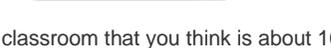


Unit Overview and Guidance

- The exemplification has been taken from the NCETM online 'Resource Toolkit', with additions in order to ensure full coverage.
- Links to the White Rose Maths hubs schemes of work (with questions categorised into the three aims of the national curriculum i.e. fluency, problem solving and reasoning) are hyperlinked to each of the objectives. Many thanks go to the White Rose Maths hub for permission to include their resources.
- The NCETM reasoning questions have also been incorporated into each unit and are identified in pale purple boxes underneath the group of the most relevant objectives.
- The 'big Ideas' sections from the NCETM 'Teaching for Mastery' documents have been included at the start of each unit. Hyperlinks to the full NCETM 'Teaching for Mastery' documents have also been included for easy reference.
- Hyperlinks to NRich activities have also been added to this version. These are found by clicking on the blue buttons like this one  at the bottom of relevant objective.
- Some additional content has been added in order to support mixed-aged planning. Any additional content is in *italics*. Occasionally ~~strike through~~ has been used to identify when an objective has been altered and this is primarily where an objective has been split between two units.
- Each unit is sub-divided into sections for ease of planning. Sub-categories in this unit are;
 1. Estimate, measure, weigh, compare and convert units
 2. Perimeter, area, volume and capacity
 3. Time

	Yr 2	Yr 3	Yr 4
NCETM Teaching for Mastery Questions, tasks and activities to support assessment	<p>The Big Idea</p> <p>We need standard units of measure in order to compare things more accurately and consistently.</p>	<p>The Big Ideas</p> <p>Developing benchmarks to support estimation skills is important as pupils become confident in their use of standard measures. The height of a door frame, for example, is approximately 2 metres, and a bag of sugar weighs approximately 1 kilogram.</p>	<p>The Big Ideas</p> <p>The smaller the unit, the greater the number of units needed to measure (that is, there is an inverse relationship between size of unit and measure).</p>
	Teaching for Mastery Year 2	Teaching for Mastery Year 3	Teaching for Mastery Year 4

MEASUREMENT (MEA - 7 weeks)

Strand	Yr2	Yr3	Yr4
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Estimate, measure, weigh, compare and convert units</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Measuring, comparing and calculating with measures (Length)</p>	<p>choose and use appropriate standard units to estimate and measure length/height capacity/volume and mass/weight in any direction (m/cm); to the nearest appropriate unit, using rulers and scales</p> <p>Measure length (cm)</p> <p>Measure length (m)</p> <p>Suggest sensible units you might use to measure: the height of your table?</p> <p>Choose a piece of equipment to help you measure: how long the classroom is; how long this lesson lasts.</p> <p>How long is this line? Now draw a line 2 cm longer than this one.</p>  <p>How long is the pencil?</p>  <p>Find an object in the classroom that you think is about 10 cm long.</p> <p>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?</p> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; text-align: center; line-height: 20px; margin: 10px auto;">1</div> <p>compare and order length and record the results using >, <, =</p> <p>Compare lengths</p> <p>Order lengths</p> <p>Four operations with length</p> <p>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 < ?</p>	<p>measure, compare, add and subtract: lengths (m/cm/mm);</p> <p>Measure length</p> <p>Equivalent lengths (m and cm)</p> <p>Equivalent lengths (mm and cm)</p> <p>Compare lengths</p> <p>Add lengths</p> <p>Subtract lengths</p> <p>Draw accurately</p> <p>Length: children should be able to find something that they think is just shorter/longer than a metre/ centimetre/ millimetre. They should be able to check whether they are right.</p> <p>What is the difference in length between the pen and the pencil?</p> 	<p>Convert between different units of measure [for example, kilometre to metre; hour to minute]</p> <p>Kilometres</p> <p>Children learn the relationships between familiar units of measurement. They learn that kilo means one thousand to help them remember that there are 1000 grams in 1 kilogram and 1000 metres in 1 kilometre.</p> <p>A bag of flour weighs 2 kg. How many grams is this?</p> <p>Children can suggest suitable units to measure length, weight and capacity; for example, they suggest a metric unit to measure the length of their book, the weight of a baby, the capacity of a mug. They suggest things that you would measure in kilometres, metres, litres, kilograms, etc.</p> <p>Children can record lengths using decimal notation, for example recording 5 m 62 cm as 5.62 m, or 1 m 60 cm as 1.6 m. They identify the whole-number, tenths and hundredths parts of numbers presented in decimal notation and relate the whole number, tenths and hundredths parts to metres and centimetres in length.</p>

