.

Pre- assessment	Assessment tasks	Language Focus
	White rose assessment. PUMA assessment.	
Teaching sequence	**Learning tasks**	**Language Focus**
LENGTH AND PERIMETER.		
1 Measure in kilometres and metres.	In previous years, children measured lengths using metres (m) and centimetres (cm). In this small step, children are introduced to kilometres and the abbreviation "km". Children should understand that kilometres are greater than metres and are used to measure greater distances. The focus of this step is to partition measurements into the number of	Kilometres, metres, measure, greater, less than, convert.

	kilometres and metres and make links with addition. Bar models and part-whole models can be used to explore this relationship and to support children with their understanding. The fact that 1 km = 1,000 m can be discussed, but conversions are not explicitly covered until the next step. It is useful to make connections with real-life contexts, so that children are aware when different types of units are used **Key questions:** • What unit of measurement would you use to measure the length of a ? Why? • What unit of measurement would you use to measure ? Why? • Which is the greater length, 1 km or 1 m? • Which is greater, km and m or km and m? How do you know? • Which is greater, km or m? How do you know? • How many kilometres and metres are there in km m? **Possible misconceptions:** • Children may ignore the unit of measurement and just compare the numbers involved. For example, they might think that 2 km and 60 m is less than 1 km and 700 m, because 260 is less than 1,700 • Children may think that 1 km = 100 m, based on the relationship between metres and centimetres.	
2. Equivalent lengths (kilometres and metres)	In Year 3, children converted between metres and centimetres, and between centimetres and millimetres. In this small step, children use the fact that 1 km is equal to 1,000 m to derive related facts using numbers up to 10,000 Children make links to counting in 1,000s as covered in their earlier learning on place value. Bar models, part-whole models and double number lines are useful representations to explore the connections between the two units and to support children with conversions. Children learnt to multiply and divide by 10 and 100 in the previous block and could extend their thinking to multiply and divide by 1,000; if this is not appropriate, they could count up and down in 1,000s instead. **Key questions:** • How many metres are there in 1 km? So how many metres are there in km? • How can you work out how many metres is equivalent to half a kilometre? What other fractions of a kilometre can you convert to metres? • Which is greater, km or m ? How do you know?	Kilometres, metres, measure, greater, less than, convert

	• What is the same and what is different about converting metres to centimetres and converting kilometres **Possible misconceptions:** • Children may mix up the conversions between different metric units, for example thinking that 1 km = 100 m. • Children may make errors when counting in 1,000s. • Children may just consider the numbers and not the units and think that, for example, 70 m is greater than 7 km as 70 is greater than 7	
3. Perimeter on a grid.	In Year 3, children were introduced to the idea of perimeter by measuring and calculating the perimeter with labelled side lengths. In this small step, children explore perimeter further with a focus on rectilinear shapes, where all sides meet at right angles. These rectilinear shapes will be drawn on squared grids, mainly centimetre squared grids. Encourage children to label the lengths of the sides if needed, and to mark off each side as they add the lengths together. Looking at a variety of shapes enables children to compare their perimeters. They also explore drawing different shapes with a specified perimeter. They continue to consider rectilinear shapes only and do not look at diagonal lengths. **Key questions:** • What does "perimeter" mean? • What is the length of each square? How do you know? • What is the length of each side? How do you know? • What unit is used for the perimeter of your shape? • How can you make sure you do not include one side twice? • Which shape has the greater/greatest perimeter? How do you know? • Can two different shapes have the same perimeter? How do you know? Can you draw an example to support your answer? **Possible misconceptions:** • Children may only add the width and length of one side, or the sides labelled, rather than all the sides of the shape. • Children may forget to include the unit of measurement. • Children may count all the squares around the outside of the shape, rather than the lengths of the sides. • When looking at irregular rectilinear shapes, children may miss some of the sides of the shape.	Kilometres, metres, measure, greater, less than, convert, cm, perimeter, rectilinear, irregular

4. Perimeter of a rectangle	In this small step, children focus on calculating the perimeter of rectangles using the side lengths, rather than counting the squares. Rectangles are first presented on squared grids as they have been seen previously. Children should be encouraged to label the side lengths on the rectangles and discuss anything they notice as they work through some examples. They can then progress to looking at rectangles that are not presented on squared grids but with all four sides labelled, before finally exploring rectangles with only one length and width given. Children explore different methods for working out the perimeter of rectangles, such as adding double the length to double the width, and doubling the sum of the length and the width. **Key questions:** • What is the length of each side? How do you know? • How can you use the length of each side to calculate the perimeter? • What is the measurement unit used for the perimeter of the rectangle? • How did you work out the perimeter of the rectangle? How could you have done it a different way? • If you know the length and width of a rectangle, do you need to measure/label every side? • How many different ways can you find the perimeter of this rectangle? **Possible misconceptions:** • Children may only add the lengths of the sides that are labelled rather than using more efficient methods involving multiplication. • Children may not check the units given in the diagrams and so fail to convert them if there are mixed units. • If children do not have efficient strategies for doubling 1- and 2-digit numbers then this may lead to a reliance on inefficient methods.	
5. Perimeter of rectilinear shapes.	This small step continues to build children's understanding of perimeter by exploring more rectilinear shapes, both with and without grids. Children know that a rectilinear shape has straight lines that meet at right angles. In this step, it is useful for children to measure the perimeter practically before they find the perimeter of a shape on a grid or from a shape with all side lengths labelled. When calculating, children should mark the sides they have already counted to avoid duplication or omission. At this stage, children do not need to calculate	

