HILLSBOROUGH
NURSERY & PRIMARY SCHOOL

Hillsborough Primary school
Maths Content and progression

Measurement

Progression of skills Overview

Measurement						
Comparing and Estimating						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and solve problems.	compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than] * capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] * time [e.g. quicker, slower, earlier, later]	compare and order lengths, mass, volume/capacity and record the results using >, < and =		estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes (also included in measuring)	calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.
					estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)	
	sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	compare and sequence intervals of time	compare durations of events, for example to calculate the time taken by particular events or tasks			

Measuring and Calculating						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	measure and begin to record the following: * **lengths and heights** * **mass/weight** * **capacity and volume** * **time** (hours, minutes, seconds**)**	choose and use appropriate standard units to estimate and measure **length/height** in any direction (m/cm); **mass** (kg/g); **temperature** (°C); **capacity** (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	measure, compare, add and subtract: **lengths** (m/cm/mm); **mass** (kg/g); **volume/capacity** (l/ml)	estimate, compare and calculate **different measures,** including **money in pounds and pence** (appears also in Comparing)	use all four operations to solve problems involving measure (e.g. **length, mass, volume, money**) using decimal notation including scaling.	solve problems involving the calculation and conversion of **units of measure**, using decimal notation up to three decimal places where appropriate (appears also in Converting)
			measure the **perimeter** of simple 2-D shapes	measure and calculate the **perimeter** of a rectilinear figure (including squares) in centimetres and metres	measure and calculate the **perimeter** of composite rectilinear shapes in centimetres and metres	recognise that shapes with the same areas can have different **perimeters** and vice versa
	recognise and know the value of different denominations of **coins and notes**	recognise and use symbols for pounds **(£) and pence (p)**; combine amounts to make a particular value	add and subtract amounts of **money** to give change, using both £ and p in practical contexts			
		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				
				find the area of rectilinear shapes by counting squares	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and	calculate the area of parallelograms and triangles

					square metres (m^2) and estimate the area of irregular shapes *recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})* (copied from Multiplication and Division to discuss)	
	Telling the Time					
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	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.	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)		
	recognise and use language relating to dates, including days of the week, weeks, months and years (appears in sequence events...)	know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)			
				solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	solve problems involving converting between units of time	
	Converting					

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	know the number of seconds in a minute and the number of days in each month, year and leap year	convert between different units of measure (e.g. kilometre to metre; hour to minute)	convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	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
				read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)	solve problems involving converting between units of time (appears in telling the time)	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)
				solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	convert between miles and kilometres

Year 1.

NC Objective

compare, describe and solve practical problems for:

* lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half]
* mass/weight [e.g. heavy/light, heavier than, lighter than]
* capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]

time [e.g. quicker, slower, earlier, later]

There 4 learning objectives for this section they should be taught separately.

Learning Objectives

-Describe, compare and solve problems for lengths and heights.
-Describe, compare and solve problems for mass/weight
-Describe, compare and solve problems for capacity and volume
-Describe, compare and solve problems for time

Vocabulary

measurement
roughly
centimetre,
ruler
metre stick
kilogram, half kilogram
litre, half litre
capacity
volume
more than
less than
quarter full

Pre-learning

Use everyday language to talk about

- Size
- Weigh
- Capacity
- Position
- distance
- time
- money

Put the words: Full; Empty or Half full against these bottles.

Compare quantities and objects

Start solving problems

Ask pupils to handle 5 objects and set them out in order with the heaviest first.
Ask pupils to look at 5 objects and set them out in order with the longest first.

Methods from Calculation Policy

Measure length using a range of non-standard units and compare length.

Which weighs the most? Which of these two is the longest?

butterfly or cow a bus or a car

Chn should begin to measure **length** in cm and m.
Measure length using a range of non-standard units and compare height.
Begin to measure **height** in cm and m.
Measure weight using a range of non-standard units and compare mass/weight.
Begin to measure **mass** in g and kg.

Height length mass capacity

Encourage chn to express themselves using the language -key vocabulary

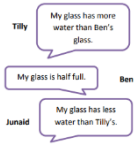
Key Questions for GDS

Rick eats half a Mars bar and says,
"My chocolate bar is longer now I have eaten some of it."
Do you agree? Explain why.

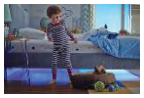
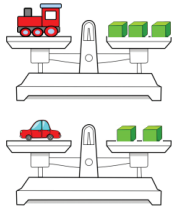
Pick two objects. Before you measure them, can you guess which is longer? How do you know?

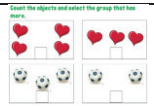
Helen has a mystery object. She says, "It is shorter than my work table. It is taller than my exercise book."
What could Helen's object be?

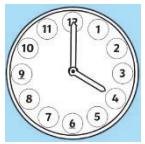
Tilly, Ben and Junaid are describing their glasses of water.



Can you fill in how much water could be in each of the children's glasses?

sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening	Sequence events in chronological order using language Vocabulary months of the year (January, February …) seasons: spring, summer, autumn, winter , weekend, month, year earlier, later , first, midnight date	Put the following in order (Put 1 to 4 against each picture): **Use pictures to start with**     Put the following in order (Put 1 to 4 against each statement): Having breakfast Lunchtime Getting out of bed Getting home from school	Chanting days of the week, starting from any day. Chanting months of the year. Orally answering questions or statements such as, 'If it is Tuesday today what day was it yesterday?' If it Friday today what day will it be tomorrow? If it Saturday today what day will it be in 2 days' time?  Order time using the correct language. Encourage chn to always use these vocabulary If it is Thursday today, what day was it yesterday? What day will it be tomorrow? If it is Monday today what day is it in two days? Wednesday If it is Saturday today, what day is it in three days? Monday	**True or false?** We go to bed before we brush our teeth? Explain why. Use pictures of different activities e.g. waking up, eating dinner, working at school. Can you order them in a sensible way and explain why you have done this? Make sure you use at least three of the words below before after next first
measure and begin to record the following: * **lengths and heights** * **mass/weight** * **capacity and volume** * **time** (hours, minutes, seconds**)**	Measure and begin to record different units of measurement. Vocabulary **lengths and heights** **mass/weight** **capacity and volume** **time** (hours, minutes, seconds**)**	**Use everyday language to talk about** • Size • Weigh • Capacity • Position • distance • time • money  Put the words: Full; Empty or Half full against these bottles.    **Compare quantities and objects**	See - compare, describe and solve practical problems	Here is a ruler. Here is a book longer than the ruler. Find the length of the book.  Look at the balance scales below. Which of the statements is true? 