MEASUREMENT (MEA - 7 weeks)

Estimate, measure, weigh, compare and convert units

Measuring, comparing and Calculating with measures (Mass, Volume, Temperature)

choose and use appropriate standard units to estimate and measure length/height capacity/volume and mass/weight in any direction (m/cm); to the nearest appropriate unit, using rulers and scales

[Millilitres](#)

[Litres](#)

How much water is in this measuring jug?



compare and order volume/capacity and record the results using $>$, $<$, $=$

[Compare capacity](#)

choose and use appropriate standard units to estimate and measure length/height capacity/volume and mass/weight in any direction (m/cm); to the nearest appropriate unit, using rulers and scales

[Measure mass \(g\)](#)

[Measure mass \(kg\)](#)

Suggest sensible units you might use to measure: the weight of my reading book;

Choose a piece of equipment to help you measure: the weight of your shoe;

About how heavy do you think your pencil case is?

2

compare and order mass, and record the results using $>$, $<$, $=$

[Compare mass](#)

1

2

choose and use appropriate standard units to estimate and measure length/height capacity/volume and mass/weight in any direction (m/cm); to the nearest appropriate unit, using rulers and scales

[Temperature](#)

measure, compare, add and subtract: volume/capacity (l/m)

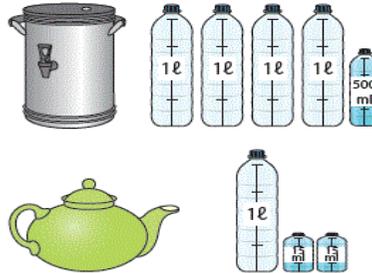
[Measure capacity \(1\)](#)

[Measure capacity \(2\)](#)

[Compare capacity](#)

[Add and subtract capacity](#)

Here is a tea urn and a teapot. The bottles show how much water each can hold.



How much more does the tea urn hold?

Capacity: Find a container that they think would hold one litre and check to find out if they were correct
measure, compare, add and subtract: mass (kg/g);

[Measure mass \(1\)](#)

[Measure mass \(2\)](#)

[Compare mass](#)

[Add and subtract mass](#)

Mass: Say which object in the classroom is heavier than 100 g/kilogram/half-kilograms and know how to check if they are correct.

What is the weight of the flour shown by this scale?



Say what each division on this scale is worth and explain how they worked this out.

1

2

3

estimate, compare and calculate different measures,

Use calculation strategies to solve one- and two-step word problems, including those involving money and measures.

Use rounding to estimate the solution, choose an appropriate method of calculation (mental, mental with jottings, written method) and then check to see whether their answer seems sensible. Throw a beanbag three times and find the difference between their longest and shortest throws. After measuring their height, children work out how much taller they would have to grow to be the same height as their teacher.

Solve problems such as:

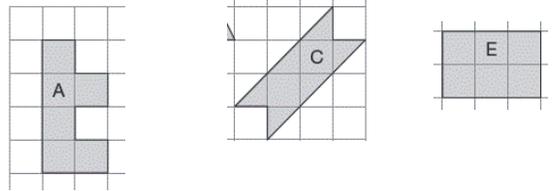
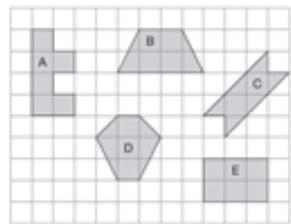
- A family sets off to drive 524 miles. After 267 miles, how much further do they still have to go?
- A can of soup holds 400 ml. How much do 5 cans hold? Each serving is 200 ml. How many cans would I need for servings for 15 people?
- A string is 6.5 metres long. I cut off 70 cm pieces to tie up some balloons. How many pieces can I cut from the string?
- A jug holds 2 litres. A glass holds 250 ml. How many glasses will the jug fill?

1

MEASUREMENT (MEA - 7 weeks)