	unknown side lengths as this will be covered in the next step. **Key questions:** • What is a rectilinear shape? • How many sides does the shape have? • Are any of the sides equal in length? • What strategies can you use to find the perimeter? • How can you be sure you have included all the sides? • How can you check your answer? • How many rectilinear shapes can you draw with a perimeter of cm? **Possible misconceptions:** • Children may make arithmetical errors when adding the side lengths. • Children may omit sides or count them more than once. • When working on a grid, children may count the number of squares around the shape rather than the side lengths. • Children may add the side lengths and double them, as they did when calculating the perimeters of rectangles	
6. Find the missing lengths in rectilinear shapes.	In this small step, children continue to look at rectilinear shapes, focusing on finding missing side lengths. Children explore the relationship between the sides of a rectilinear shape, rather than finding the perimeter. They start by using addition to find the missing side lengths, then using subtraction and finally using both operations to find more than one missing side length. Part-whole models may be useful here. Children may find it helpful to draw the shapes and measure them, enabling them to notice that the opposite sides of the shapes are related. They could cut pieces of string or thin strips of paper to see which parts of a side correspond to another side. **Key questions:** • What lengths do you know? What lengths do you need to find out? • What is the total horizontal length of the shape? Which sides add together to give the same total? • What is the total vertical length of the shape? Which sides add together to give the same total? • Do you need to add or subtract to find the missing length? How do you know? • Are you finding a part or a whole? **Possible misconceptions:**	

	• Children may need support to notice the relationships between the sides. • Children may use the wrong operation to find the missing side length, for example adding two sides instead of subtracting them. • The words “horizontal” and “vertical” may be unfamiliar.	
7. Calculate perimeter of rectilinear shapes	Building on the previous step, children move on to calculating the perimeter of rectilinear shapes where they first need to find the missing length(s). This could involve addition or subtraction depending on the information given in the question. Children identify equivalent sides and, after calculating any unknown lengths, annotate the shape, ensuring that every side is labelled. This helps to prevent errors or omissions when calculating the perimeter. Children also work backwards from a given perimeter to work out an unknown side length **Key questions:** • What lengths do you know? What lengths do you need to find out? • What is the total horizontal/vertical length of the shape? Which sides add together to give the same total? • Where is the missing length on the shape? • How many missing lengths are there on the shape? • Do you need to add or subtract to find the missing length? How do you know? • Are you finding a part or a whole? **Possible misconceptions:** • Children may need support to identify equivalent sides. • Children may use the wrong operation to find the missing length. For example, they may add together two sides rather than subtract them. • When finding the perimeter of a complex rectilinear shape, children may miss a side when adding, or add the same side twice	
8. Perimeter of regular polygons.	In this small step, children are introduced to the term “regular polygon” for the first time. Explain that, in a regular polygon, all sides are equal in length and the angles are equal in size. For this step, children only need to understand that a regular polygon has equal side lengths, as they will not be exposed to shapes that have the same side lengths with different angles. Children use the equality of sides to calculate the perimeter of regular polygons by making links with repeated addition and/or multiplication facts. Similarly, they use division to find the length of one side of a regular polygon when given its perimeter.	

	Children may need reminding that a polygon is a flat shape with straight sides. **Key questions:** • What is a polygon? • How do you know if a polygon is regular? • If one side is cm, what is the length of each of the other sides of the shape? How can you find the perimeter? • Is an equilateral triangle a regular shape? • Is a rectangle a regular shape? • If you know the perimeter of a regular polygon, how can you work out the length of each side **Possible misconceptions:** • Children may need support to learn the names of different polygons and the number of sides they have. • Children need to be secure with multiplication and division facts. • Children may misunderstand the word "regular" and think that, for example, a rectangle is regular	
Perimeter of polygons.	In this small step, children learn the word "irregular" to describe polygons that are not regular. Show children a range of irregular shapes to help them to identify that either the lengths or angles, or both, are not all equal. In this step, children are exposed to examples of polygons in which the lengths are equal but angles are not, and this is an important discussion point. Children continue to add the side lengths together to find the perimeter. Encourage children to use number bonds to add related sides (for example, 4 cm + 6 cm = 10 cm) when working out the perimeter, as this will make calculating more efficient. They also use symmetry and properties of shapes to label lengths that are not given to help them calculate perimeters of shapes that are partially labelled. Children should still label and mark sides as they are working out perimeters to help avoid errors. **Key questions:** • What is the difference between a regular and an irregular polygon? • Is the shape irregular? How do you know? • How can you work out the perimeter of the shape? • Are any of the sides the same length? • What is the length of each side? • How can you work out the perimeter more efficiently? • If the shape is symmetrical, how can this help you to work out some of the missing side lengths?	

	Possible misconceptions: • Children may try to measure unknown sides rather than use the given information to work out the lengths. • When finding the perimeter of a more complex shape, children may omit some of the sides, or count them more than once	
AREA		
What is an area?	In this small step, children encounter area for the first time. They learn that area is the amount of space taken up by a two-dimensional shape or surface. They explore different ways of working out the area of a shape, and it is important that children recognise that some ways are better than others. In this small step, area is found by practically counting squares and not through any formal calculations. This topic lends itself to practical activities such as finding the area of classroom objects using square pieces of paper. Activities such as this can be extended by using different-sized squares and discussing why this gives a different answer. Children also explore the idea that counters are not suitable for finding area, as the whole area cannot be covered.7 **Key questions:** • How can you measure area? • Which item has the greatest/smallest area? • Why would you not use sticky notes to find the area of the playground? What could you use instead? • Why are sticky notes not useful for finding the area of a circle? • What do you think the area of might be? • What happens if you use a different unit of measure to find the area? **Possible misconceptions:** • When investigating area for the first time, children may not use a reliable method or unit to count how much space is taken up. • When using sticky notes to practically investigate area, children may overlap them. This is a good opportunity to discuss the importance of measuring accurately.	
Count squares	In the previous small step, children learnt that area is the space taken up by a two-dimensional shape or surface, and measured it practically. In this small step, they use the strategy of counting the number of squares inside a shape to find its area. If appropriate, children can move on to finding the areas of shapes that include half squares. Marking or noting which squares they have already counted supports children's accuracy when finding the area of complex shapes. Using arrays relating to area can be explored, but children are not expected to recognise the formula. Knowledge of the properties of squares and	

