Subject: Maths
Year group: Primary 1
Unit 1: Numbers

Week 4

1. P1U1/Ma As a class, count up to 10, 3 times. Now whisper a count to 10, followed by a shout to 10! Work in pairs to count to 10 on your fingers. Clap your hands for 10 happy fingers!
2. P1U1/Ma Count to 10 again and try to count backwards too. Can you start from 5 and go to 10 and then back to zero? Try starting from a different number to practice.

3. P1U1/Ma Repeat day 1 and 2 but move up to 30. Can you hear some patterns in your counting? Use groups of 3 people to count 30 fingers backwards and forwards.

4. P1U1/Ma Draw the numbers 0 to 9 in the sand. Trace them with your fingers and sticks. Which numbers are straight, and which are curly? Put 3 stones next to '3' and so on.

5. P1U1/Ma Repeat day 4, then take it in turns to point to one number for everybody to read together. Then only say one number and try to point to it.

Week 5

6. P1U1/Ma Count together from 10 to 20. Try counting fast and slow. Then count from 0 to 20, backwards and forwards. Count from 20 to 30 and back. Cheer 10, 20, 30!

7. P1U1/Ma Write the numbers 0 - 10 in on the board. Check you can read each number. Put a circle around every other number starting with 0. You have even numbers!

8. P1U1/Ma Write 0 – 10 and circle the even numbers, reading them aloud. Clap your 2 hands to remind you of even numbers. Say them in order getting louder as you go!

9. P1U1/Ma Circle every other number starting with 1. These are odd numbers! Say them together. Trying standing for even and sitting for odd numbers!

10. P1U1/Ma Count in even numbers up to 30 and then up in odd numbers. You might need to practice this throughout the day. Weekend challenge – go backwards!

Subject: Maths
Year group: Primary 1
Unit 2: Measurement

Week 9

1. P1U2/Ma How big is your hand compared to your foot? How small is your finger compared to your arm? Who is the tallest in your class? Who is the shortest? Which tree is the tallest near you? Can you find two short twigs and two long twigs? What other things can you compare?

2. P1U2/Ma How could you measure how high the door is? How much higher is it than your teacher? How much higher is it than you are? Are all doors the same size? See what you can find out about door heights near you.

3. P1U2/Ma How long is the path from your classroom to the next classroom? How many steps doe sit take you? How much further is it to the school entrance? How many steps do you think it takes you to walk home? These steps help you to measure length and time.

4. P1U2/Ma A 'Handspan' is the length you make when you stretch out your hand. It is about 3 handspans across a table for example. How many handspans is it across the entrance to your classroom? How many handspans up the leg of the table? What else can you measure?

5. P1U2/Ma You can use your foot too to measure length – 'heel to toe'. It is about 5-foot lengths across the door entrance. How many foot lengths is it across the front of your classroom? What ese can you measure? How does a foot length compare to steps taken? (A step includes a space!)

Week 10

6. How do we know what day it is? We give days a name! Monday, Tuesday and so on. What did you do on Sunday? What will you do on Wednesday? Talk to your partner about what you have done today? There are 7 days in a week. Make up a song to say all of them.

7. What day was it yesterday? What day is tomorrow? What day do you go to the market? What days do you come to school? Talk with your partners about what you did yesterday and what you plan to do tomorrow.

8. There are 4 weeks in a month and 12 months in a year. How many Mondays are there in a month? How nay weeks do you think you will go to school this year? How many months is that? How many weeks in 2 months? Can you make up some other puzzles about weeks and months?

9. How many years old are you? How many years old is your friend? Can you remember anything that happened a year ago? What do you think will happen next year? Do you think a year is long time? What do you hope will happen next year? What do you hope will not happen next year?

10. We have talked about days, weeks, months and years this week. These are measures of time. We use hours and minutes to measure time too. We measure length too! Make a quiz for another class about measure of time and length.

Subject: Maths
Year group: Primary 2
Unit 2: Measurement

Week 5

1. Pick up two different objects. Do they feel the same? Which one feels heavier? Can you find a heavier object? We measure how heavy something is by talking about weight. Is your bag heavy? What is the lightest thing you can find?

2. When something is the same weight as something else, then we can say they are balanced or equal. Can you find two items that feel the same weight? Can you find two similar heavy items and two lighter items? What can you say about the shape of items that feel the same weight? Does shape and size mean the same weight?