		  **Start solving problems** Ask pupils to handle 5 objects and set them out in order with the heaviest first. Ask pupils to look at 5 objects and set them out in order with the longest first.		
recognise and know the value of different denominations of **coins and notes**	Recognise and know the value of different denominations of coins and notes Vocabulary Coins Smallest value Different amount Same amount Value Change Cost more Cost less Cheap/cheaper	Introduce money by showing sample of coins 	Getting pupils to recognise each of the coins up to £2 by showing and getting pupils to respond to large images of the coins and by handling the coins. Make up 10p in 1p coins; then in 2p coins; then in 5p coins. Now make up £1 in 10p coins; then in 5p coins; then in 20p coins, etc. Write the value of  = pence  = pence  = pence Put the following coins in a row with the smallest value first.  Ans = 	Show two ways of paying 55p Show two ways to pay 75p Show three ways of paying 29p **Find the odd one out.** 20p, 2p, 5p, 30p Tamsin has 3 coins in a bag. One is silver, one is gold and one is copper. The copper coin is the biggest. The silver coin has the most sides. The gold coin is round. What coins could Tamsin have? 
tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	Tell the time to the hour and half past the hour Vocabulary how long ago? how long will it be to ...? how long will it take to ...? how often? usually once, twice half past, clock face,	Put numbers 1 to 5 next to the statements according to when they happen: • I play outside with my friends • I have breakfast • I have my tea • I go to assembly • I go to bed	Using a clock face take pupils through what time it is when the big hand is at 12. Again, using the clock faces take pupils through what time it is when the big hand is at 6. Revise with pupils what they do at key times during the day, that is o'clock and half past the hour significant times, ie, lunch at 12 o'clock, go home at half past three, etc. Tell o'clock times. Tell half past times	In pairs, children start at 6 o'clock. In turns, they move the time on either half hour or 1 hour. Whoever lands on 12 o'clock is the winner

	hour hand, minute hand hours, minutes		Draw hands on a clock to show o'clock times Draw hands on a clock to show half past times  hour hand minute hand	These clocks show important times in Sahil's day.  Using the times on the clocks, can you describe what Sahil might be doing at each time?
recognise and use language relating to dates, including days of the week, weeks, months and years	Recognise and use language relating to dates Vocabulary Days of the week Months of the year Reading specific dates	See sequencing...	See sequencing...	Hannah is describing a month. She says, "I don't like this month because it's always cold and it's darker outside for longer. Sometimes it snows." What month do you think this is? Convince me! Look at the calendar below. Kirsty wants to go to the cinema one weekend. List the days she could possibly go. Explain why? 

Year 2.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
compare and order lengths, mass, volume/capacity and record the results using >, < and =	Compare and order lengths and record the results using >, < and = Compare and order mass and record the results using >, < and = Compare and order volume/capacity and record the results using >, < and = Vocabulary measuring scale further, furthest, , tape measure , gram millilitre contains temperature degree more than less than equal	**Revisit and recap the signs** more than >
less than <
equal = Use the >, < signs to show which of the two objects is **longer or taller**  Use the >, < signs to show which of the two objects is heavier  **Encourage chn to express themselves using the language -key vocabulary**	LENGTH -Look at a one metre stick and consider items or objects that measure more or less than one metre.
Remind pupils of the term centimetre and that 100 cms make a metre.
MASS-Hold a one Kg. weight and consider items or objects that weigh more or less than 1Kg.
Remind pupils of the term grams and that 1000 grams make a Kg.
Introduce pupils to the symbols < >.
Put them on large cards.
Get pupils to physically place the symbols < > between objects of different weight and of different length.
CAPACITY-Remind pupils of last year's learning about the terminology associated with measuring liquid.
Practically get pupils to fill containers which have $\frac{1}{2}$ litre and then see how many will be required to fill a container with 1 litre and 2 litres.
Get pupils to make lists of liquids which we buy in the supermarkets, eg, coke, lemonade, milk, etc. Make them look at the labels and work out how much liquid each has.
Try to get pupils to get a concept of how much a litre is.
Gather a number of containers together and get pupils to estimate how much liquid they contain and then order them before checking their estimates.
Using the signs >, < or = complete sentences.	Hannah is weighing three bags.  The green bag is heavier than the pink bag. The orange bag is lighter than the pink bag.
Order the bags from heaviest to lightest.
If the pink bag weighs 7kg, what could the other bags weigh? Helen says 'I think the bigger something is, the heavier it is'
Do you agree? Use objects in your classroom to prove your answer. Four students measured their heights. Lucy was taller than Katie, but not as tall as Tim. Gary was taller than Tim. Write down their names in order of their heights, from shortest to tallest.    The jug holds 3 litres and the glass holds $\frac{1}{2}$ litre. How many glasses will it take to fill the jug?

			 Bottle A < Bottle C Bottle C > Bottle B Bottle B > Bottle A	
compare and sequence intervals of time	Compare and sequence intervals Vocabulary Compare Sequence Minutes Hour	Chanting days of the week, starting from any day. Chanting months of the year. Orally answering questions or statements such as, 'If it is Tuesday today what day was it yesterday?' If it Friday today what day will it be tomorrow? If it Saturday today what day will it be in 2 days' time? Order time using the correct language Encourage chn to always use these vocabulary If it is Thursday today, what day was it yesterday? What day will it be tomorrow? If it is Monday today what day is it in two days? If it is Saturday today, what day is it in three days?	Revise previous work done on time, reminding pupils of the five-minute intervals and appropriate use of terminology. Consider the things that happen in morning; afternoon, evening and night time. Build a picture of the things that typically happen at these times. Use terms like 'one hour later' and 'one hour earlier'. Get pupils to think about time intervals during a typical day, e.g. arrive at school and going home from school. Which is greater? Half an hour | 45 minutes — 45 minutes 60 minutes | 1 hour — They are the same	Beth needs to be in Leeds for a film showing that starts at 4 o'clock. She can either: - Get the 3:20 bus that takes half an hour or - Get the 3:30 train that takes 30 minutes. Which should she take and why?
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	Choose and use appropriate standard units to estimate and measure Vocabulary Estimate Measure Approximate	Chn should begin to measure **length** in cm and m. Begin to measure **height** in cm and m. Begin to measure **mass** in g and kg Measure objects in and around the classroom. Chn should then to estimate the measurement of different items then given the opportunity to check.	Remind pupils of the standard units associated with measuring length or height. Use a metre stick to help pupils gain a true concept for one metre. Remind pupils that a metre is broken into 100 cm. Use most adults, being just below 2 metres, as a standard height measure. Use the metre stick to check on items in the classroom that are more or less than one metre. Consider weight and remind pupils that weight is measures in Kg and grams.	50m Race Three runners had a 50m running race. Tom, the winner was 5m ahead of Rhian, the person who finished second. Rhian was 4 m ahead of the third person, Jan. What is the distance between Tom and Jan at the end of the race? How many metres had Rhian run when Tom had finished?

<table>
<tr>
<td></td>
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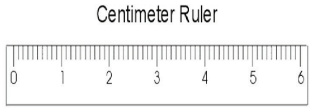
<td>As with length, let pupils find items that weigh more or less than 1Kg.

Measure 10 cm; then 5cm and finally 20 cm.

 
Balance scale
Using balancing scales, first estimate and then find out how many lego brick (of the same size) it will take to weigh 1Kg.</td>
<td></td>
</tr>
<tr>
<td>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</td>
<td>Recognise and use symbols for pounds (£) and pence (p

Vocabulary
bought,
sold
purchase
pound
value
amount</td>
<td>Get pupils to recognise each of the coins up to £2 by showing and getting pupils to respond to large images of the coins and by handling the coins.
Make up 10p in 1p coins; then in 2p coins; then in 5p coins.
Now make up £1 in 10p coins; then in 5p coins; then in 20p coins, etc.

<u>Write the value of</u>
  = pence
  = pence
  = pence
Put the following coins in a row with the smallest value first.
 
Ans =  </td>
<td>Remind pupils of the fact that 100p make £1.
Show pupils £1 and £2 coins and remind them of their value.
Set up a shop with items costing various amounts of no more than £5. Let pupils buy items and pay for them and receive the correct change.
Change £1, £2 coins and a £5 note for other coins, noting that their value is the same.
Have a variety of cards with different amounts.
Play a game where the first to bring the correct amount wins the card.

