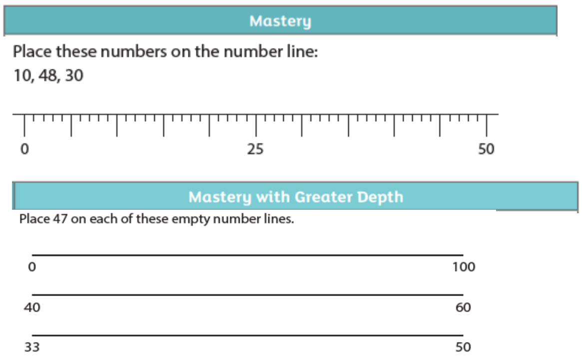
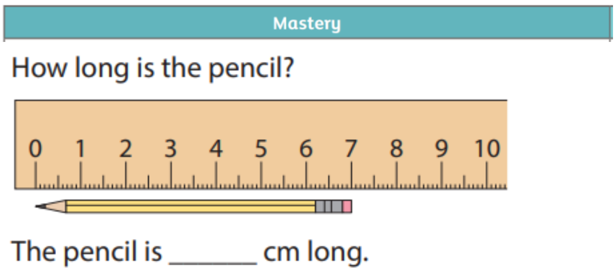
Planning Overview
Year 2 Measures incorporating TAF statements

Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.
Compare and order lengths, mass, volume/capacity and record the results using >, < and =.

NPV–2 Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.

Read scales in divisions of ones, twos, fives and tens (TAF ARE)
Read scales where not all numbers on the scale are given and estimate points in between (TAF GD)
Also consider opportunities to consolidate other TAF statements through measure. Some opportunities identified in red on plan below.

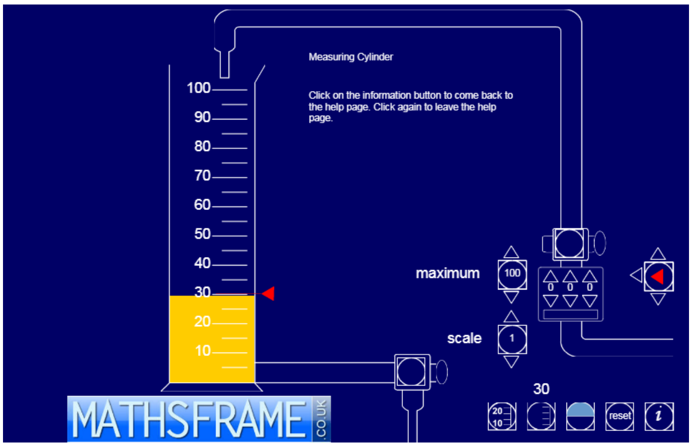
	Teaching and Learning
Introduction	Sally and Josh measured the hall using their feet, but they couldn't agree how many feet long the hall was. Why do you think that happened? What else could they use to measure the hall? Will that be better? Why? Have a range of measuring equipment and vocabulary on the tables and start a conversation about what we can measure and how we measure it. Suggest sensible units you might use to measure: the height of your table; how much water is in a cup; the weight of my reading book; how long it takes me to wash my hands. Choose a piece of equipment to help you measure: the weight of your shoe; how long the classroom is; how long this lesson lasts; how much water a cup holds. Find an object in the classroom that you think is about 10 cm long. About how heavy do you think your pencil case is? If I programme my floor turtle to go forward three metres is there enough room in the classroom? How could you measure to find out? Other questions to use as starting points: • What could you use to find out how much water this container holds? • Would it be better to use multilink cubes or peas to balance the weight of this shoe? Why? • Would you measure the length of a book in centimetres or metres? Why?