	rectangles can help children to find the areas of shapes with parts missing. **Key questions:** • What can you do to make sure you do not count a square twice? • How can you make sure you do not miss a square? • Does your knowledge of times-tables help you to find the area? • Can you use arrays to find the area of any shape? • Which method is easier? Why? • What can you do if the squares are not full squares? **Possible misconceptions:** • Children may miscount when counting the squares of more complex shapes. • If children are insecure with their times-tables, they may make mistakes when using arrays to find the area. • After using arrays to find the area of a rectangle, children may use them to find the areas of all shapes, which may not be appropriate	
Make shapes	In this small step, children make rectilinear shapes using a given number of squares. Children learn that a rectilinear shape is a shape that has only straight sides and right angles. They explore the idea that rectilinear shapes need to touch at the sides and not just at the corners. Children may notice that a rectilinear shape looks like two rectangles joined together, but should be careful not to calculate the area as two rectangles added together, as this will sometimes include an overlap. Children should work systematically to find all the different rectilinear shapes using a given number of squares by moving one square at a time, before moving on to drawing their own shapes with a given area. **Key questions:** • How many different shapes can you make with four squares? • How can you work systematically? • Should you overlap the squares when making your shapes? • How many of these shapes are rectilinear? Explain why. • Is it possible to make a rectangle with an odd number of squares? • Is it possible to make a square with an odd number of squares? **Possible misconceptions:**	

	• Children may not know that rectilinear shapes need to be touching along the sides, not just at the corners. • When making rectilinear shapes with concrete resources, children may overlap the squares. • Children may not recognise that shapes can look different but have the same area.	
Compare areas	Building on previous steps, children compare the areas of rectilinear shapes where the same size square has been used. Marking or noting which squares they have already counted will support children's accuracy when finding the area of complex shapes. Children begin by using the symbols and = to compare the areas of different shapes, before drawing their own shapes to satisfy an inequality. They also compare the areas of different shapes and put them in size order. Children could move on to finding the area of shapes that include half squares. This is another opportunity for children to explore the most efficient method for finding the area. **Key questions:** • How can you find out which shape has the greater area? • How much greater/smaller is the area of the first/second shape? • What is different about the numbers of squares covered by the two shapes? • What is the difference in area between the shapes? • How can you order the shapes? **Possible misconceptions:** • Children may not be confident using > and < for inequalities. • Children may miscount when counting the squares of more complex shapes. • When counting squares to find the area of rectilinear shapes, children may count some squares more than once, which will give them an incorrect area.	

Y4 Personalised Learning Journey

Money

NC Objectives:

Year 3

Pupils should be taught to:

- add and subtract amounts of money to give change, using both £ and p in practical contexts

Year 4

Pupils should be taught to:

- Pupils build on their understanding of place value and decimal notation to record metric measures, including money

Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation, deepening understanding resources Policies (Use of concrete), NCETM mastery assessment docs, past SATs questions. Deepening Understanding TTRS Prodigy Maths Classroom secrets

Money, counters, place value charts.

Real life discussion before/, during teaching: Where do we use measure in real life:

EG: Shopping, banking, paying bills, wages.

Pre- assessment	Assessment tasks	Language Focus
	White rose assessment. PUMA assessment.	
Teaching sequence	**Learning tasks**	**Language Focus**
1. Pounds and pence	Children develop their understanding of pounds and pence. This is the first time they are introduced to decimal notation for money. Once children are confident with this, they can move on to convert between different units of money. Children can use models, such as the part-whole model, to recognise the total of an amount being partitioned in pounds and pence. **Key questions:** • How many pence make a pound? • Why do we write a decimal point between the pounds and pence? • How would we write 343 p using a pound sign? • How can the amounts be partitioned in to pounds and pence? • Is there only one way to complete the part-whole model? • How can these amounts be converted into pounds and pence? **Possible misconceptions:** • Understand the pence as a decimal. • Understanding of how many more pence makes a pound. • Adding money following the rules of place value.	

2. Ordering money	Children use their knowledge of £1 = 100 p to compare amounts. Children begin by ordering amounts represented in the same format e.g. 4,562 p and 4,652 p, or £45.62 and £46.52 and relate this to their place value knowledge. Once children understand this, they look at totals that include mixed pounds and pence and also totals represented in decimal notation. Using real notes and coins could support some children. **Key questions:** • What does the digit ___ represent? • What place value column is the digit in? • How many pounds/pence is it equivalent to? • How can this help us decide which amount is larger/smaller? • Can we think of an amount which could go in between these amounts? • What does ascending/descending mean? • What's the same? • What's different? **Possible misconceptions:** • Place value of a digit when converting money to decimals. • Understanding the difference between pound and pence. • The difference between ascending and descending – mix up meaning.	
3. Estimating money	Children round amounts of money written in decimal notation to the nearest pound. They estimate the total of two amounts and move on to estimating with more than two amounts. Children discuss underestimating and overestimating and link this to rounding down or up and apply it to real life scenarios such as buying food in the supermarket. **Key questions:** • If we have ____ , what whole numbers/pounds does this come in between? • Where will it go on the number line? • Which pound is it nearer to? • What does estimate mean? • What does approximately mean? • Where would be a sensible place to start labelling the number line? • What will each amount round to? • How much will they total altogether? • If you had ___ , would you have enough to buy the items? **Possible misconceptions:** • Rounding rules. • The place value of a digit when rounding. • The value of money changes when rounded.	