How many 20p coins make £1?
20p+20p+20p+20p+20p

How many 50p coins make £5?
50p=50p+50p=50p+50p+50p+50p=50p+50p+50p

Look at the prices of the following items.
  70p
  £1.50p
  50p
  £1.90p
Show a way of paying for the teddy and the book.

Show a way of paying for the ball, teddy and car.</td>
<td>Jamie has 5 silver coins in his hand.
How many different ways can he make £1 or more?

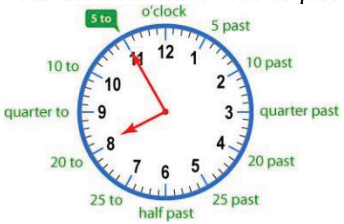
Patrick visits an arcade. He has £5. He wants to go on at least 4 games.
<table><tr><th>Game</th><th>Price</th></tr><tr><td>Whack-a-rat</td><td>70p</td></tr><tr><td>Donkey Derby</td><td>90p</td></tr><tr><td>Bingo</td><td>£1</td></tr><tr><td>Grab-a-prize</td><td>50p</td></tr><tr><td>Dance mania</td><td>85p</td></tr><tr><td>Deal or no deal</td><td>£1.25</td></tr></table>
Which games can he go on? Will he have any change? Can you find more than one combination of games?

A portion of fish and chips costs exactly £1.50. 

The fish cost 50p more than the chips.

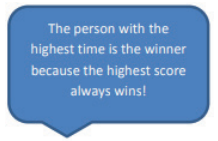
How much did the fish cost?</td>
</tr>
</table>

			How much change will I get from £5 if I buy all 4 items?	
find different combinations of coins that equal the same amounts of money	Find different combinations of coins that equal the same amounts of money Vocabulary Change from… Value of …	Children should be familiar with the different coins  How much money have I got? How much more do I need to have £2	Set up a mini shop and get pupils used to paying for items and giving the correct amount of change. Ensure that they are familiar with all coins, up to and including £2. Create a number of items that have prices labelled to them. Get pupils to pay for the amount shown, using exact money or an amount that is above but close to the actual amount shown. Give pupils sums of money in different coins. Get the pupils to handle the money as you provide problems for them to solve. Start with simple problems, such as, 'I need to pay £1.26p' and move on to requiring change, etc. Make up the following amount using as few coins as possible. 35p £1.20 65p 70p 85p 90p 45p This is a chart to show the cost of fruit Apples 8p | Pears 6p | Bananas 10p | Oranges 12p | Kiwis 15p If I wanted to buy 3 apples; 2 pears; 1 orange; 2 kiwis and 3 bananas, do I enough money if I have a £2 coin? If not, how much more do I need? If so, how much change will I get?	Hanna and Ste both claim to have 90p. Hanna has 3 coins and Ste has 4 coins. Are they correct? Which coins could they have? Emily has £3.40 and Katie has £2.20. How much does Emily need to give Katie so they have the same amount?
solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	Solve simple problems Vocabulary	Same as above	Same as above	Here is a price list. Jay has £2.20 What can he buy?

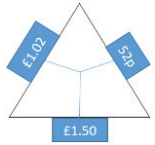
				<table><tr><th>Item</th><th>Price</th></tr><tr><td>Chicken sandwich</td><td>£1</td></tr><tr><td>Ham sandwich</td><td>£1.50</td></tr><tr><td>Turkey sandwich</td><td>£1.20</td></tr><tr><td>Salad</td><td>30p</td></tr><tr><td>Jacket potato</td><td>£1</td></tr><tr><td>Panini</td><td>£1.30</td></tr><tr><td>Soup</td><td>£1.60</td></tr><tr><td>Sauce</td><td>10p</td></tr><tr><td>Can of pop</td><td>60p</td></tr><tr><td>Bun</td><td>60p</td></tr><tr><td>Chocolate bar</td><td>50p</td></tr></table> Can you find different set of items he can buy?
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.	Tell and write the time to five minutes, Vocabulary fortnight, 5, 10, 15 ... minutes past digital/analogue clock/watch, timer , seconds	Using a clock face take pupils through what time it is when the big hand is at 12. Again, using the clock faces take pupils through what time it is when the big hand is at 6. Revise with pupils what they do at key times during the day, that is o'clock and half past the hour significant times, ie, lunch at 12 o'clock, go home at half past three, etc. Tell o'clock times. Tell half past times Draw hands on a clock to show o'clock times  Draw hands on a clock to show half past times hour hand minute hand	Using a clock where the hour hand moves as the minute hand is moved along take pupils through the five-minute sequence on the clock, e.g. five past, ten past, quarter past etc. Explain how the hour hand does not remain stationary but moves slightly as the minute hand moves along. In pairs, pupils set a time at five-minute intervals and check that their partner can read it. Then change places. Get pupils to consider what the time will be five minutes later and then five minutes before. Remind pupils that when the minute hand is 'to' the hour the hour hand will nearly be at the number but when the minute hand is after the hour the hour hand will be just after the number. 	Put these clocks in order  Sammy starts her questions at 11:10 It takes her 5 minutes per question. She finishes at 11:55 How many questions did she complete?

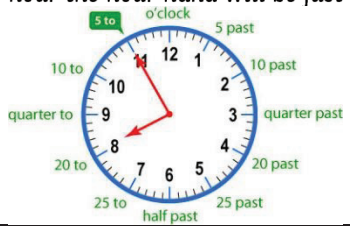
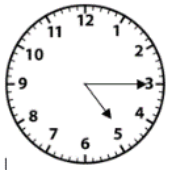
know the number of minutes in an hour and the number of hours in a day.	Know the number of minutes in an hour and the number of hours in a day. Vocabulary	As above	As above	**True or false?** There are more minutes in the day than there are hours. Explain why Kim says "If you are looking at a clock and adding 3 hours on, the minutes do not change". Is she correct? Prove it!

Year 3.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
compare durations of events, for example to calculate the time taken by particular events or tasks	Compare durations of events Vocabulary Convert Minutes to... Minutes after... Hourly Length of time Duration How many minutes ...?	Children should revisit telling the time. They should be able to read the time before trying to calculate the difference in time 	Talk about leap year and associate it with the Olympics. Estimate the length of time it takes for things to happen. Use as many everyday examples as possible, such as time to get to school; time to drink a glass of milk or water, etc. Find the time difference between two events by counting on The school concert started at 7.30pm and finished at 9.15pm. How many minutes did the concert last for? 105mins	Henry measures the time it takes for three of his friends to do 30-star jumps. He wants to find out who is the quickest. Henry says:  Is Henry correct? Explain your reasoning. Order the times below from shortest time to longest time. 83 seconds 1 minute 12 seconds 56 seconds 2 minutes 2 seconds 1 minute 87 seconds 143 seconds Explain your reasoning
measure, compare, add and subtract: **lengths** (m/cm/mm); **mass** (kg/g); **volume/capacity** (l/ml)	Measure, compare, add and subtract: **lengths** (m/cm/mm); **mass** (kg/g); **volume/capacity** (l/ml) Vocabulary Metre Centimetre Millimetre Kilogram Gram Litre Millimetre Capacity Volume	LENGTH -Look at a one metre stick and consider items or objects that measure more or less than one metre. Remind pupils of the term centimetre and that 100 cms make a metre. MASS-Remind pupils of the term grams and that 1000 grams make a Kg. Get pupils to physically place the symbols < > between objects of different weight and of different length. CAPACITY-Remind pupils of last year's learning about the terminology associated with measuring liquid.	**Measuring Length** • Talk to the pupils about a range of measuring apparatus for length. Talk about their suitability for measurement, eg, ruler, trundle wheel, tape measure, etc. • Provide pupils with practical opportunities to use measurement apparatus. • Talk to pupils about equivalence in relation to measuring length, eg, 10mm =1cm and 100cm = 1 metre.	Which of the following statements could be true? them and correct the false ones by using measuring equipment. - A chair is about 120mm tall. - A sensible portion of pasta is about 40m. - A ruler is about 300mm long The length of a swimming pool is 50m, Miss