3. Collect 5 items and order them according to their size and then their weight. Is the biggest the heaviest? Use a Beam Balance if you have one to compare weights of these items. Which items fall and which ones rise? Did they do what you expected?

4. Can you find two items that weigh about the same as one item? How many pebbles for examples weight the same as a rock? How many sticks weigh the same as a book? What other examples can you create?

5. We measure length using cm and metres. We measure weight using grams and kilograms. Where do you see people weighing items? Why do they do this? Are their any costs we can match with particular weights? What happens when you go to the market? Keep alert and watch for weights in our world!

Week 6

6. We have talked about weight and length. Can you remember how we measure time? Days and weeks have helped us. We split a day up into 24 hours. What can you do in 1 or 2 hours? How does that compare to what you can do in a day? How far can you walk in an hour? There are 60 minutes in 1 hour.

7. How long do you sleep at night? How many hours is it dark in a day? What else can you say about the sunlight in a day using hours? To help organise our day we talk about 'o'clock'. So, at 9 o'clock we start school and at 6 o'clock we eat our dinner. What else can you do at these times?

8. Measuring the day in hours helps us to tell the time. You can wear a watch or look at a clock to help you. You can look at the position of the sun too! Where is the sun in the sky in the morning and where is it at night? Ask your family about the time. What do they do in the morning compared to the afternoon?

9. If you can see a clock or watch, look at the longer arm. This points to the hour. The shorter hand shows how many minutes in hour. (60) If the longer arm points to the number 2, it is 2 o'clock and so on. Ca you make a big clock on the field. Use number cards and sticks to create different times.

10. The clock has 12 numbers on it. But there are 24 hours in a day! The longer arm travels twice around the clock in a day. We have 3 o'clock in the morning (in the night!) and 3 o'clock in the afternoon. We usually say a day is 12 hours from sunrise to sunset. When does the day begin and when does it end? What time is it when the sun is the highest in the sky?

Subject: Maths
Year group: Primary 2
Unit 3: Geometry

Week 10

1. Look around the school compound for different shapes. What are the same and what are different? What shapes have straight edges, and which have rounded edges?

2. Gather different shapes from the environment. Arrange them to make different patterns. What do you notice about size and how well they match?

3. If a shape has 4 sides, it is called a quadrilateral. How many different 4-sided shapes can you make? What patterns can you make using quadrilaterals?

4. What 4 sided shapes can you see around you? What large and smaller quadrilaterals can you find? Look for these shapes at home and tell people about them.

5. A 3-sided shape is called a triangle. Make some triangles using sticks and stones. Make patterns using triangles. Where can you see triangles around you?

Week 11

6. Draw a quadrilateral so that all the sides are the same size. If the shape seems straight, then it is called square! Where can you see squares around you?

7. Make a pattern of quadrilaterals, including some squares. Can you make a repeated pattern? Can you make the same pattern, but bigger or smaller?

8. Use triangles, squares and quadrilaterals to create a pattern. Notice how shapes fit together. Where are the gaps and the joins? What shapes fit together the best?

9. Look for patterns in the environment that combine shapes. How does nature organise shapes? How does a building do this? What shapes have more than 4 sides?

10. Create a pattern that could be used to decorate a wall or floor. Look at some fabrics if you can to give you some examples or photos of decorative floors around the world.

Subject: Maths
Year group: Primary 3
Unit 3: Measurement

Week 6

1. Draw a quadrilateral where each side is a different length. Now draw a square that is a similar size. Compare lengths of sides. Repeat. What do you notice?

2. Draw or make a few quadrilaterals. Split these into triangles. How do the triangles compare? How many triangles inside can you create?

3. Create a triangle using sticks. Swap one stick (side) for another sized stick. What do you notice? How could you measure these sides?

4. Create a sequence/pattern of squares and quadrilaterals. How do they fit together? How many ways can you divide a quadrilateral into smaller shapes?

5. Draw a quadrilateral. Measure each side using a ruler or your fingers. Split the quadrilateral in half. Measure the size of each new shape.

Week 7

6. Talk about how shapes are used in buildings. Why are some shapes chosen over others? Why are some shapes 'strong'? What shapes dominates buildings?

7. Consider circles the environment. What are the benefits of a circle in everyday items such as a cup or a wheel? What do you know that needs to roll?

8. Use some string or a collection of stones to create some circles. Can you divide them in half? What shapes can you split a circle into?