Y3 3 Recap 4. Convert pounds to pence	Children convert between pounds and pence using the knowledge that £1 is 100 pence. They group 100 pennies into pounds when counting money. They apply their place value knowledge and use their number bonds to 100 **Key questions:** • How many pennies are there in £1? • How can this fact help us to convert between pounds and pence? • How could you convert 600p into pounds? • How could you convert 620p into pounds? **Possible misconceptions:** • How many pence in a pound. • Converting a large amount of pence to pounds. • Place value of a digit.	
Y 3 Recap **5. Add money**	Children add two amounts of money using pictorial representations to support them. They are encouraged to add the pounds first and then add the pence. Children then exchange the pence for pounds to complete their calculations **Key questions:** • Can you group any of the coins to make a pound? • Can you use estimation to support your calculation? • Why is adding 99p the same as adding £1 and taking away 1p? **Possible misconceptions:** • Place value of a digit. • Lining numbers up accurately including the decimal place. • Exchanging pence to pounds.	
Y3 Recap 6. Subtract money	Children use different methods to subtract money. They will see examples where they can physically remove the coins, and examples where they will need to use their knowledge of converting money to exchange £1 for 100 pence. Children also use number lines to count on or back to calculate the difference between two amounts. **Key questions:** • Can we make 50p in a different way to make it easier to subtract 10p physically? • Which number should I place on the number line first? • Could I count backwards on the number line? • Does this change the difference? • Do we need to exchange any pounds for pence? **Possible misconceptions:** • Place value of a digit.	

	• Lining numbers up accurately including the decimal place. • Exchanging pence to pounds.	
Y3 Recap 7. Give change	Children use a number line and a part-whole model to subtract to find change. Teachers use coins to practically model giving change. Encourage role-play to give children a context of giving and receiving change. **Key questions:** • What do we mean by 'change' in the context of money? • Which method do you find most effective? • How does the part-whole model help to solve the problem? **Possible misconceptions:** • Place value of a digit. • Lining numbers up accurately including the decimal place. • Exchanging pence to pounds.	
8. Four operations	Children solve simple problems with money, involving all four operations. Children are not expected to formally add with decimals in Year 4 but could explore other methods, such as partitioning and recombining to add money. They could use prior knowledge of converting, as well as number bonds, to help them. Bar modelling could also be used as a strategy when solving problems. **Key questions:** • How can we label the bar model? • What other questions could we ask? • What operation will we use? • How can we partition pounds and pence to help add two amounts? • Is there an alternative way to answer this question? **Possible misconceptions:** • Place value of a digit. • Lining numbers up accurately including the decimal place. • Exchanging pence to pounds.	

Y4 Personalised Learning Journey

Time

NC Objectives:

Year 3

Pupils should be taught to:

- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight.
- know the number of seconds in a minute and the number of days in each month, year and leap year.
- compare durations of events [for example, to calculate the time taken by particular events or tasks.

Year 4

Pupils should be taught to:

- read, write and convert time between analogue and digital 12- and 24-hour clocks.
- solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days.

Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation, deepening understanding resources Policies (Use of concrete), NCETM mastery assessment docs, past SATs questions. Deepening Understanding TTRS Prodigy Maths Classroom secrets

Clocks, stopwatch

Real life discussion before/, during teaching: Where do we use measure in real life:

EG: To tell the time throughout the day and understand morning (am) and afternoon/night (pm), read the time on a timetable when travelling.

Pre- assessment	Assessment tasks	Language Focus
	White rose assessment. PUMA assessment.	
Teaching sequence	**Learning tasks**	**Language Focus**
1 Y3 Recap Telling the time to 5 minutes.	Children tell the time to the nearest 5 minutes on an analogue clock. They focus on the language of "past" and "to", and will recognise and use Roman numerals on a clock face. Attention should be drawn to the differences between the minute hand and the hour hand. This is especially important for times that are close to the next hour, for example, 5 minutes to 12 **Key questions:** • Which of the hands is the minute hand and which is the hour hand? • Is the minute hand past or to the hour? • How many minutes past/to the hour is the minute hand? If the minute hand is pointing at the 6, how many minutes have passed in this hour? • What do you notice about the clocks? • Which Roman numeral represents the number ____? Do we ever say "45 minutes to" the hour? **Possible misconceptions:**	Analogue Minutes Seconds Hours Past To

