Mathematics Year 2 Summer Term

Block 1 Fractions

Step 1 Introduction to parts and whole	This small step is the first time that children encounter fractions this year. They begin by learning about parts and wholes. Children are introduced to a variety of examples showing parts and wholes. It is important that they are secure in identifying the whole and parts of the whole. They can use everyday objects such as bicycles and flowers to identify the whole and parts of the whole. Using an interactive map is a good tool to identify the parts and whole, then zooming in to redefine the parts and whole before comparing. Children should also consider how many ways they can identify parts and wholes from pictures. They should begin to consider if the part is a large or small part of the whole. This learning will be built upon over the block, as children identify equal parts and begin to formally recognise and find fractions.
Step 2 Equal and unequal parts	In this small step, children explore equal and unequal parts. It is important that children have a secure understanding of the whole and parts before moving on to this step. They will already have used many skills required for this step in the multiplication and division block when identifying equal and unequal groups, so it may be useful to recap this. Children identify whether a shape has been split into equal or unequal parts. This is crucial learning, as it is used throughout the block to identify fractions. They first look at shapes where the equal parts look the same, but are then challenged to prove a shape has been split into equal parts where the parts do not look the same. At this stage, children do not need to describe the parts as fractions of the whole.
Step 3 Recognise a half	Children now begin to focus on specific fractions, starting with a half. Children were taught this in Year 1 and may be familiar with the word or concept of a half from everyday life. It could be useful to discuss this and identify any misconceptions, such as "the bigger half". Once confident with their understanding of a half, they are introduced to the formal notation for fractions for the first time, in this case 1/2. It is important to spend time considering what each digit represents to support understanding, not only in this step, but for understanding of fractions moving forwards. Children are also introduced to the terms "numerator" and "denominator" for the first time. Children need to identify half of a shape, but they should also look at length and sets of objects. In the next step, they will work out half of a number.
Step 4 Find a half	In this small step, children use their understanding of 1/2 to find half of a quantity. This step should focus on using concrete resources and pictorial representations to support understanding. It may also be useful to recap division skills. Children could start by sharing bean bags or counters into two equal groups. Guide them to make the link that when they find 1/2 of a number, they need to divide the number by 2, the denominator of the fraction. Children could also use related facts to help them find 1/2 of greater numbers, for example using 1/2 of 4 to work out 1/2 of 40.
Step 5 Recognise a quarter	Building on their learning in Year 1, children spend the next two steps deepening their understanding of a quarter. In this small step, they recognise a quarter, focusing mainly on shapes but also considering length and sets of objects. Children should be able to identify if a shape has been split into equal parts and if each part represents a quarter. They can compare the written notation for 1/2 and 1/4 and identify what the digits represent. Children should see 1/4 represented in multiple ways and not be limited to just standard examples. They may also begin to compare 1/2 and 1/4 in relation to the same object or amount and think about which is greater.
Step 6 Find a quarter	In this small step, children use their understanding of a quarter to find 1/4 of an amount. As with Step 4, the focus here should be on using concrete and pictorial resources to support understanding. One of the difficulties with this step is that children are not yet familiar with dividing by 4, so modelling of