	mass	Using the signs >, < or = complete sentences.	• Show pupils how to measure with a ruler, taking account of the extra piece put on edges of some rulers. **Measuring Mass** • Talk to pupils about measuring weight and mass, using the correct terminology of grams and kilograms. • Ensure pupils know that 1000g makes 1 Kg. **Measuring Volume** • Now do the same with volume, taking account of suitability and equivalence. Use a ruler to draw as accurately as you can the following lines: 10cm 20cm 15cm and 7cm Label each carefully.  Weigh pieces of Lego or unifix (or something else equally suitable). How many will you need to make the following weights? 500g 1Kg 20g 120g and 70g  Use <, > or = to complete the statements below 750g < 0.8kg 500ml= Half a litre 17mm < 2cm – 5mm	Jones swims 200m every morning. How many lengths are this?
measure the **perimeter** of simple 2-D shapes	Measure the **perimeter** of simple 2-D shapes Vocabulary Perimeter Distance 2D shapes	Revisit different 2D shapes	Take pupils to the outside playground/ field and talk about what is meant by perimeter by pointing out the perimeter of the playground or school field, etc. Use 2D shapes and point out the perimeter of each of the shapes.	How many different rectangles can you draw with a perimeter of 20cm? A square has sides that

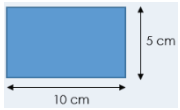
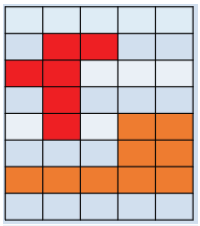
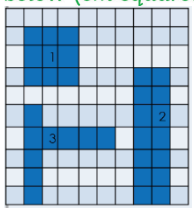
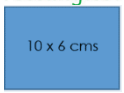
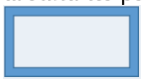
	Distance around Estimate		Find everyday objects around the classroom and measure their perimeter, eg, a book; table top, white board, etc. Ensure pupils get into the habit of estimating first before checking and finding out. Get pupils to talk about their estimates and how they think they could improve them. Create different shapes and emphasise that the perimeter is like the distance if you were to walk around the outside. What is the perimeter of the rectangle? 4cm  2cm 4cm+4cm+2cm+2cm=12cm	are in whole cm. Which of the following measurements could be its perimeter? 18cm, 8cm, 25cm, 24cm Explain your thinking.
add and subtract amounts of **money** to give change, using both £ and p in practical contexts	Add and subtract amounts Vocabulary Estimate Given change Estimate the amount	Remind pupils of the fact that 100p make £1. Show pupils £1 and £2 coins and remind them of their value. Set up a shop with items costing various amounts of no more than £5. Let pupils buy items and pay for them and receive the correct change. Change £1, £2 coins and a £5 note for other coins, noting that their value is the same. Have a variety of cards with different amounts. Play a game where the first to bring the correct amount wins the card. How many 20p coins make £1? 20p+20p+20p+20p+20p How many 50p coins make £5? 50p=50p+50p=50p+50p+50p+50p=50p+50p+50p Look at the prices of the following items.  Show a way of paying for the teddy and the book. Show a way of paying for the ball, teddy and car.	Another opportunity to help pupils to have deeper understanding of amounts of money before tackling Year 4 learning. Use coins to help pupils work practically through buying and giving change. Help pupils to organise themselves when counting large sums of money by organising money into sets of each amount and then making up pounds. Pupils should be encouraged to buy two items from a shop and work out how much the combined items cost. They should also learn to work out the difference between amounts. Using coins make the following amounts in three different ways: £5.75p £8.25p £11.90p £15.67p £5.98p	Place a coin in each segment so that this money triangle works.  **Savings** Tom and Andy have saved £45 between them. Tom has saved £11 more than Andy. How much had each one saved?  Place these five coins in a row following these instructions: The total of the first three coins is 31p The total of the last three coins is £1.12p The last coin is double the value of the first coin.

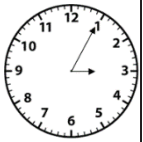
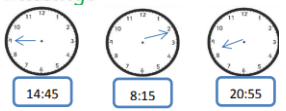
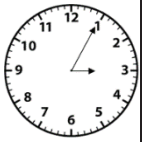
		How much change will I get from £5 if I buy all 4 items?		Now make up some more instructions with these 5 coins and then with a different set of 5 coins.
tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-Hour clocks	Tell and write the time from an analogue clock, Vocabulary century calendar, , earliest, latest a.m., p.m. Roman numerals 12-hour clock time, 24-hour clock time	Using a clock where the hour hand moves as the minute hand is moved along take pupils through the five-minute sequence on the clock, e.g. five past, ten past, quarter past etc. Explain how the hour hand does not remain stationary but moves slightly as the minute hand moves along. In pairs, pupils set a time at five-minute intervals and check that their partner can read it. Then change places. Get pupils to consider what the time will be five minutes later and then five minutes before. Remind pupils that when the minute hand is 'to' the hour the hour hand will nearly be at the number but when the minute hand is after the hour the hour hand will be just after the number. 	Show the children a number of clocks faces to include ones that have Roman numerals. Ensure that the children are familiar with the differences. Play a game of snap which includes numbers 1 to 12 and Roman numerals 1 to 12. (1 to X11). What time is it? 5:15pm 	Kim is explaining how to tell the time on a 24 - hour clock. 'Look at the hour number and minus 12' Do you agree with Kim? Prove your answer by showing examples. Leila is telling the time from an analogue clock. 'The hour hand is pointing to XI the minute hand is pointing to XII' What time is it?
estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight	Estimate and read time with increasing accuracy to the nearest minute Vocabulary	As above	Using a large clock face set the time so that it is not exactly on one of the numbers, eg, a little past the one, etc. Get the children to tell the time to the nearest five minutes. Use cards with Roman numeral and conventional times set out on them and get pupils to put the time on a clock which has moving hands. It is ten past three. Put in the correct time on the clock face. 	A television programme lasting 45 minutes finished at 5.20. At what time did it start? Put the start and finish time on the two clocks below  

know the number of seconds in a minute and the number of days in each month, year and leap year	Know the number of seconds in a minute and the number of days in each month, year and leap year Vocabulary Leap year Months of the year Days of the week	Revise with pupils what they do at key times during the day, that is o'clock and half past the hour significant times, ie, lunch at 12 o'clock, go home at half past three, etc. Tell o'clock times. Tell half past times Draw hands on a clock to show o'clock times  Draw hands on a clock to show half past times hour hand minute hand	Remind pupils of the number of seconds in a minute and the number of minutes in one hour. Debate with pupils about why 60 and not 100 was used to measure seconds and minutes. Say out loud together the poem 'There are 30 days in ……' as a way to help pupils remember how many days there are in each month. <u>How many seconds are there in:</u> 2minutes =120 seconds 4 minutes and 20 seconds= 260 seconds 4 minutes= 240 seconds 5 minutes and 10 seconds=310 seconds 7 minutes and five seconds= 425 seconds	**Home on Time** It is now half past eight. Helen has to be home by 11 o'clock and she is watching a film at her friend's house which lasts 2 hours. It takes 10 minutes to walk home. Has she enough time to watch all the film and get home on time? **Lazy Day** It is now between 2 and 3 pm I got out of bed 360 minutes ago. I woke up and read my book for 45 minutes before I got out of my bed. My alarm went off at 7.30am but I lay awake and thought about the day ahead for 30 minutes before I started to read. What time is it now?