	• Struggle to identify the minute and hour hands incorrectly • Confuse the past and to • Struggle to identify quarter past and quarter to • Struggle to read a analogue clock	
2. Y3 recap Telling the time to the minute.	Children tell time to the nearest minute using an analogue clock. They use the terms 'past' and 'to'. When telling time 'to' the next hour, children may need to count on to find how many minutes are left in the hour. **Key questions:** • Which hand is the minute hand? Which hand is the hour hand? • How many minutes is it past the hour? • How many minutes is it to the next hour? • When are the minutes to an hour and the minutes past an hour • the same? • If the hour hand is between ____ and ____, which hour is the • time referring to? **Possible misconceptions:** • Misread the hour hand • Struggle to identify the minute and hour hands incorrectly • Confuse the past and to • Struggle to identify quarter past and quarter to • Struggle to read a analogue clock	
3. Y3 recap ***Using am and pm***	Children use 'morning', 'afternoon', 'a.m.' and 'p.m.' to describe the time of day. Children continue using analogue clocks and will be introduced to digital time for the first time **Key questions:** • What time of the day does ____ happen? • Is _____ earlier or later than _____? • How do you know whether a time is in the morning or afternoon? • What times could be a.m.? • What times could be p.m.? • What is the difference between analogue and digital? • What would the time look like on an analogue clock? • How can we change analogue to digital? **Possible misconceptions:** • Identifying AM and PM on a digital clock • Understanding what a.m. and p.m. mean	

	• Struggle writing the time on a digital clock	
4. Y3 recap 24-hour clock	Children are introduced to telling the time on a 24-hour digital clock for the first time. Children spend time looking at analogue and digital clocks at various times throughout the day, in order to compare what is the same and what is different. **Key questions:** • Using the 12-hour clock, is the time an a.m. or a p.m. time? • What will the number representing the hour be in 24-hour clock time? • How do you know if it will be less than 12 or more than 12? • What will the minutes be in 24-hour time? • Where can you count from? • When does the number of minutes become 0 again on a 24-hour clock display? **Possible misconceptions:** • Struggle to count on time after noon • Struggle to understand that time starts from 13 and ends at 24 • Struggle to read the time off of a 24-hour digital clock	
5. Hours, minutes and seconds.	Children recap the number of minutes in an hour and seconds in a minute from Year 3 They use this knowledge, along with their knowledge of multiplication and division to convert between different units of time. **Key questions:** • What activity might last one hour/minute/second? How many minutes are there in an hour? • How can we use a clock face to check? • How could we count the minutes? • How many seconds are there in one minute? • What could we use to check? • How many minutes in _____ hours? • How many seconds in ____ minutes? **Possible misconceptions:** • Identifying the hours and minutes • Knowing how many seconds are in a minute • Knowing how many minutes are in an hour • Struggle to convert different units of time	
6. Years, months, weeks and days	Children recap the concept of a year, month, week and day from Year 3 They use this knowledge, along with their knowledge of addition, subtraction, multiplication and division to convert between the different units of time. **Key questions:** How many days are there in a week? How many days are there in each month?	

	How many weeks in a year? How many days are there in _____ weeks? What calculation do we need to do to convert days to weeks/weeks to days? How many months/weeks/days are there in _____years? **Possible misconceptions:** • Struggle to understand how many days are in a month • Struggle to know how many days are in a year • Struggle to understand we have a leap year • Struggle to understand there are not the same amount of weeks/days in each month	
7. Analogue to digital – 12 hours.	Children convert between analogue and digital times using a format up to 12 hours. They use a.m. and p.m. to distinguish between times in the morning and afternoon. They understand that how many minutes past the hour determines the digital time. It is important for children to recognise that digital time need to be written in 4-digit format. For example, 09:30 a.m. not 9:30 **Key questions:** • What time is the analogue clock showing? • How many minutes is it past the hour? • How can you count the minutes efficiently? • How do we record each time in digital format? • What does a.m./p.m. mean? • Can you order the activities starting with the earliest? • What would the time look like on Alfie's digital watch when he left home? **Possible misconceptions:** • Struggle writing on an analogue clock from digital • Struggle identifying minutes and hours when converting from a digital clock onto an analogue clock • Misplace hours and minutes on a analogue clock from a digital	
8. Analogue to digital – 24 hours.	Children now move on to convert between analogue and digital times using a 24 hour clock They use 12 and 24 hour digital clocks, and a number line, to explore what happens after midday. **Key questions:** • What do you notice about the time 1 o'clock in the afternoon on a 24 hour digital clock? • How will the time be shown for 3 o'clock in the morning/afternoon? • How do you know? • What time is the analogue clock showing? • Why is it important to know if it is a.m. or p.m.?	

	• What time does she leave school on a 24 digital clock? **Possible misconceptions:** • Struggle understanding the hour for p.m. • Struggle to understand that midnight is 00:00	

Y5 Personalised Maths Learning Journey Date: WB:		
NC Objectives: • convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs. Base 10, place value counters, part-whole models, bar models, real-life objects e.g. sweets etc.		
Real life discussion before teaching: Building, constructions, shopping, baking		
Pre- assessment	Assessment tasks	Language Focus
Revision from previous years: • Convert between different units of measure [for example, kilometre to metre; hour to minute] • estimate, compare and calculate different measures, including money in pounds and pence	White Rose Year 4 Converting Units Assessment sheets.	
Teaching sequence	Learning tasks	Language Focus
1. WALT: To convert between metres and kilometres. WILF: I will multiply and divide by 1000 to convert between metres and kilometres.	Model how to convert. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- practice multiplying and dividing by 1000. If this is successful they can apply this to metres and kilometres.	Convert, metres, kilometres, multiply, divide, 1000, place value, column, measure, measurement, unit of measure
2. WALT: To convert kilograms and kilometres.	As above. Once children have started. Have children that are on apply task to	Convert, metres, kilometres, multiply, divide, 1000, place value, column, measure, measurement, unit of measure, grams, kilograms