9. 'A circle has an infinite number of sides.' Talk about what that means. Practice drawing perfect circles. What can you use to help?

10. Measure the width of circles you have created. Where is it the widest? How does this compare to triangles and quadrilaterals?

Subject: Maths
Year group: Primary 3
Unit 5: Statistics

Week 11

1. Talk to your partner about graphs and charts that you know of. Where do you see these and what do they tell you? Data and statistics can be complicated! It is useful to use models and pictures to help us understand them.

2. Use some bottle tops of stones to help you organise a block graph to represent how many family members people in your class have. What number of family members is the most common? Talk about the process of organising your block graph. What decisions did you have to make?

3. Collect some data from your class about favourite foods. Discuss how you could present this to show a local market what people like to eat. Collect more data about food most eaten and compare your results. What could you use to make your block graph?

4. An abacus is like a block graph, but why is a block graph more complex? Why is it more useful to explain data? How can a tally help you to collect data for a block graph? How does a tally remind you of an abacus?

5. Block graphs are often used to summarise data. A pictogram represents data using pictures or symbols. Talk about which statistical tool is useful to describe modes of transport in your community. Look for some examples of block graphs in newspapers and magazines if you can. How else is data represented?

Week 12

6. A block graph creates bold visual shapes to describe certain data. The x and y axis of the graph need to be organised to cope with the range and scale of data collected. Talk about the challenges of creating the x and y axis. What do you need to identify?

7. Collect some data from adults in school about what area they live in. Organise your data so that it can be presented in a block graph. Does this enable to you to compare where people live? How would a block graph be different if you asked people how far away they lived from school?

8. Talk about the importance of labelling your graphs and axis carefully. Create some graphs … but leave labels off! Can anybody guess what they are about? Convert one of your graphs into a pictogram. Which statistics are better? Remember! Data is raw, it is what you collect. Statistics are how you present the data.

9. Collect some statistics about a topic of your choice. Think carefully about the range of your data. Can you collect enough data to make a viable graph? Plan carefully how to collect your data so that you can interpret it easily when you draw your graph.

10. Look at some graphs in magazines or online if you can. What other types of graphs are there? What do you think a scatter graph is for example or a line graph? Why are these alternate graphs required?

Subject: Maths
Year group: Primary 4
Unit 4: Algebra

Week 7

1. Algebra is a branch of maths that deals with symbols and the rules for manipulating those symbols. What maths symbols do you already know? + - x ÷ = These help us to calculate and solve problems. Discuss what kinds of problems each of these symbols allow us to solve.

2. Take the + symbol and use it to describe some problems that you have encountered today. How many people did you see on the way to school today for example? 12 people by the road, 4 people at the gates and 9 people in the yard. 12 + 4 + 9 =? Now make up your own problems to tell a story.

3. Take the – symbol. How is it connected to the + symbol? Create some stories that describe a problem being solved involving this subtraction symbol. How much did you spend at the market for example from the money you had? How much water did you use from the container? Talk about how your subtraction story could be turned into an addition story.

4. Think about x and ÷. How are the connected? How is x related to addition? Use the x symbol to describe how many shoes there are in your class today. Use the x symbol to describe the number of wheels on the cars (or bicycles) you passed on your way to school today.

5. Use the x symbol again in conjunction with +. What calculations can you write to total 100? Remember that x always needs to be completed before +. Can you also create some x and + calculations to total 1000? How are these like the calculations to reach 100?

Week 8

6. Algebra is about using letters in place of numbers. Sometimes it's possible to work out what the letter represents. For example, x + 4 = 10. What is x worth? This is an example of a linear equation. Write some more for your partner to solve.

7. Algebra involves use of unknowns to represent information. We normally use letters. How would you write this as an algebraic sentence: Akong x bought bananas and y oranges? How many fruits did Akong buy altogether?

8. 'Unlike terms' implies having different terms in a statement. So yesterday, bananas and oranges were presented differently. If 7 bananas and 5 oranges were bought, you would write $7x + 5y$. How would you write buying 12 mangoes and 34 bananas? Write some more for your partner.

9. We can simplify sentences such as 5y + 9y because we are only dealing with y. So here, we simply have 14y. How would you simplify 24 x + 17 x ? Now write some of your own.

10. We usually put the number at the front in more complex sentences. 5($\boldsymbol{n}$ + $\mathbf{5}$). What do you think this means? If $\boldsymbol{n}$ is 4, then we say $4 + 5 = 9$, and then we multiply that by 5 to make 45. When might you need sentences like this in everyday life?