Year 4.

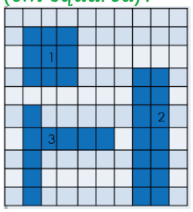
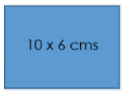
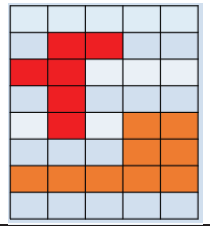
NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
estimate, compare and calculate different measures, including money in pounds and pence	Estimate, compare and calculate different measures **Vocabulary** unit, standard unit metric unit breadth edge, area, covers square centimetre (cm2)	Look at the prices of the following items.  Show a way of paying for the teddy and the book. Show a way of paying for the ball, teddy and car. Another opportunity to help pupils to have deeper understanding of amounts of money before tackling Year 4 learning. Use coins to help pupils work practically through buying and giving change. Help pupils to organise themselves when counting large sums of money by organising money into sets of each amount and then making up pounds. £5.75p £8.25p £11.90p £15.67p £5.98p	Pupils should be encouraged to buy two items from a shop and work out how much the combined items cost. They should also learn to work out the difference between amounts. Using coins make the following amounts in three different ways: £56.40 £30.25 £16.00 Order the following amounts placing < or > between them. £25.62, 2657p, 2567p £25. 62 < 2567p < 2657p	Lola and Jamal are sharing some coins. Lola gets half the amount of Jamal. Which coins could they each get?  1 chocolate bar costs the same as 4 sweets. 4 sweets cost the same as 2 stickers. 1 sticker costs 30p. How much does the chocolate bar cost?
measure and calculate the **perimeter** of a rectilinear figure (including squares) in centimetres and metres	measure and calculate the **perimeter** of a rectilinear figure **Vocabulary** Perimeter Distance around Length Breadth Regular shapes Irregular shapes	Revisit different 2D shapes  Give chn the opportunity to measure objects	Go outside onto the school playground or field and show pupils what the perimeter is. Allow pupils the opportunity to estimate what the perimeter is before they actually measure. Show pupils regular shapes and again emphasise what the perimeter is. Explain how you could build in a formula for rectangles and squares. Pupils need to measure accurately to enable them to find the perimeter of given shapes. Find the perimeter of the following	The perimeter of the rectangle is 45m. The length of the rectangle is 15.5m  What is the width of the rectangle? The width of a rectangle is 4 metres less than the length. The perimeter of the rectangle is between 30m and 40m.  What could the dimensions of the rectangle be?

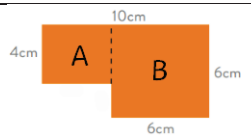
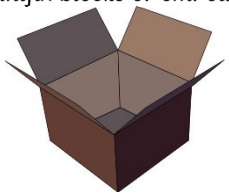
			 10cm +10cm+5cm +5cm = 30cm  What is the perimeter of these composite rectilinear shapes? Red is 14 cm Orange is 16cm	
find the area of rectilinear shapes by counting squares	Find the area of rectilinear shapes by counting squares Vocabulary Perimeter Rectilinear shape Volume Dimension Calculate	Revisit different 2D shapes Discuss the **dimension** of objects for chn to understand the term  Dimension-measure of the size or distance of an object Give chn the opportunity to measure objects	Use squared paper with pupils to explain that the area is measured in squares. Introduce the term cm^2 and explain it in relation to the squares on the paper. Let pupils draw different shapes on squared paper and record the area using cm^2 Introduce the formula for calculating the area of a rectangle as 'length x breadth'. What is the area of the shaded areas below (cm squared)?  1= $9cm^2$ 2= $14cm^2$ 3= $9cm^2$ What is the area of the following rectangles?  10 x 6 = $60cm^2$	A shape has the area of 17cm2. Could the shape be a rectangle? Explain your answer. How many shapes can you draw that have an area of 8 square centimetres? A swimming pool has a walkway around its perimeter.  The walkway is exactly 2m wide all around. The pool has an area of 250metres^2. What could the area of the walkway be?

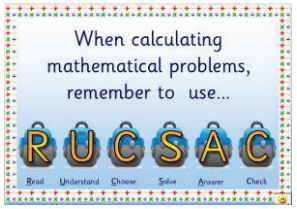
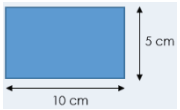
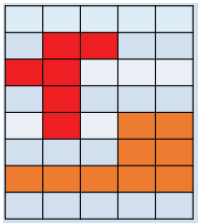
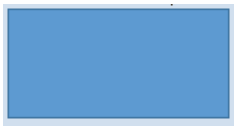
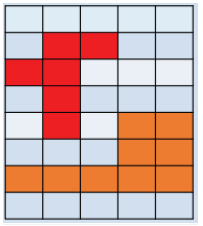
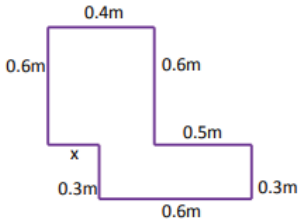
read, write and convert time between analogue and digital 12 and 24-hour clocks	Read, write and convert time between analogue and digital 12 and 24-hour clocks Vocabulary Analogue clock Convert Digital	Using a clock where the hour hand moves as the minute hand is moved along take pupils through the five-minute sequence on the clock, e.g. five past, ten past, quarter past etc. Explain how the hour hand does not remain stationary but moves slightly as the minute hand moves along.  	Remind pupils of various terminology associated with time by demonstrating on a clock face and by giving pupils clock faces to use. Talk pupils through the 24-hour clock system and the way various times are written down. Use small white boards for pupils to record times that are said to them. What is the time? 3:05pm 	Can you match the analogue clocks to the digital time even though one of the hands is missing?  Sam says 'To change any time after midday from 12 hour to 24-hour clock just add 12 to the minutes'. Is he correct? Can you explain his thinking?
solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	Solve problems involving converting from different times. Vocabulary leap year, millennium noon, date of birth timetable, arrive, depart	Remind pupils of the number of seconds in a minute and the number of minutes in one hour. Debate with pupils about why 60 and not 100 was used to measure seconds and minutes. Say out loud together the poem 'There are 30 days in .....' as a way to help pupils remember how many days there are in each month. <u>How many seconds are there in:</u> 2minutes =120 seconds 4 minutes and 20 seconds= 260 seconds 4 minutes= 240 seconds 5 minutes and 10 seconds=310 seconds 7 minutes and five seconds= 425 seconds	Remind pupils of various terminology associated with time by demonstrating on a clock face and by giving pupils clock faces to use. Talk pupils through the 24-hour clock system and the way various times are written down. Use small white boards for pupils to record times that are said to them. What is the time? 3:05pm  Match the times; fill in the missing times in the empty boxes. 11:30 5:30am 11:30pm 6:30pm 2:30pm 11:30am 8:30am 18:30 14:30 23:30 08:30 05:30	Tara is going to Blackpool for a day. She has 4 hours 30 minutes there and can choose 3 activities to do while she is there. Which activities could she choose to do? How much time would they fill? How many combinations of activities can you find? Donkey rides 30 minutes Theme Park 110 minutes Blackpool Tower 1 hour 20 minutes Swimming pool 1 hour 45 minutes Amusements 1 hour 10 minutes Sea life Centre 125 minutes It is the 6th of November. Can you work out when Jan, Tim and Saira's birthdays are using the clues below? 