WILF: I will multiply and divide by 1000 to convert between metres and kilometres and between grams and kilograms.	come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- as above. If they needed all previous lesson to secure understanding of multiply/divide by 1000 then they can recap today and then try with measures.	
3. WALT: To convert millimetres and millilitres. WILF: I will multiply and divide by 1000 to convert between metres and millimetres and litres and millilitres.	Explain milli- means 1/1000. As above but now explain that it is to find a smaller unit of measurement. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- continue from previous lessons.	Convert, metres, kilometres, multiply, divide, 1000, place value, column, measure, measurement, unit of measure, grams, kilograms, millilitres, millimetres, litres
4. WALT: To convert metric units. WILF: I will multiply and divide by multiples of 10 to convert between kilometres, metres, centimetres and millimetres.	Model the conversion of mm – cm, cm- m, m -km by writing to conversion and showing directional arrows and what they need to multiply or divide by. Try a few examples on whiteboards. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- recap of multiply and divide by 10, 100 and then apply to measures if/when ready.	Convert, metres, kilometres, multiply, divide, 1000, place value, column, measure, measurement, unit of measure, grams, kilograms, millilitres, millimetres, litres, centimetres,
5. WALT: To convert imperial units. WILF: I will multiply and divide by multiples of 10 to convert between cm	Model the conversion of inches – cm, kg - lbs by writing to conversion and showing directional arrows and what they need to multiply or divide by. Try a few examples on whiteboards. Once children have started. Have children that are on apply task to come to board to check understanding	Convert, metres, kilometres, multiply, divide, 1000, place value, column, measure, measurement, unit of measure, grams, kilograms, millilitres, millimetres, litres, centimetres, inch, inches, pounds (lb)

and inches, kg and lbs.	and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- as previous lesson. Same measurements as these may be too abstract for them.	
6. WALT: To convert units of time. WILF: I will use multiplying and dividing to convert units of measures (years, months, weeks, days, hours, minutes, seconds).	As above but with units of time. Problem solving and reasoning questions. LA- As lesson 5 but with time.	Convert, metres, kilometres, multiply, divide, 1000, place value, column, measure, measurement, unit of measure, grams, kilograms, millilitres, millimetres, litres, centimetres, inch, inches, pounds (lb), year, months, days, hours, minutes, seconds
7. WALT: To use timetables to retrieve information. WILF: To convert units of time to retrieve information and problem solve from a timetables.	Model use of timetable and how to read. Problem solving and reasoning questions. LA- simple timetable and retrieve* information e.g., wat time does the show start and finish? How long does that show last.	Convert, metres, kilometres, multiply, divide, 1000, place value, column, measure, measurement, unit of measure, grams, kilograms, millilitres, millimetres, litres, centimetres, inch, inches, pounds (lb), year, months, days, hours, minutes, seconds, timetable

Y5 Personalised Maths Learning Journey Date: WB:		
NC Objectives: • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs. Base 10, place value counters, part-whole models, bar models, real-life objects e.g. sweets etc.		
Real life discussion before teaching: Building, constructions, shopping, baking		
Pre- assessment	Assessment tasks	Language Focus
Revision from previous years: • measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • find the area of rectilinear shapes by counting squares	White Rose Year 4 Perimeter and Area Assessment sheets.	Multiple, multiplication, lots of, groups of, divide, share,
Teaching sequence	Learning tasks	Language Focus
1. WALT: To measure the perimeter of shapes without a grid. WILF: I will use the measurements given and addition to calculate the perimeter of rectilinear shapes.	Model how to calculate the perimeter of shapes. Show the calculation in algebra. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- Children will investigate a range of rectilinear shapes that have given measurements. First start with squares and rectangles. Apply- can they draw a shape with a given perimeter? Give them to	Rectilinear, compound, square, rectangle, length, perimeter, add

	perimeter and have them draw the shape.	
2. WALT: To measure perimeter of shapes on a grid. WILF: I will calculate the length of sides using a grid and then add these to calculate the perimeter of rectilinear shapes.	Model how to calculate the length using the grid. Recap how to calculate perimeter. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- give the children a range of shapes on a grid. They calculate the perimeter by identifying the length first by counting the squares on the gird. Apply- give the children grid with various shapes on with questions such as. Which shape has the largest perimeter? Can they guess first? Which is the shortest? Can they put them in order? Do any have the same perimeter? Can they draw their own shape and put it in to the order?	Rectilinear, compound, square, rectangle, length, perimeter, add, grid
3. WALT: To measure perimeter of rectangles. WILF: I will use addition and multiplication to calculate the perimeter of squares and rectangles.	Show a square with the length of only one showing. Can I work out the perimeter? Discuss. Now show rectangle with length and width show on only 1 side. Can I work this out? Discuss and model. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- give squares and rectangles with just 1 side (squares), 2 sides (rectangles) showing and have them calculate the perimeter. Apply-give them a measurement. Can they make a square and rectangle with that measurement as perimeter? They need to apply what they have done in the practice.	Rectilinear, compound, square, rectangle, length, perimeter, add, grid, multiply