	sharing into four equal groups will be required. They could also approach finding a quarter by recognising that it is half of a half or divide by 2 twice. Encourage children to attempt both strategies and decide which they find more efficient.
Step 7 Recognise a third	In this small step, children are introduced to the fraction 1/3 for the first time. It is important that time is taken to consider what is the same and what is different about 1/3 and the other fractions children have learnt. They should recognise that 1 is still the numerator (the importance of which will be covered in more detail in Step 10), but the denominator is 3, so the whole is split into three equal parts. Again, children should consider what each digit represents in the written notation to support understanding. Children identify a third of a shape, a length and a set of objects and need to consider if they have been split into three equal parts. At this stage, they could also begin to compare 1/2 , 1/4 and 1/3 to support and deepen understanding.
Step 8 Find a third	In this small step, children use their understanding of a third to find 1/3 of an amount. As with previous steps, the focus should be on the use of concrete and pictorial representations to support understanding alongside the abstract calculations. Children should use their understanding of the denominator to realise that they need to share the objects into three equal groups and eventually understand that they need to divide by 3 Children begin to think about the similarities and differences between finding 1/2 , 1/3 and 1/4 of a number. They may recognise that finding 1/3 of a number will result in a greater amount than 1/4 , but a smaller amount than ½.
Step 9 Find the whole	In this small step, children use the skills that they have learnt in previous steps to use a fraction of an amount to find the whole. Although this has been explored briefly in previous steps, children now formalise this understanding and start to make comparisons between fractions. Children may find this difficult to visualise at first, so encourage them to use diagrams and practical resources to ensure accuracy and understanding. Bar models are particularly useful. Encourage children to identify the part and to use the fact that all the parts must be equal to find the whole. Give children opportunities to use this skill in a range of contexts, including length.
Step 10 Unit fractions	In this small step, children bring together the learning so far in this block to understand the concept of unit fractions. They are already familiar with the fractions 1/2 , 1/4 and 1/3 and will now use the term "unit fraction" to describe them. Children should recognise that a unit fraction is one in which the whole has been split into equal parts and one of those parts is shaded or highlighted. They should consider how unit fractions are written in fraction notation, and this will clarify the role of the numerator and denominator. They can begin to generalise that a unit fraction is any fraction with a numerator of 1 Children begin by looking at unit fractions where one equal part of a shape or object is shaded/circled, before exploring unit fractions of a set of objects.
Step 11 Non-unit fractions	In this small step, children learn about non-unit fractions. Reference should be made to the previous step, and unit fractions should be constantly used within questioning to ensure that children can differentiate between the two types of fraction. They recognise that a non-unit fraction is a fraction where the numerator is greater than 1. They identify 2/3 , 2/4 and 3/4 and also begin to look at fractions equivalent to 1 whole. It may be useful to identify non-unit fractions as an amount of unit fractions, for example 2/3 = 2 lots of 1/3 Children begin to compare unit and non-unit fractions by using diagrams or contexts and are introduced to the concept of equivalence through fractions that are equivalent to a whole.
Step 12 Recognise the equivalence of a half and two quarters	Children may have thought about equivalence in the previous step, but they now look in detail at 1/2 and 2/4 and recognise their equivalence. It is important to discuss the language of equivalence. Children need to approach this step with practical and pictorial resources to support understanding. When finding a fraction of a shape, they should see that 1/2 and 2/4 take up the same amount of space, as long as the wholes are equal in size. Although finding non-unit fractions of amounts has not been covered yet, this may be explored with support as another way to show the equivalence between 1/2 and 2/4.
Step 13 Recognise three-quarters	Children have already begun to explore non-unit fractions in the last two steps, and in this small step they focus on recognising 3/4 Children first look at 1/4 and 3/4 and identify the relationship between them, recognising that 3/4 is made up of 3 lots of 1/4. They should also be able to identify that 3/4 represents the whole being split into four equal parts and having three of the equal parts. Children recognise and represent 3/4 in a variety of ways, including with shapes, length and sets of objects. They should also be able to recognise 3/4 when there are more than four equal parts (for example, a set of 20 pencils), using sharing to support this.