Subject: Maths
Year group: Primary 4
Unit 5: Statistics

Week 11

1. Statistics involves the collection, recording and representation of data and the interpretation of data. What data do you have about your school? How is it organised?

2. Primary data is raw. It is collected at source. Secondary data is collected by someone else. What examples can you think of? Cows in the field? School register?

3. We have looked at a bar graph. How might a line graph be similar? They are useful for showing trends over time. How might data about your school change over time?

4. Look at a line graph if you can. How steep is the line. Why is this? What can you think of that changes rapidly or dramatically? What changes slowly?

5. Compare some line graphs and bar charts. How are the same and different? Look at the axis. What can you say generally about the y (horizontal) axis?

Week 12

6. A pie chart is a circle divided into segments. Each segment is proportional to the number of cases in the category. Draw some pie charts to show ½, ¼, 1/3 etc.

7. Draw a table to record how many classmates are right & left-handed. Organise this into a pie chart. How does this compare to learners in another class?

8. Use a table to record how many people live in a house in your class. Represent this either as a bar graph or a pie chart. Why is a line graph not useful?

9. Work in pairs to choose another topic to explore so that it can be explained using a pie chart. How does your knowledge or circles help?

10. What jobs do people do in your community? Prepare a pie chart to show this. How do you think this chart would compare to another community?

Subject: Maths
Year group: Primary 5
Unit 1: Number

Week 1

1. Read this number 583 216. What can you say about the place value here? How is this different to 58 216 and 580 216?

2. Use digit cards to create a variety of 5- and 6-digit numbers. Write down a sequence of numbers going from highest to lowest.

3. Use digit cards again to create a 6-digit number at random. Practice adding 10, 100 and 1000 to each number you create. Then subtract the same.

4. 1000g is equal to 1Kg. How many g do you have if you have 13kg of rice? How Many Kg of flour do you have if you have 42,000g? Any more ideas?

5. Can you write these numbers in words? You'll need to check each other's spellings! 555 321, 321 555, 23 899, 304 201. Read them aloud.

Week 2.

6. A number is divisible by 3 if the sum of the digits is divisible by 3. Try it! 12, 15, 18, 21, 24, 27. Make up some other, 3-digit numbers divisible by 3.

7. Create a quiz of 4-digit numbers that are & are not divisible by 3. Who can spot which ones are not multiples of 3? What do you think about multiples of 6?

8. You have 63 pounds to spend in the market. Each mango costs 3 pounds. How many can you buy? Make up similar problems to solve.

9. If a number is divisible by 4, the last two digits are divisible by 4. For example: 34 544 or 379 228. Make up some others using 5 digits. Write down the rule!

10. A number is divisible by 6 if it is divisible by 2 and 3. 114. 672. Use all your rules for x3, x4 and x6 to create a quiz. Don't make it too easy!

Subject: Maths
Year group: Primary 5
Unit 4: Algebra

Week 8

1. Talk about the mathematical operations that you know. Provide a true and false example of each. Can your partner spot the mistake? 4 + 27 = 31 4 + 41 – 45. Can you think of a real problem for each of your true statements? Collecting stones? Selling shoes?

2. In maths we talk about solutions and solving a problem. What is the solution to this problem? Deng has SSP170 more than George. George has twice the amount Jane has. If there is SSP1200 in total, how much does George have?

3. The length of the school path is 20m longer than classroom wall. If the classroom wall is 13m, how long is the path? The path is to be extended by 30 m. How long will it be in total? Write this as an algebraic expression.

4. In class the number of girls is 3 times the number of boys. If the difference between then is 20, how many boys are there? Write this using mathematical operations. Can you write a similar problem to solve for your partner?

5. Write some problems that involve both multiplication and subtraction. Use number that are 4 or 5 digits. How does this compare to writing problems are that use addition and division? What operations are needed every day by people in different jobs?

Week 9

6. How can we describe multiples using algebra? 4c means 4 x c, but we simplify it t 4c. What is 4c + 5c? 9c, more simply. But 4c + 5d cannot be simplified. If c = 9 and d = 13, what is the answers to these questions? Make up some more of your own using multiplication in this way. Can you add a third variable, e?