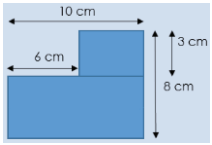
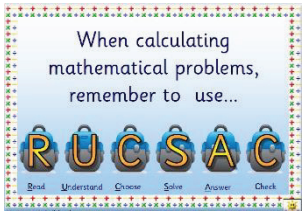
convert between different units of measure (e.g. kilometre to metre; hour to minute)	Convert between different units of measure Vocabulary Kilometre metre millimetre centimetre	Recap multiplying and dividing by 10 and 100 Revisit converting between different units of measurements Revise relationships between measures: 1000m = 1km; 100cm = 1m; 10mm = 1cm Revise relationships between measures: 1000g = 1kg Revise relationships between measures: 60 min = 1 hour; 60 secs = 1 min; 12 months = 1 year	This is a reminder unit, however there will be opportunities to extend pupils' thinking. Remind pupils of the relationships between metres and Km; between grams and Kg; between ml and L; and between seconds, minutes and hours. Help pupils to express an amount of more than a Km; Kg or Litres in metres; grams and millilitres respectively. Then move on to time and express minutes in seconds and express hours in minutes.	Hannah's Training Runs Below is a table to show how fast Hannah has run 800 metres during her training. **Day** / **Time** Sunday — 2 min 23 secs Monday — 2 min 35 secs Tuesday — 2 min 55 secs Wednesday — 3 min 01 secs Thursday — 2 min 34 secs Friday — 2min 21 secs Saturday — 2 min 11 secs Which day did she run the fastest? How many seconds did she take to run the 800 metres on Friday? What is the difference, in seconds, between her time during her fastest run and her slowest run? Give a reason as to why Hannah had a very slow run on Wednesday. **Climbing Stairs** When Jamila has climbed 8 stairs he is 2 metres off the ground. Each step measures the same. How high is each step? How many steps will he need to climb before he is 5 metres off the ground?

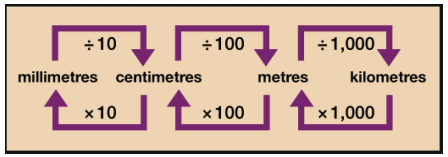
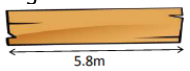
Year 5.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of **irregular shapes** (also included in measuring)	Calculate and compare the area of squares and rectangles Vocabulary square centimetre (cm2), square metre (m2), square millimetre (mm2)	Use squared paper with pupils to explain that the area is measured in squares. Introduce the term cm^2 and explain it in relation to the squares on the paper. Let pupils draw different shapes on squared paper and record the area using cm^2 Introduce the formula for calculating the area of a rectangle as 'length x breadth'. What is the area of the shaded areas below (cm squared)?  1= $9cm^2$ 2= $14cm^2$ 3= $9cm^2$ What is the area of the following rectangles?  10cm x 6cm = $60cm^2$	Remind pupils of the Year 4 learning in relation to area. Introduce the notion of working to centimetre squared paper and the quick way of measuring area. Use examples of desk tops to emphasise the area. Ensure pupils are confident of their use of the symbol ^{2} in relation to area. Talk about the different ways area is used in everyday life, eg, buying carpet or floor covering. At this stage concentrate on either cm^2 or m^2. Start by using squared paper as a reminder. Move on to show how to measure the area of irregular shapes made up of two rectangles or squares  What is the area of each shape? Red = $6cm^2$ Orange = $9cm^2$	Here is a square inside another square  The area of the inner square is 16m2 The outer square's area is four times the size of the inner square. What is the length of one sides of the outer square? How do you know? Investigate how many ways you can make different squares and rectangles with the same area of 84cm2 What strategy did you use?

			 A = 4 x 4 = 16cm^2 B = 6 x 6 = +36cm^2 52cm^2 Area = 52cm^2	
estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)	Estimate volume and capacity Vocabulary Volume Capacity Cubes	Recap measuring liquid using different sizes of measuring jugs. convert between different units of metric measure (litre and millilitre)	Fill a container with either pieces of lego or unifix blocks or cm. cubes.   Explain that when trying to determine the volume of a space the measures are made in cm^3 or m^3 - the term being cubed. Use cm^3 blocks to fill a small box and get pupils to work out how many cm^3 are required. **Investigations -complete practically** **Encourage** chn to **estimate** answers first then **check** to **prove** if their answers are **correct or incorrect.** Here is a glass that holds 300ml. It also has some water in.   Estimate how much liquid there is altogether.	1 litre is approximately equal to 1- and three-quarter pints. Use this information to draw and work out how many pints are in 10 litres. (A bar model will help.) **Complete practically** Here is one side of a cuboid.  What could the whole cuboid look like? Investigate the different types with a partner.
use all four operations to solve problems involving measure (e.g. **length, mass,**	Use all four operations to solve problems involving measure	Children should revisit RUCSAC method of solving word problems	Children will encounter units of measure in many other aspects of their mathematics	Lollies are sold in two sizes, small and large.

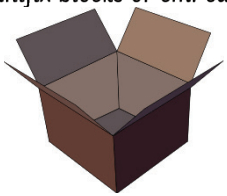
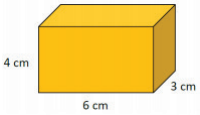
volume, money) using decimal notation including scaling.	Vocabulary Decimal notation Scaling Volume Mass		learning. Word problems lend themselves well to measures, and are a good way of integrating this strand of mathematics with application of calculation skills.	 Sanjay buys two small lollies for 92p Jenny buys 5 small lollies and 3 large lollies and pays with a £10 note. Jenny receives £4.16 change. How much does one large lolly cost?
measure and calculate the **perimeter** of composite rectilinear shapes in centimetres and metres	Measure and calculate the **perimeter** of composite rectilinear shapes in centimetres and metres Vocabulary Perimeter Composite rectilinear shape Centimetres Metres	Go outside onto the school playground or field and show pupils what the perimeter is. Allow pupils the opportunity to estimate what the perimeter is before they actually measure. Show pupils regular shapes and again emphasise what the perimeter is. Explain how you could build in a formula for rectangles and squares. Pupils need to measure accurately to enable them to find the perimeter of given shapes. Find the perimeter of the following  10cm +10cm+5cm +5cm = 30cm  What is the perimeter of these composite rectilinear shapes? Red is 14 cm Orange is 16cm	Remind pupils of the Year 4 learning in relation to perimeter. Use examples of desk tops to emphasise the distance around to secure understanding of finding the perimeter. Calculate the perimeter of a range of shapes, including composite shapes by dividing into smaller shapes 6cm  4cm 6cm+6cm+4cm+4cm =20cm 2(6+4) = 20cm  Count the outside of each square (distance around the shape) to find the perimeter. What is the perimeter of these composite rectilinear shapes? Red is 14 cm Orange is 16cm	Investigate the different ways you can make composite rectilinear shapes with a perimeter of 54cm. Amy and Ayesha are making a collage of their favourite football team. They want to make a border for the canvas. Here is the canvas.  They have a roll of blue ribbon that is 245cm long and a roll of red ribbon that is 2.7m long. How much ribbon will they have left over?