4. + Word Problem Lesson WALT: To measure the perimeter of rectilinear shapes. WILF: I will use addition and multiplication to calculate the perimeter of squares and rectangles and apply that to rectilinear shapes.	Model how to use yesterday's knowledge to identify the rectilinear shape when there is no grid. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. WORD PROBLEMS LESSON LA- recap yesterday's learning. Now show how they can use that knowledge if two of those rectangles where attach. Use cut out triangles. Have them find the perimeter when 1 length and width is given. Now stick them together and show that the knowledge is the same. Model now with a rectilinear shape that is already made. Can they draw a line on and then calculate the perimeter of both rectangles and then add both together? Apply- Order the rectilinear shapes in size.	Rectilinear, compound, square, rectangle, length, perimeter, add, grid, multiply
5. WALT: To measure area of shapes. WILF: I will count squares to calculate the area of shapes.	Model finding area using squares. Problem solving and reasoning questions. LA- Children will investigate a range of shapes on a grid. First start with squares and rectangles. Apply- can they draw a shape with a given area? Give them the area and have them draw the shape.	Rectilinear, compound, square, rectangle, length, perimeter, add, grid, multiply, area
6. WALT: To measure area of shapes. WILF: I will use a formula to calculate area of shapes.	Model A = L x W. Problem solving and reasoning questions. LA- start with squares and rectangles. Not looking at the given measurements and using the formula. Keep numbers low and increase difficulty if understanding is secure. Apply- give them some shapes. Have them predict which has largest/smallest area. Then work out. Can they put them in order of size?	Rectilinear, compound, square, rectangle, length, perimeter, add, grid, multiply, area, formula

7. WALT: To measure area of rectilinear shapes. WILF: I will use for formula for area and addition to calculate area of rectilinear shapes.	Model how multiplication facts can be used to find relating division facts. Explain and model how this can also be used to check answer. Children practice this skill- give some multiplication facts for the children to write as division fact. Then give some division facts for them to check using inverse if they are correct or not and explain what is wrong and why. LA- recap yesterday's learning. Now show how they can use that knowledge if two of those rectangles where attach. Use cut out triangles. Have them find the perimeter when 1 length and width is given. Now stick them together and show that the knowledge is the same. Model now with a rectilinear shape that is already made. Can they draw a line on and then calculate the perimeter of both rectangles and then add both together? Apply- Order the rectilinear shapes in size.	Rectilinear, compound, square, rectangle, length, perimeter, add, grid, multiply, area, formula
8. + WORD PROBLEMS WALT: To measure area of irregular shapes. WILF: I will use my knowledge of fractions to calculate area of irregular shapes on a grid.	Model how to calculate area where there are part boxes covered. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. WORD PROBLEMS. LA- same as everyone else.	Rectilinear, compound, square, rectangle, length, perimeter, add, grid, multiply, area, formula, irregular

Y5 Personalised Maths Learning Journey Date: WB:		
NC Objectives: • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs. Base 10, place value counters, part-whole models, bar models, real-life objects e.g. sweets etc.		
Real life discussion before teaching: Building, constructions, shopping, baking		
Pre- assessment	Assessment tasks	Language Focus
Revision from previous years: •	White Rose Year 4 measuring Volume Assessment sheets.	
Teaching sequence	Learning tasks	Language Focus
1. WALT: To know what volume is. WILF: I will use amount of waters and different containers to show the difference between the volume and capacity.	Explain capacity and show a jug. Now full with water and explain volume. Model how to read measures. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- practical with different containers with the came amount of volume. They look fuller but it is the same volume but the capacity has changed. Apply- using multilink cubes, can they create the same volume but with different shapes?	Volume, capacity, millilitres, litres
2. WALT: To compare volumes. WILF: I will calculate volume to compare and order different volumes.	As above. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- create and compare volume made from different multilink shapes.	Volume, capacity, millilitres, litres
3.	Show different objects and have children estimate. Remind them what	Volume, capacity, millilitres, litres, estimate

WALT: To estimate volume. WILF: I will use sensible guesses based on my understanding of volume.	1l looks like and use that as a comparison. E.g., if this is 1l how much do you think this bucket will hold, the table caddy etc. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. LA- practical task. Show an object, have them guess the volume and then test it out to see who is closest.	
4. + WORD PROBLEMS WALT: To estimate capacity. WILF: I will multiply and divide by multiples of 10 to convert between kilometres, metres, centimetres and millimetres.	Same as yesterday but apply to capacity. Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary. Problem solving and reasoning questions. WORD PROBLEMS LA- same as yesterday but with capacity.	Volume, capacity, millilitres, litres, estimate

Y6 Personalised Learning Journey Measures

NC Objectives:

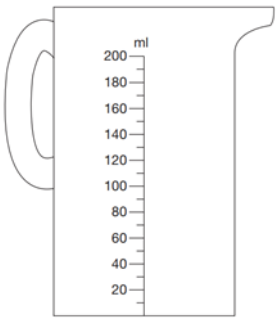
- solve problems involving the calculation and conversion of units of measure, using
- decimal notation up to three decimal places where appropriate
- use, read, write and convert between standard units, converting measurements of
- length, mass, volume and time from a smaller unit of measure to a larger unit, and
- vice versa, using decimal notation to up to three decimal places
  convert between miles and kilometres
- recognise that shapes with the same areas can have different perimeters and vice
- versa
- recognise when it is possible to use formulae for area and volume of shapes
- calculate the area of parallelograms and triangles
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].

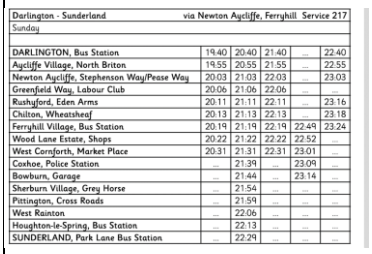
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, past SATs questions.

Base 10. Place value counters.

Real life discussion before/during teaching : Measures in the real world- when do we use measures of length, volume, capacity etc. Give examples of small and large measures and when and where they are used.