Estimate, measure, weigh, compare and convert units	Money	<p>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value; Count money - pence Count money - pounds Count money – notes and coins Select amounts Find the total Find the difference find different combinations of coins that equal the same amounts of money Make the same amount Compare money</p>  <p>Holly has these coins. Harry has the same amount of money but has six coins. What are they? Is there only one possible answer?</p>	<p>add and subtract amounts of money to give change, using both £ and p in practical contexts</p> <p>Pounds and pence Converting pounds and pence Adding money Subtracting money Giving change</p> <p>Jake wants to buy a comic that costs £1. He saves 25p one week and 40p the next. How much more money does he need to buy the comic?</p> <p>Add these prices: £6.73, £9.10 and £7.00 to find the total. Find out how much more do you need to add to get £23?</p>	<p>money in pounds and pence</p> <p>Pounds and Pence Order money Estimating money Four operations with money</p> <p>Use calculation strategies to solve one- and two-step word problems, including those involving money and measures.</p> <p>Solve problems such as:</p> <ul style="list-style-type: none"> Dad bought three tins of paint at £5.68 each. How much change does he get from £20? Tins of dog food cost 42p. They are put into packs of 10. How much does one pack of dog food cost? 10 packs? I spent £4.63, £3.72 and 86p. How much did I spend altogether? Dean saves the same amount of money each month. He saves £149.40 in a year. How much money does he save each month?
	NCE1M Reasoning	<p>Top tips</p> <p>Put these measurements in order starting with the smallest.</p> <p>75 grams, 100 grams, 85 grams, 55 grams</p> <p>Position the symbols</p> <p>Place the correct symbol between the measurements > or <</p> <p>36cm <input type="checkbox"/> 63cm 130ml <input type="checkbox"/> 103ml</p> <p>Explain your thinking</p> <p>Application</p> <p>(Practical) Draw two lines whose lengths differ by 4cm.</p> <p>Possibilities</p> <p>How many different ways can you make 63p using only 20p, 10p and 1p coins?</p>	<p>Top Tips</p> <p>Put these measurements in order starting with the largest.</p> <p>half a litre; Quarter of a litre; 300 ml</p> <p>Position the symbols Place the correct symbol between the measurements > or <</p> <p>306cm <input type="checkbox"/> Half a metre 930 ml <input type="checkbox"/> 1 litre</p> <p>Write more statements</p> <p>If there are 630ml of water in a jug. How much water do you need to add to end up with a litre of water? What if there was 450 ml to start with?</p> <p>Position the symbols</p> <p>Place the correct symbols between the measurements > or < Explain your thinking</p> <p>£23.60 2326p 2623p</p>	<p>Top Tips</p> <p>Put these amounts in order starting with the largest. Explain your thinking</p> <p>Half of three litres; Quarter of two litres; 300 ml</p> <p>Write more statements</p> <p>One battery weighs the same as 60 paperclips; One pencil sharpener weighs the same as 20 paperclips.</p> <p>Write down some more things you know.</p> <p>How many pencil sharpeners weigh the same as a battery?</p> <p>The answer is</p> <p>225 metres</p> <p>What is the question?</p>

MEASUREMENT (MEA - 7 weeks)

Perimeter and Area	Perimeter	<p>measure the perimeter of simple 2D shapes</p> <p>Measure perimeter</p> <p>Calculate perimeter</p> <p>Measure the sides of regular polygons in centimetres and millimetres and find their perimeters in centimetres and millimetres</p>	<p>measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</p> <p>Perimeter on a grid</p> <p>Perimeter of a rectangle</p> <p>Perimeter of rectilinear shapes</p> <p>Children can measure the edges of a rectangle and then combine these measurements. They realise that by doing this they are calculating its perimeter.</p> <p>Given the perimeter of a rectangle they investigate what the lengths of its sides could be.</p> <p>Children can work out the perimeter of irregular shapes drawn on a centimetre square grid.</p>
	Area	<p><i>(Year 4 objective) find the area of rectilinear shapes by counting squares (full and half squares only)</i></p> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <p>Here are some shapes. What is the area of each shape? Put them in order from smallest to largest area.</p>	<p>Find the area of rectilinear shapes by counting squares</p> <p>What is area?</p> <p>Counting squares</p> <p>Making shapes</p> <p>Comparing area</p> <p>Draw irregular shapes on centimetre square grids, and compare their areas and perimeters</p> <p>Here are some shapes</p> <ol style="list-style-type: none"> What is the perimeter of shape A? What is the area of shape B? Which shape has the smallest area? <div style="text-align: right;">  </div>
	NCETM Reasoning	<p>Testing conditions</p> <p>A square has sides of a whole number of centimetres.</p> <p>Which of the following measurements could represent its perimeter? 8cm 18cm 24cm 25cm</p>	<p>Testing conditions</p> <p>If the width of a rectangle is 3 metres less than the length and the perimeter is between 20 and 30 metres, what could the dimensions of the rectangle be?</p> <p>Convince me.</p> <p>Always, sometimes, never?</p> <p>If you double the area of a rectangle, you double the perimeter.</p>

MEASUREMENT (MEA - 7 weeks)