Step 14 Find three quarters	In this small step, children find three-quarters of a set of objects or a number. Children may find this step challenging, as it can involve dividing by 4 and will generally involve more than one step. Use concrete and pictorial resources to support understanding and develop confidence. Some children may need to use these resources throughout the step. Children start by finding 1/4 of a set of objects, then explore and discuss methods to find 3/4. They could consider the suitability and efficiency of these methods. Guide children to identify patterns when finding 1/4 , 2/4 , 3/4 and 4/4 of a number. Encourage them to consider which is greater, 1/2 or 3/4 of the same number.
Step 15 Count in fractions up to a whole	In this small step, children use their knowledge of unit fractions and non-unit fractions to count in fractions up to a whole, focusing on halves, thirds and quarters. This step is pictorially based and does not include number lines, which will be introduced in Year 3 Encourage children to recognise and represent fractions, as well as spotting patterns when counting. They should come to realise that the numerator increases, but the denominator stays the same. They should also be aware of examples in which a fraction is equivalent to 1 whole. Children do not need to count beyond 1 at this stage, but it may be useful to discuss that fractions do not stop at 1 whole.
Block 2 Time	
Step 1 O'clock and half past	In Year 1, children learnt to tell the time to the hour and half past the hour. That learning is revisited in this small step. Begin by discussing time, finding out what children already know and can remember from Year 1. Recap the two hands of the clock, starting with the minute hand on 12 and the hour hand moving around the clock, showing the different times on the hour. Provide children with clocks and ask them to show a given time, before making a time for a partner to read. Move on to half past the hour, showing the minute hand at 6 and the hour hand halfway between two numbers. Ensure that children know that the time will be half past the last number the hour hand has moved past.
Step 2 Quarter past and quarter to	In this small step, the learning from the previous step is extended to include quarter past and quarter to the hour. This is the first time that children have seen the terms "quarter to" and "quarter past", although they should be familiar with quarters from work on fractions. Model the four quarters on a clock. Children may see the connection between half past and two quarters past, and it is worth discussing this link. While children will be familiar with the term "past" from the previous step, the term "to" in relation to time is new. Spend some time modelling where the minute hand goes for quarter past and quarter to, as well as where the hour hand needs to be at these times. Children then read and create times for themselves.
Step 3 Tell time past the hour	Children have already seen the term "past" the hour in relation to half past and quarter past. In this small step, that learning is extended to include intervals of 5 minutes past the hour. Remind children that there are 60 minutes in an hour, and show that each of the twelve sections of a clock corresponds to a 5-minute interval. Use a large clock and model moving the minute hand around the clock to show 5 minutes, 10 minutes and so on, up to 30 minutes. Then discuss how to read times using the hour hand as well, for example 5 past 9, 10 past 9, quarter past 9 and so on. Children then read and create times for themselves. Times to the next hour will be covered in the next step.
Step 4 Tell the time to the hour	At this stage, children have only seen the term "to" in relation to time when referring to quarter to the hour. In this small step, that learning is extended to include intervals of 5 minutes before the hour. Explain that half past the hour is only ever said as that, and never as "half to" the hour. Then model the times 25, 20, 10 and 5 minutes to the hour, while also reminding children of quarter to the hour. They see that the hour hand is pointing to before the number that is said in the time. For example, at 10 minutes to 2, the hour hand is pointing slightly before 2. Encourage them to see that times after half past are related to the next hour, so times after half past 6, for example, are " ...minutes to 7". Children then read and create times for themselves.
Step 5 Tell the time to 5 minutes	In this small step, children combine their learning from the previous two steps to tell the time to 5-minute intervals both past and to the hour. Recap that the right-hand side of a clock shows times that are "past" the hour, while the left-hand side shows times that are "to" the hour. Remind children that when the minute hand is pointing to 6, this always refers to "half past" and never "half to". Model where the hour hand should be for a given time, discussing which two numbers it should be between and which one of the numbers it should be closer to. For "past" times, the hour hand should be less than halfway between two numbers, and for "to" times it should be over halfway.
Step 6	Children should be familiar with the fact that there are 60 minutes in an hour from earlier in the block. The focus in this step is on using and applying this fact. Start by exploring half, quarter and three-quarters of an hour and how many minutes each of these refers to. This is a good opportunity to

Minutes in an hour	revisit learning from the previous block on fractions. Children then focus on using the fact that there are 60 minutes in an hour to work out lengths of time greater than 1 hour. For example, 1 hour and 10 minutes is equal to 70 minutes, and 90 minutes is equal to one and a half hours. They can then use this to compare durations of time written in different ways. As children are yet to explore numbers beyond 100, durations of time beyond 100 minutes are not covered.
Step 7 Hours in a day	This small step extends children's knowledge of the relationships between units of time as they explore the number of hours in a day. Model how the hour hand moves throughout the day, allowing children to see that each time appears twice in the day, for example 8 o'clock in the morning and 8 o'clock in the evening. Children can then see that there are 24 hours in a day, connecting this to the twelve hours on a clock each happening twice a day. Establish that a full day of 24 hours includes the night-time when they are asleep, as some children may only think of a "day" as the hours in which they are awake. Discuss the terms midnight and noon, and explain that a new day starts at midnight. Children then solve problems involving time. The terms "am" and "pm" are not introduced until Year 3

Block 3 Statistics

Step 1 Make tally charts	In this block, children are introduced to statistics and different representations of data for the first time. In this small step, they use tally charts to systematically record data. It is important that children understand how different numbers are represented and when to use a "gate" to represent a group of 5. They should already be confident counting in 5s, and should use this skill when finding the totals represented by tallies. When they are confident in working out totals from tallies, they move on to drawing tallies for themselves to record numbers of objects. Tallies are used throughout this block, so children must be confident using them before moving on to the next step.
Step 2 Tables	In this small step, children explore the use of simple tables. Some of these include tallies, but others just show the totals. Children can compare tally charts and tables and think about when it is more efficient to use each one. They may come to understand that a table is easier to read, but a tally chart is more efficient when collecting data. Children think about what the data represents and draw pictures to match the information shown in a table, or use a picture to create a table. They should also begin to compare and answer questions about the data shown. This is built upon in the next steps, where they interpret block diagrams and pictograms.
Step 3 Block diagrams	In this small step, children are introduced to block diagrams as a way of representing data. This is a new concept and it may be beneficial to explore the similarities/differences between this and previous representations of data. Children explore block diagrams that use one-to-one correspondence, where each block represents one item. They will develop this idea when looking at bar charts with scales in later years. Children identify simple information from a block diagram, for example using the heights/lengths of the bars to identify the most/least popular items. Stem sentences can be used to support interpretation of diagrams. Children can then create their own block diagrams, firstly using concrete resources such as cubes or sticky notes, and then by drawing on paper. Explain that block diagrams can be shown vertically or horizontally.
Step 4 Draw pictograms	In this small step, children are introduced to pictograms as a way of representing data. The first pictograms they draw use one-to-one correspondence, where each symbol represents one item. Children could use physical objects to create 3-D pictograms before drawing them. Ensure that they encounter both horizontal and vertical pictograms. Emphasise the need to use the same symbol for every category, and that symbols need to be easy to draw. Keys are introduced to aid understanding and to avoid potential misconceptions later in the block when one symbol can represent 2, 5 or 10
Step 5 Interpret pictograms	In this small step, children interpret data from pictograms. Both vertical and horizontal pictograms should be explored. Children will be aware of the key features of a pictogram and how to interpret a key from the previous step. Each symbol in the pictogram still represents one item. Children start by identifying totals for different categories before comparing totals. As the numbers used are often small, this offers a good opportunity to revisit number bonds and mental methods of calculation. Children should be encouraged to look for multiple ways to make comparisons that can sometimes be done just by looking, counting the difference and also subtraction. They could think about the "story" the data tells them and infer information that is not directly shown. In the next steps, children use these skills to draw and interpret pictograms with different keys.