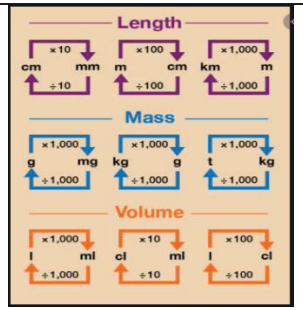
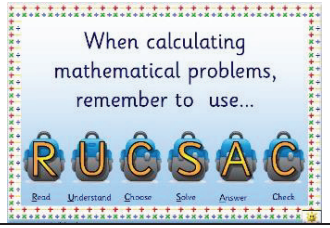
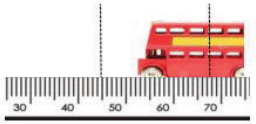
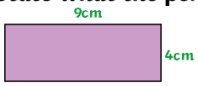
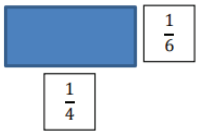
			 6cm+3cm+4cm+8cm+10cm+5cm = 36cm Perimeter = 36cm	
recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	<u>Vocabulary</u>	Discussion when measuring perimeter and area		
solve problems involving converting between units of time	Solve problems involving converting between units of time Vocabulary Minutes past Minutes to Hourly Digital time Analogue clock	Revisit the RUCSAC method approach 	Much of this unit is revising learning covered previously in both Years 4 and 5. Revisit the number of seconds in a minute; the number of minutes in an hour; days of the week; months of the year. Discuss a leap year . Look at different formats of telling the time: 24-hour clock; using am and pm; digital and analogue; Roman numerals, etc. What is 444 minutes in hours and minutes? 444 divided by 60 = 7hrs 24min Anya finishes school at twenty past three in the afternoon.  Circle the 24-hour clock that is showing the time Anya finishes school.	During a long-haul flight, Beth, Caroline and Kelsey all had a sleep. Kelsey slept four times longer than Caroline did. Beth slept 15 minutes less than Kelsey did. Beth slept for 1 hour and 45 minutes. How many minutes did Caroline sleep for? One of these watches is 3 minutes fast and one is 4 minutes slow  Work out the correct time.

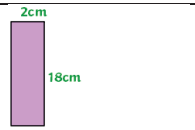
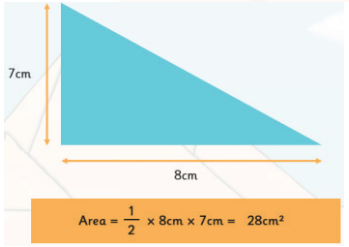
convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	Convert between different units of metric measure **Vocabulary** kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre	Recap multiplying and dividing by 10, 100 and 1000 Remind pupils of the relationships between metres and Km; between grams and Kg; between ml and L; and between seconds, minutes and hours. Help pupils to express an amount of more than a Km; Kg or Litres in metres; grams and millilitres respectively. Then move on to time and express minutes in seconds and express hours in minutes.	Remind pupils of how many metres in a Km; cm in a metre; grams in Kg and ml in litres. Help pupils to convert between these measures.  Change these measurements as directed: How many metres in 2Km?2000m How many grams in 1.2Kg? 1200g How many cm in 4m 50cm? 450cm How many ml in 4 litres? 4000ml	A plank of wood is 5.8m long.  Two lengths are cut from the wood. 175cm $3\frac{4}{5}$m How much wood is left? Cola is sold in bottles and cans.  Yasmin buys 5 cans and 3 bottles. She sells the cola in 100ml glasses.  She sells all the cola. How many glasses does she sell?
understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	Understand and use equivalences between metric units and common imperial units **Vocabulary** imperial unit pint galleon equivalent	None	Show pupils examples of coins in use in the UK in the 1960s. Explain that as a result of decimalisation we now use metric system for money. However, although metric weights and lengths are used we have not fully converted to the metric system. Many still weigh themselves in stones and pounds; many still talk of a pint of milk and many still measure car journeys by the mile.	Rita, Margret and Mable each buy some ribbon for presents from a shop. Rita buys 2 feet of ribbon. Margret buys three times as much as Rita does. Mable buys 15cm more than Margret. How many cm approximately) of ribbon do they each buy? Mr Smith sells apples for 40p a kilogram. Mr Brown sells apples for 24p a pound. Who sells them cheaper?

			Look at a range of charts to show the values of metric v imperial. **Length** 1 inch = 2.5cm 1 foot = 30cm 1 mile = 1.6km 5 miles = 8km **Mass** 16 ounces = 1 pound 1 ounce = 25g 1 pound = 450g 2.2 pounds = 1kg **Capacity** 8 pints = 1 gallon 1 gallon = 4.5 litres 1 pint = 570ml	

Year 6.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.	Calculate, estimate and compare volume of cubes and cuboids using standard units Vocabulary Net Centimetre Metre Estimate Volume Compare Calculate	Fill a container with either pieces of lego or unifix blocks or cm. cubes.   Explain that when trying to determine the volume of a space the measures are made in cm^3 or m^3 - the term being cubed. Use cm^3 blocks to fill a small box and get pupils to work out how many cm^3 are required. **Investigations -complete practically** **Encourage** chn to **estimate** answers first then **check** to **prove** if their answers are **correct or incorrect.** Here is a glass that holds 300ml. It also has some water in.   Estimate how much liquid there is altogether.	Remind pupils of the symbol (^{3}) for cubed. Volume = the amount of 3D space taken up by something. When finding the volume, you effectively multiply Length x width x height (l x w x h) Length x breath x height (l x b x w) When **measuring the volume** of a fixed object (where the shape doesn't change), we use cubic units. We are going to use cubic centimetres and cubic metres to measure and estimate the volume of cubes and cuboids. Emphasise that this remains the same no matter what the size is. **Estimate** volume of shapes and check for accuracy **Find the volume of the cuboid**  **4x6x3=72cm^3**	A box of matches measures 1cm by 4cm by 5cm. Boxes of matches are placed in a cardboard box measuring 15cm by 32cm by 40cm. How many boxes of matches fit into cardboard box?  A book is 19cm wide, 26cm long and 2.5cm thick. There are 8 similar books placed on the top of each other. What is the volume taken up by them? 
solve problems involving the calculation and conversion of **units of measure**, using decimal notation up to three decimal places where appropriate (appears also in Converting)	Solve problems involving the calculation and conversion of **units of measure**, Vocabulary circumference tonne, pound, ounce cubic centimetres (cm3), cubic metres (m3),	Recap multiplying and dividing by 10, 100 and 1000 Recap converting different units of measurements	This unit focuses on pupils' ability to recognise amounts written in decimal format and to be able to know how many smaller units there are in larger ones and vice versa. It would be helpful to physically show pupils different comparisons, ie, 1000 grams and 1 Kg; and 1000 metres and 1 Km.	Three athletes (Ben, Greg and Sam) jumped a total of 34.77m in a long jump competition. Greg jumped exactly 2 metres further than Ben. Sam jumped exactly 2 metres further than Greg. What distance did they all jump?