<p>Time</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Telling the time</p>	<p>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</p> <p>O'clock and half past</p> <p>Quarter past and quarter to</p> <p>Telling time to 5 minutes</p>	<p>tell and write the time from an analogue clock, including Roman numerals from I to XII, and 12-hour and 24-hour clocks</p> <p>Telling the time (1)</p> <p>Telling the time (2)</p> <p>24 hour clock</p>	<p>read, write and convert time between analogue and digital 12- and 24-hour clocks</p> <p>Analogue to digital – 12 hour</p> <p>Analogue to digital – 24 hour</p>																					
	<p>Here are some flights from Manchester</p> <table border="1"> <thead> <tr> <th>Flight number</th> <th>Destination</th> <th>Take-off time </th> </tr> </thead> <tbody> <tr> <td>AX40</td> <td>Paris</td> <td>13:35</td> </tr> <tr> <td>BH253</td> <td>Berlin</td> <td>14:05</td> </tr> <tr> <td>CG008</td> <td>Rome</td> <td>15:25</td> </tr> <tr> <td>DP369</td> <td>Paris</td> <td>15:40</td> </tr> <tr> <td>EZ44</td> <td>Lisbon</td> <td>16:15</td> </tr> <tr> <td>FJ994</td> <td>Dublin</td> <td>17:25</td> </tr> </tbody> </table>	Flight number	Destination	Take-off time	AX40	Paris	13:35	BH253	Berlin	14:05	CG008	Rome	15:25	DP369	Paris	15:40	EZ44	Lisbon	16:15	FJ994	Dublin	17:25	<p>What time does this clock show?</p>  <p>Draw a clock showing the time five minutes later.</p> <p>Show your school day on clock faces: when do you leave home, have breaks, go back home, etc.?</p> <div style="display: flex; justify-content: space-around;">    </div> <div style="display: flex; justify-content: space-around;">    </div> <p>Which of these clocks shows a time between 5 and 7 o'clock?</p> <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">1</div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">2</div> </div>	<p>Read times like this in analogue and digital formats, including those with Roman numerals.</p> <p>What time does each clock show?</p> <div style="display: flex; align-items: center; justify-content: center;">   <div style="margin-left: 20px; font-size: 2em;">8:58</div> </div> <p>Ben's clock says 7:50 when he gets up. Show this time on a clock face.</p> <div style="display: flex; justify-content: center; gap: 5px;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">1</div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">2</div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">3</div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">4</div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">5</div> </div>
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<p>compare and sequence intervals of time</p> <p>Durations of time</p> <p>Compare durations of time</p> <p>Which is greater?</p> <p>Half an hour 45 minutes</p> <p>65 minutes 1 hour</p> <p>Can you put these times in order from earliest to latest</p> <ul style="list-style-type: none"> - Half past twelve in the afternoon - Quarter to four in the afternoon - Nine o'clock in the morning - Nine o'clock in the evening 	<p>estimate and read time with increasing accuracy to the nearest minute,</p> <p>Measure time in seconds</p> <p>use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight</p> <p>am and pm</p> <p>Kevin leaves home at quarter past 8 and arrives in school at 20 to 9. How long is his journey? How did you work this out?</p> <p>How long is it between the times shown on these two clocks? How did you work it out?</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; margin-right: 20px;">8:35</div>  </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 10px;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">1</div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">2</div> </div>	<p>know the number of seconds in a minute and the number of days in each month, year and leap year</p> <p>Months and years</p> <p>Hours in a day</p> <p>How many minutes is 140 seconds?</p> <p>What is the date of the day after 30th November?</p> <p>How many days are they in January?</p>																						

MEASUREMENT (MEA - 7 weeks)