Step 6 Draw pictograms (2, 5, 10)	In this small step, children draw pictograms where the symbols represent 2, 5 or 10 items. From the previous steps, children should have a secure understanding of how to draw pictograms and what the key represents. They also need to be confident counting in 2s, 5s and 10s. Children start this step by considering examples of data where symbols representing one item are not appropriate, as they would take a long time to draw and take up too much space. Initially, children are given keys to use, but they then move on to choosing the most appropriate key depending on the data. They also need to interpret what number is represented by half a symbol.
Step 7 Interpret pictograms (2, 5, 10)	In this small step, children interpret pictograms where the symbols represent 2, 5 or 10 items. Again, the pictograms may be presented either vertically or horizontally and children should now be familiar with both. Children encountered how to interpret part symbols in the previous step, but this is challenging and may need some reinforcement. Questions include reading from a single row/ column of a pictogram, making comparative statements and solving simple multi-step problems. At this point, children may start to make inferences and consider more contextual questions such as "Why do you think that the data shows this?"
Block 4 Position and Direction	
Step 1 Language of position	In this small step, children use the language of position, recapping and building upon learning from Year 1 Children start by describing the position of objects using left and right. Discuss methods for remembering which way is left and which way is right. They then think about other language to describe position, such as above, below and between. Children use their understanding of this language to complete multi-step and more sophisticated problems. This learning will be built upon as they begin to think about describing movement and turns in the next steps.
Step 2 Describe movement	In this small step, children use their understanding of position to describe movement. This could be explored, in the first instance, by following instructions outside to move from one area to another. Children then begin to record and describe movement more formally, in terms of both direction and number of squares. They should first describe movement of an object as up, down, left and right as they look at it on a page. Once they are confident with this, they can begin to think about describing movement using forwards and backwards. This is often difficult for children and will need careful modelling as the direction of forwards or left, for example, changes, depending on which way a person or object is facing. This learning is key and needs to be fully understood as it is used throughout the remainder of this block.
Step 3 Describe turns	In this small step, children start to describe turns. Children learn about quarter, half, three-quarter and full turns, as well as using clockwise and anticlockwise. Links could be made to other areas of the curriculum (time, fractions) to help conceptualise the learning. Children may find it beneficial to complete quarter, half, three-quarter and full turns before they are introduced to clockwise and anticlockwise. Children should be able to draw what an object would look like after a turn and describe the turn that an object has performed. As with previous steps, there will be plenty of opportunity to explore this step practically, both in the classroom and outside.
Step 4 Describe movement and turns	In this small step, children combine their learning from previous steps to describe movement and turns. There are many misconceptions that can occur within this step, so it is important to practically complete tasks and discuss any misunderstandings as a class. Children could play games, such as giving each other instructions through a maze. They need to visualise which way an object is facing and which way it will be facing if it turns left or right. Once this is secure, they can then think about describing movement and giving instructions to move an object from one place to another. The use of small, programmable robots could also be used to consolidate this learning.
Step 5 Shape patterns with turns	In this small step, children explore patterns that involve turns. Time could be spent recapping patterns that just use different shapes first, including different ways to form patterns, before introducing them to patterns with one or two shapes that include a turn. They should be able to identify what the next shapes in the pattern are and what direction they face. Encourage children to use the language of quarter, half, three-quarter turns as well as clockwise and anticlockwise. Discuss what happens when a shape completes a full turn and why this may not be useful when creating patterns. Children can cut out shapes and complete some of these tasks practically before describing their patterns.