	• What units would you use to measure the width of the classroom? • How about the weight of your teacher? • Look at a mug. Which of these amounts would you choose to say how much water the mug holds? 1 metre, 1 litre, 1 centimetre, ¼ kilogram, ¼ litre
Number lines **NPV–2 Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.**	Consider whether the teaching of number lines needs to be revisited before moving on to the teaching of reading scales. Are children secure with finding the midpoint and checking validity of their answers? Make sure these types of questions have been tackled in place value.  In this example, the first two number lines have the same midpoint (50) but will 47 be in exactly the same place relative to this midpoint? GD children need to understand that it won't and why.
Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) to the nearest appropriate unit, using rulers **Compare and order lengths and record the results using >, < and =**	Model how to measure – make deliberate mistakes such as not lining up the object to zero, not holding the ruler straight.  How long is this line? Now draw a line that is 2cm longer than this line. Could extend to measuring and drawing objects e.g. rockets or people with specific dimensions - Metre man Place the correct symbol between the measurements > or < 36cm _ 63cm 24cm_24m Explain your thinking Order lengths – choose 5 objects, measure them and then record them in order of length

	Link to a PE, science or DT context to create purposeful measuring in centimetres and metres and a combination of both e.g. how far you can jump from a line, how far you can throw a beanbag, how far a vehicle travels down a ramp, how far away you can still read a word/hear a sound, do taller people have longer feet? Measure all the dimensions of an object you have made or make an object with specific dimensions. Word problems that involve length and height e.g. examples in sections further down the plan. Nrich – Can you do it too? **Can You Do it Too?** **Age 5 to 7** **Challenge Level** ★ Here are some pictures of people taking part in Olympic throwing events. The first one shows a man throwing a hammer and the second shows a woman throwing a discus.  They can throw them a long way. A recent Olympic record for throwing the hammer was about 80 adult strides and for throwing the discus was about 70 adult strides. How far do you think you can throw a beanbag? What would your estimate be? (When you estimate, you use what you already know to make a guess.) Have a go! How did your real throw compare with your estimate?
Choose and use appropriate standard units to estimate and measure capacity (litres/ml) to the nearest appropriate unit, using measuring vessels **Compare and order volume/ capacity and record the results using >, < and =**	Ensure that children understand the two terms volume and capacity. Capacity is the amount a container can hold. Volume is how much a container is holding. i.e. it might be half full. Have a variety of containers for children to compare. Start with direct comparison – which one has a greater capacity? How can we find out? Look at different strategies– filling one then pouring into another (What does it mean if it overflows?) – pouring both into identical containers - using a smaller container to fill them both up and count how many you need -tipping the water out on the playground and comparing the size of the puddle. Establish that using measuring equipment with a standard scale would be useful – introduce l and ml. Sort bottles into those you think are greater than/less than/equal to 1 litre and check their capacities using a litre measuring jug - put them in order. Look at the labels on bottles, cans, paint tins etc.

Use measuring cylinder ITP to look at a range of scales that could be used and why it is important to check to the next numbered interval.

The ITP allows you to fill to a certain volume, then type in an amount you want to add. Children can calculate this to practise addition strategies before the tap is turned. Similarly, you can type in how much you will drain out to practise subtraction.

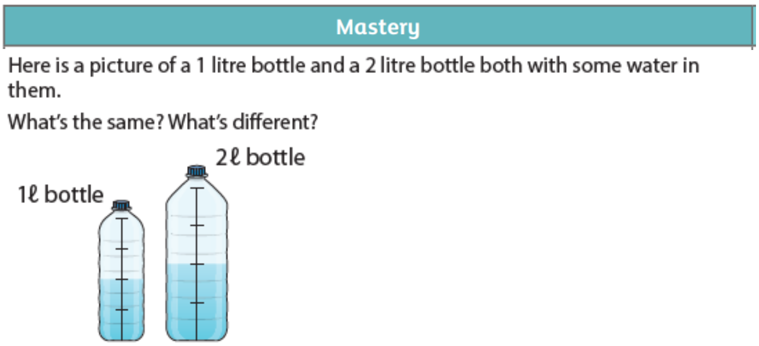


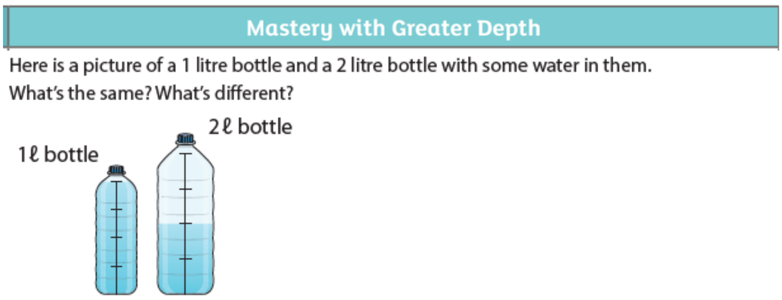
Ask children to read a range of amounts in a measuring jug.