	cubic millimetres (mm3), cubic kilometres	 Recap a method of solving word problems e.g 	One of the main things to drill home is that there are units of 1000 in some, eg, m to Km and units of 100 in others, eg, cm to metres. Talk about the way we travel and how the speedometers in British cars have both imperial and metric measures but it is imperial that is still used by most people. Josh is trying to run 10kilometres in one week. Here are the distances he runs on the first three days: **Day 1**: 1.6 kilometres **Day 2**: 850 metres **Day 3**: 2.12 kilometres How much further does he have to run? 1.6km + 2.12km + 0.850km = 4.57km 10km-4.57km = 5.43km	Part of a ruler and a toy bus are shown below. The whole bus is 4 times the length that is shown. How long would 8 buses be in cm? 
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.	Recognise that shapes with the same areas can have different **perimeters** and vice versa Vocabulary Perimeter Area Distance around... Dimension	Revisit 2D and 3D shapes Revisit year 4 and 5 objs-how to find the perimeter of shapes Revisit year 5 obj finding the areas of shapes	Use 2 rectangular shapes that are different but have the same area, eg, 6 x 4 and 8 x 3 Use this to show how the perimeters are different and therefore emphasise that a shape could have the same area as another shape but they may have a different perimeter and vice versa. **Draw two rectangles that have an area of 36sq. cm but have a different perimeter. State what the perimeter of each is.**  Area = 9 x 4 = 36cm^2 Perimeter = 2(9 + 4) =26cm	The shape below has an area of 1/24  How many shapes can you draw with the area 1/24? What are the perimeters of these shapes? Is there a pattern/do you notice anything? Three children are given the same shape to draw. They each give a clue. Kate says, "The smallest length is 4cm."

				Lucy says, "The area is less than 30cm2" Ash says, "The perimeter is 22cm." What are the lengths of the quadrilateral?
calculate the area of parallelograms and triangles Recognise when it is possible to use formulae for area and volume of shapes.	Calculate the area of parallelograms and triangles Vocabulary Parallel lines Parallelogram Area	Revisit year 5 obj finding the areas of shapes	Reinforce the formula for working out the area of a triangle and a parallelogram. Know formula for calculating area of triangle. Calculate area of triangles The area of a triangle is based on being half the area of a rectangle.  **Area of a triangle** = half the area of the rectangle = half of the base x height   Know formula for calculating area of parallelogram The area of a parallelogram is based upon the area of a rectangle that can be made by cutting off one end and moving it to make the rectangle.	Kara has a piece of fabric in the shape of a parallelogram. Its height is 12m and its base is 18m. She cuts the fabric into four equal parallelograms by cutting the base and the height in half. What is the area of each new parallelogram? A square-based pyramid building has to be covered in glass. Each of the 4 sides of the pyramid has a base of 15 metres and the measurement from the tip to the centre of the base is 20 metres.  The glass costs £5.50 per sq. metre. How much will it be to cover the pyramid?

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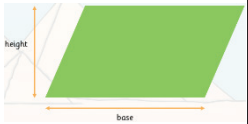
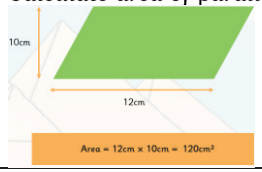
Area of a parallelogram
= the area of the rectangle
= base x height
 

Calculate area of parallelograms
 
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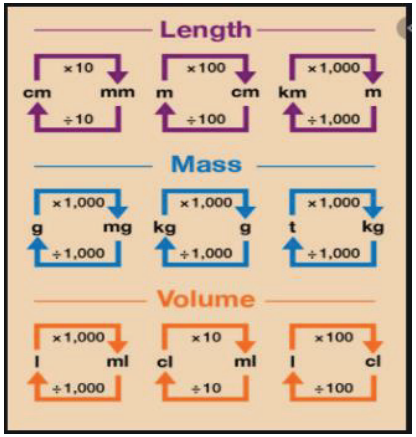
<tr>
<td>use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places</td>
<td>Use, read, write and convert between standard units

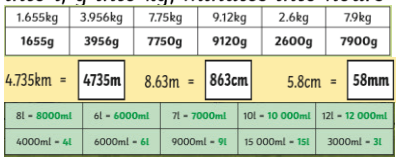
Vocabulary
Decimals
Decimal places
kilometre and metre;
centimetre and metre;
centimetre and millimetre;
gram and kilogram;
litre and millilitre
Vocabulary</td>
<td>Recap multiplying and dividing by 10, 100 and 1000

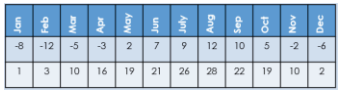
Revisit converting between different units of measurements

 
</td>
<td>This is a unit which aims to improve pupils' ability to convert between standard units.

This will include length; weight; volume; time and temperature.

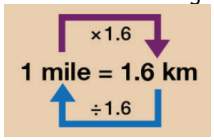
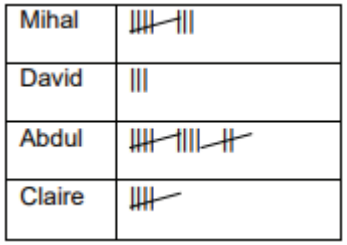
Use, add and subtract positive and negative integers for measures such as temperature and money

Convert large numbers of cm into m; ml into l; g into kg; minutes into hours
 

Here are the recorded high and low temperatures for each month last year.
 
</td>
<td>Here is a train time table showing the
arrival times of the same trains to Halifax and Leeds.
<table><tr><th>Halifax</th><th>Leeds</th></tr><tr><td>07:33</td><td>08:09</td></tr><tr><td>07:49</td><td>08:37</td></tr><tr><td>07:52</td><td>08:51</td></tr></table>
An announcement states all trains will
Arrive $\frac{3}{4}$ of an hour late.
Which train will get into Leeds the closest to 09:07?

To bake buns for a party, Keeley used
these ingredients:
600g caster sugar
0.6kg butter
18 eggs =792g

$\frac{3}{4}$ kg self-raising flour
10g baking powder</td>
</tr>
</table>

			What is the difference between the highest recorded and lowest recorded temperature through the year? Highest =12 Lowest = -12 Difference =-24	What weight, in kilograms, did the unbaked products come to?
convert between miles and kilometres	Convert between miles and kilometres **Vocabulary** Miles Kilometre distance		There are very precise systems in place for converting between miles and Km. However, there are also two very good approximate examples which work very well. Know the formula for converting m:km Use the formula to calculate distances Use a conversion graph  A mile is farther than a kilometre 5 miles ≈ 8 kilometres What does the symbol ≈ mean? **It means approximately equal to.** 5 miles is approximately equal to 8 kilometres. To convert miles to kilometres, use this formula: **miles ÷ 5 × 8 = km** Divide the miles measurement by 5, then multiply by 8. 85 ÷ 5 = 17 8 × 17 = 136 85 miles ≈ 136 kilometres	Miles and his 6 friends take part in a 5km charity race. Between them, how many miles do they run altogether? The tally chart below shows the number of miles different drivers did in a day.  When Stefan's miles are added to it, the whole amount of kilometres driven can be rounded to 50 when rounded to the nearest 10. How many miles did Stefan drive? Have you found all the possibilities?