Pre- assessment	Assessment tasks	Language Focus
Revision from previous years:	Converting from litres to ml, kg to g, m to cm, cm to mm Matching card tasks using decimal equivalents EG 0.5 m = 50cm	
Teaching sequence	**Learning tasks**	**Language Focus**
WALT: Convert metric units of length	Make sure that children understand the various size of measures by showing using rulers, metre sticks, tape measures etc. Ask children in pairs to think about things that can be measured using the different units EG: a pencil sharpener would be measured in mm the distance travelled would be km etc. Show on the board: What are the conversions? 1cm = ____mm? 1m = ____ cm? 1km = _____ m? Ask/tell children the conversions and then show the calculation EG: 1cm = 10mm so to convert cm	1metre (m) 1mm (millimetre) 1cm (centimetre) 1km (kilometre)

	into mm you multiply by 10 and then mm to cm do the inverse divide by 10. Repeat for m to cm and km to m. In pairs, children work together to match cards with the correct conversion. Differentiate so that children are using their prior knowledge of equivalent FDPs EG 0.5m = ½ m = 50cm etc. Practise: Completing tables by converting measures like in matching game. Application: worded problems and SATs questions.	
WALT: Convert measures of weight and mass	As above bit with g and kg	Kg (killiogram) D (gram)
WALT: convert measures of capacity	As above but with l and ml	Ml millilitres L liters Convert conversion
WALT: solve problems involving measures	A range of differentiated word problems and SATs questions involving measures and weight, mass, length and capacity. Use the graphic organiser to ensure children are solving problems accurately. GD work together on more challenging word problems.	
WALT: Read scales	Give a range of scales on weighing scales, rulers, measuring jugs and ensure children can read the intervals accurately. Application through SATs style questions EG: Chen pours 165 millilitres of milk into a measuring jug. Draw an arrow on the jug to show the level of the milk.  	Scales Intervals increments
WALT: Interpret time tables	Recap on time conversions 1 m = 60 seconds, 1 hour = 60 minutes etc. Link back to FDP EG: 3.5 hours = 3 ½ hors = 240 minutes.	Digital Hours Minutes Seconds

	Give some to do on whiteboards to check they are secure. Recap on reading the 24 hours clock. Give bus time table EG:  Darlington - Sunderland via Newton Aycliffe, Ferryhill Service 217 Sunday DARLINGTON, Bus Station 19.40 20.40 21.40 ... 22.40 Aycliffe Village, North Briton 19.55 20.55 21.55 ... 22.55 Newton Aycliffe, Stephenson Way/Pease Way 20.03 21.03 22.03 ... 23.03 Greenfield Way, Labour Club 20.06 21.06 22.06 ... Rushyford, Eden Arms 20.11 21.11 22.11 ... 23.16 Chilton, Wheatsheaf 20.13 21.13 22.13 ... 23.18 Ferryhill Village, Bus Station 20.19 21.19 22.19 22.49 23.24 Wood Lane Estate, Shops 20.22 21.22 22.22 22.52 ... West Cornforth, Market Place 20.31 21.31 22.31 23.01 ... Coxhoe, Police Station ... 21.39 ... 23.09 ... Bowburn, Garage ... 21.44 ... 23.14 ... Sherburn Village, Grey Horse ... 21.54 ... ... Pittington, Cross Roads ... 21.59 ... ... West Rainton ... 22.06 ... ... Houghton-le-Spring, Bus Station ... 22.13 ... ... SUNDERLAND, Park Lane Bus Station ... 22.29 ... ... Move onto solving worded problems using the timetable. EG: Sheree catches the 21.54 bus from Sherburn Village. She gets off at the last stop. a. Where does she get off the bus? b. How long is the journey? Work from simple to more complex questions. More examples using SATs style questions	
WALT: Calculate the perimeter of polygons.	Recap on find the perimeter of rectangle l x w (refer back to using algebra) and ensure they know that the perimeter is the length around the outside of the shape Move onto finding the perimeter of composite rectilinear shapes where there are missing lengths- finding the missing lengths first then calculating the perimeter.	Perimeter Length polygon
WALT: Calculate the area of composite rectilinear shapes	Recap on find the area of rectangle l x w (refer back to using algebra) and ensure they know that the area is always written using cm or m squared. Give composite rectilinear shapes. Ask how we would find the area of these shapes. Show how to physically cut up the shape into rectangles, find the area of both and then add together. Move onto finding the area of composite rectilinear shapes where there are missing lengths.	Area Algebra m/cm squared
WALT: Investigate the area and perimeter of shapes	Investigation questions: Can shapes have different perimeters as their area?	

	Can shapes have the same area and perimeter? Do all shapes with the same perimeter have the same area? Give different investigations for children to solve in pairs or small groups.	
WALT: Find the area of triangles	Recap on finding the area of rectangles. Show a triangle-how do you think we would find the area of a triangle. Physically show a rectangle being cut in half. How do you think that we would calculate the area of a triangle knowing that it is half of a rectangle: A = b x h ÷ 2 Link back to algebra. SATs style questions for application.	
WALT: Find the area of parallelograms	Recap on finding the area of rectangles. Show a parallelogram-how do you think we would find the area of a parallelogram. Physically show a parallelogram's end being cut off and how they can be pieced together to make a rectangle. How do you think that we would calculate the area of a parallelogram knowing this information: b x h = a Link back to algebra. SATs style questions for application.	Parallelogram Area algebra
WALT: Calculate the volume of cubes and cuboids.	Recap on what a cube ad a cuboid is. Show that to calculate the volume (the area inside the shape) we use the formula l x b x h -= V Give some cubes and cuboids to calculate. Use SATs style questions for application tasks.	Volume Cube Cuboid algebra