Time <small>NCETM Reasoning</small>	<p>Undoing</p> <p>The film finishes two hours after it starts. It finishes at 4.30. What time did it start?</p> <p>Draw the clock at the start and the finish of the film.</p> <p>Explain thinking</p> <p>The time is 3:15pm.</p> <p>Kate says that in two hours she will be at her football game which starts at 4:15.</p> <p>Is Kate right? Explain why.</p> <p>Working backwards</p> <p>Draw hands on the clock faces to show when break started and when it finished 15 minutes later at 10:35.</p> <p>The answer is 3 hours</p> <p>What is the question?</p> <p>What do you notice?</p> <p>What do you notice?</p> <p>1 hour = 60 minutes</p> <p>$\frac{1}{2}$ hour = 30 minutes</p> <p>$\frac{1}{4}$ hour = 15 minutes</p> <p>Write down some more time facts like these</p>	<p>Undoing</p> <p>A programme lasting 45 minutes finishes at 5.20. At what time did it start?</p> <p>Draw the clock at the start and finish time.</p> <p>Explain thinking</p> <p>Salha says that 100 minutes is the same as 1 hour. Is Salha right? Explain why.</p> <p>Working backwards</p> <p>Tom's bus journey takes half an hour. He arrives at his destination at 9:25. At what time did his bus leave?</p> <p>9:05 8:55 8:45</p> <p>The answer is</p> <p>25 minutes</p> <p>What is the question?</p> <p>What do you notice?</p> <p>What do you notice?</p> <p>1 minute = 60 seconds</p> <p>2 minutes = 120 seconds</p> <p>Continue the pattern</p> <p>Write down some more time facts like these</p>	<p>Undoing</p> <p>Imran's swimming lesson lasts 50 minutes and it takes 15 minutes to change and get ready for the lesson. What time does Imran need to arrive if his lesson finishes at 6.15pm?</p> <p>Explain thinking</p> <p>The time is 10:35 am.</p> <p>Jack says that the time is closer to 11:00am than to 10:00am.</p> <p>Is Jack right? Explain why.</p> <p>Working backwards</p> <p>Put these times of the day in order, starting with the earliest time.</p> <p>A: Quarter to four in the afternoon</p> <p>B: 07:56</p> <p>C: six minutes to nine in the evening</p> <p>D: 14:36</p> <p>What do you notice?</p> <p>What do you notice?</p> <p>1:00pm = 13:00</p> <p>2:00pm = 14:00</p> <p>Continue the pattern</p>
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MEASUREMENT (MEA - 7 weeks)

Solving Problems	Solving Problems	<p>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</p> <p><u>Find change</u></p> <p><u>Two-step problems</u></p> <p>Jess has saved 62p. She spends 15p. How much money does she have left?</p> <p>She pays with a 50p piece. How much change does she get?</p>	<p>record and compare time in terms of seconds, minutes, hours and o'clock;</p> <p>compare durations of events, for example to calculate the time taken by particular events or tasks</p> <p><u>Finding the duration</u></p> <p><u>Compare the duration</u></p> <p><u>Start and end times</u></p>	<p>solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</p> <p><u>Hours, minutes and seconds</u></p> <p><u>Years, months, weeks and years</u></p>								
	1	<p>Estimate how long your favourite TV programme lasts. Use a television guide to work out how close your estimation was.</p> <p>It takes 35 minutes to walk from home to school. I need to be there by 8.55 am. What time do I need to leave home?</p> <p>How much does it cost to hire a rowing boat for three hours?</p> <table border="1" style="margin: 10px auto;"> <thead> <tr> <th colspan="2">Boat Hire</th> </tr> </thead> <tbody> <tr> <td>Motor boats £1.50 for 15 minutes</td> <td>Rowing boats £2.50 for 1 hour</td> </tr> </tbody> </table> <p>Sasha pays £3.00 to hire a motor boat. She goes out at 3:20 pm. By what time must she return? Explain how you solved this problem. Could you have done it in a different way?</p> <p>Sally and Maria both went to the gym on Saturday. Sally was there from 2 pm until 3.30pm. Maria was there from 12.30 pm until 3.15 pm. Who spent the longer time at the gym? How much longer was she there than her friend?</p>	Boat Hire		Motor boats £1.50 for 15 minutes	Rowing boats £2.50 for 1 hour	<p>How long did she swim?</p> <p>Dev leaves school at 15.25. He arrives home at ten past four pm</p> <p>How many minutes did it take Dev to walk home?</p> <p>solve simple measure and money problems involving fractions and decimals to two decimal places.</p> <p>These are the prices in a shoe shop</p> <table style="margin: 10px auto;"> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>boots £45.50</td> <td>sandals £12.75</td> <td>trainers £34.99</td> </tr> </table> <p>How much more do the boots cost than the trainers? Rosie buys a pair of trainers and a pair of sandals. How much change does she get from £50?</p> <p>Harry spent one quarter of his savings on a book. What did the book cost if he saved: £8...£10...£2.40...?</p> <p>A box of four balls costs £2.96. How much does each ball cost?</p> <p>Dean and Alex buy 3 boxes of balls between them. Dean pays £4.50. How much must Alex pay?</p> <p>A full bucket holds $5\frac{1}{2}$ litres. A full jug holds $\frac{1}{2}$ a litre. How many jugs full of water will fill the bucket?</p> <p>Max jumped 2.25 metres on his second try at the long jump. This was 75 centimetres longer than on his first try. How far in metres did he jump on his first try?</p>				boots £45.50	sandals £12.75
Boat Hire												
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