Place the correct symbol between the measurements > or <

130ml $\square$ 103ml

Explain your thinking





Complete word problems that involve capacity e.g. examples in sections further down the plan.

<table>
<tr><td></td><td>Nrich – Thirsty (purple containers representing a harder problem then the orange)

Age 5 to 7
Challenge Level ★
This problem has been designed to work on in a group of about four. For more details about how you might go about doing this, please read the Teachers' Notes.
You will need to print off these eight cards, which have pictures of glasses of orange and blackcurrant juice on them. You need one set of these cards for your group.
Have a good look at the cards with everyone in your group. Talk to each other about what you notice. Can you sort the cards in different ways?
Now you are ready for the challenge. You will need to print off this set of clue cards. There are ten clue cards altogether.</td></tr>
<tr><td>Choose and use appropriate standard units to estimate and measure mass (kg/g) using scales

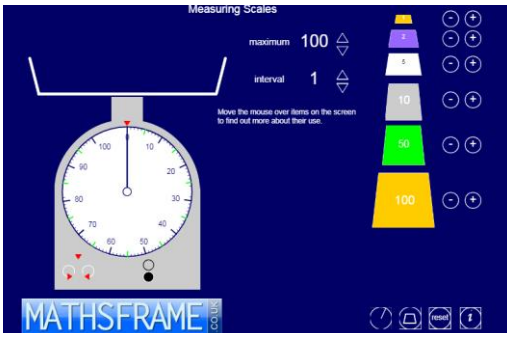
Compare and order mass, and record the results using >, < and =</td><td>Use pan balance or spring scale like one below to compare 2 objects directly and to order objects by mass.

You could measure how far each object makes the spring scale stretch down and compare lengths here too.

Cook with the children and weigh out ingredients accurately. Look at recipes and discuss the measurements used. Look at food labels and find a big packet of food that weighs less than a small packet of food.

Allow children to hold a kg weight and find things that are heavier and lighter by being a human balance.
Use a balance or set of scales to check you were right.
Order the objects by weight

Investigate different identical packages and predict the mass of the other packages in grams from 1 known package weight then check using a balance or scales

Use measuring scales ITP to read the scales. Add weights, change scale.


Complete word problems that involve mass e.g. examples in sections further down the plan.</td></tr>
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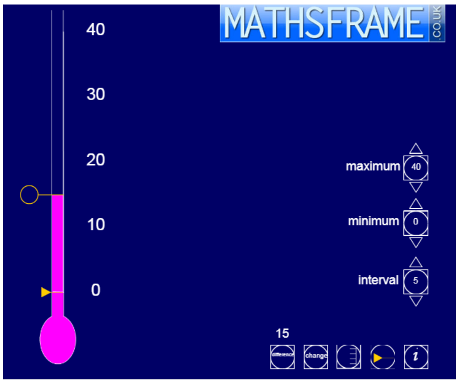
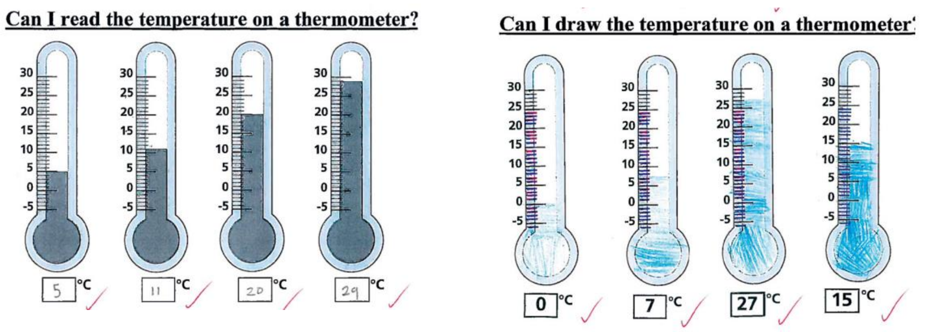
Choose and use appropriate standard units to estimate and measure temperature (°C) to the nearest appropriate unit, using thermometers **Compare and order temperature using >, < and =**	What temperature do you think is cold, warm, hot etc Move thermometer from a bowl of cold water to a bowl of hot water to measure and compare temperatures. Link to practical work in science measuring temperature outside and inside over the course of the day.  Use ITP to practise reading a scale marked in 10s to nearest degree or to nearest 2, 5 or 10 degrees and to investigate addition/ subtraction problems as difference between two temperatures. Reading temperatures on pictures of scales and drawing line to given level e.g. y2 exemplification document  Link to Geography e.g. What is the difference in temperature between Delhi and London? Complete word problems that involve temperature e.g. examples in section further down the plan.
Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures	Consolidate addition/subtraction strategies Ensure children understand how to use the bar model to find missing numbers/understand the link between addition and subtraction. Comparison of measures will require children to have an understanding of finding the difference. TAF opportunity – Partition any two-digit number into different combinations of tens and ones, explaining their thinking verbally, in pictures or using apparatus. How many different ways could you cut a ribbon of 63cm into two amounts where one piece is a multiple of 10?

The parcel weighs 56 grams altogether. The post office clerk uses 10g and 1g weights on the balance scales to weigh it. What combinations of weights could they use?

TAF opportunity – Add any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. 48 + 35).

The train is 27m long. It adds another carriage that is 14m long. How long is the train now?

John's stick is 72cm long. George's stick is 12 cm long. How long will they be if they lay them end to end?

3 cities in India all have temperatures between 20° C and 50° C. The temperature in Mumbai is 5° C hotter than New Delhi. The temperature in Jaipur is 10° C hotter than in Mumbai. How hot could each city be?

Adapted version of Mathsticks problem. Doll's house juice bottles. How could you make certain given capacities e.g. 70ml (50 +20), 86ml (33+33+20), 46ml (33+33 – 20).

TAF opportunity – Subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. 72 – 17).

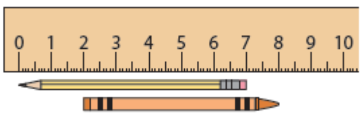
Dan needs 80 g of sugar for his recipe. There are 45 g left in the bag. How much more does he need to get?

Megan and Jack are growing beans. Megan's plant is 25 cm tall. Jack's is 38 cm tall. Whose plant is the taller? By how much? Can you compare them using > or < ?

The temperature was 26 degrees in the morning and 11 degrees colder in the evening. What was the temperature in the evening?

Mastery with Greater Depth

How long is the crayon?



The crayon is ______ cm long.

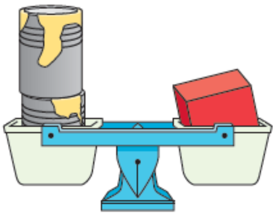
How much longer is the crayon than the pencil?

	I had an amount e.g. length/weight/capacity, I took/cut 9cm, 56ml 45g out/off and I had 25cm, 50ml, 23g left. What was my original amount? How do you know? What would this look like on a bar model? TAF opportunity – Recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships (e.g. If 7 + 3 = 10, then 17 + 3 = 20; if 7 – 3 = 4, then 17 – 3 = 14; leading to if 14 + 3 = 17, then 3 + 14 = 17, 17 – 14 = 3 and 17 – 3 = 14).  Choose 2 ingredients to make a potion that is 10ml. Now can you make a potion that is 20ml? Which bottle do you need to add to your previous answers? How about if you want to make 19ml? Can you think of a useful strategy? Adjust numbers on bottles as necessary to enable children to make potions that total other numbers **within** 20. Draw two lines whose lengths differ by 4cm.
Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	TAF opportunity – Recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary. If David drinks 2 litres of water in one day, how much will he drink in a week? Jill has to take 5mls of medicine three times a day. How much will she take in a day? How much will she take in 4 days? If one bag of sugar weighs 2kg. How much will 6 bags weigh? If I need 8kg of sugar to bake cakes, how many bags do I need to buy? Scaling with twice as…or half as…

Mastery

This box weighs 10 kg.

How much does each tin of paint weigh?



Mastery with Greater Depth

What is the mass of two red bags?

Which is heavier, the red bag or the green bag?

Explain your reasoning.