7. Thinking of subtraction, 55 bananas are eaten from a collection of 130. How many are left? We can write that as 130b – 55b =? But we may as well just use numbers. Letters are useful when there are 2 or more variables. (different fruits etc) Good examples to use algebra include talking about forces market prices. Where else can you think of?

8. Try a few examples now again where you must determine the missing variable. 457 – y = 344. What is y? Make up some of these for a partner, just using one variable to uncover. Can you see the rule? 457 – 344 = y. Does the same rule work for addition? Try it!

9. Can you think of a real-life problem where algebra could help you? Think about a business near you and consider calculations that they need to make. Design some examples to share.

10. Think about all that you have learnt about algebra. Design a quiz for your partner. Don't make it too easy! But be ready to explain your answers and try to work out where your partner has gone wrong if they answer incorrectly.

Subject: Maths
Year group: Primary 6
Unit 1: Numbers

Week 2

1. Can you remember divisibility tests for 6 and 4? Write some examples to remind yourself. How do think multiples of 8 relate to multiples of 4?

2. A number is divisible by 8 if the last 3 digits are divisible by 8. 888, 816, 404 for example. Create some examples to share so that 4/5 are correct, but there is one error to identify!

3. If we move to numbers beyond 1000, can you still check for multiples of 8? Don't get confused by the bigger number! 123 444, 279 844, 888 261. Which one is not divisible by 8? How do you know?

4. Is number that is divisible by 8, also divisible by 4 and 2? Prove this with some examples.

5. What is the difference between a number that is divisible by 8 and number that is a multiple of 80? Create some examples to show your thinking.

Week 3

6. Write some numbers that are multiples of 11. Can you see any patterns? You need to get creative for this problem! Hint: Try using addition and subtraction.

7. identify if a number is divisible by 11, add and subtract digits in an alternating pattern. Then check if that number is divisible by 11. 913 (+9-1+3= 11) yes. 3729 (+3−7+2−9= −11) Yes. What about 978 and 53?

8. Which of the following numbers are divisible by 11? a)2 547 039 b)10 604 c)31 415 d)292 215. Show your working so that you can prove your answers. Write some of your own examples.

9. How are multiples of 11 related to multiples of 8? Are there any numbers that are a multiple of 8 AND 11? Explain your thinking.

10. Identify numbers divisible by 8 or 11. Which method will you use? a)3 624 b)2 728 c)28 182 d)7 120 What do you think about multiples of 12? How could this be related to other multiples?

Subject: Maths
Year group: Primary 6
Unit 2: Measurement

Week 9

1. When we need to measure small lengths, we use millimetres, mm. What can you see that is shorter than 1cm or 10mm?

2. We can also use mm to provide very accurate measurements. What situations can you think of that would require this precision?

3. How many mm is there in one metre (1m)? Can you show 1m by taking a step? How about 1com or 1mm? How many cm in 3m? How many m in 4000mm?

4. Create some problems like the ones you were given yesterday. You need to be good at x and ÷ by 10,100 and 1000! What can you say about place value?

5. 5.2m is 520cm. 5.02m is…? Place value is important. What about these: 4.27m is? cm. 42.7m is? cm. Create some of your own statements like these.

Week 10

6. When we switch between cm and m or mm and cm, we are converting units. Can you measure your textbook in cm and mm? How about your pencil?

7. Estimate these lengths…which unit will you use?? A car door, a fork, the nearest tree, across the river, your fingernail and the road to the next village.

8. A circle is a 2-dimensional shape made by drawing a curve that is always the same distance from a center. What circles can you see? How wide are they?

9. The radius is defined as the distance between the centre of the circle and a point on the circle curve. How is this different to the 'width'?

10. We call the full width of the circle, the diameter. If the diameter is 36cm, what is the radius? If the radius is 23cm, what is the diameter?

Subject: Maths
Year group: Primary 7
Unit 1: Numbers

Week 3

1. What can you remember about proportion? Think about how many days it has rained this month or how many people in your class have blue eyes.

2. Thinking further about proportion, how many Litres of water do you use at hoe compared to school? How much water do you need to cook rice? More examples?

3. The Unitary Method: we calculate the value of a single unit before calculating the value of many. 1 drink costs 13SSP, 4 drinks cost 42SSP. More examples?

4. If 12 tins of beans weigh 48kg, how much does one tin weigh? How much do 4 tins weigh? How much would 20 tins weigh? More examples?

5. If 13 identical boxes weigh 117kg, how much would one box weigh? How much would 20 boxes weigh? Ore examples?

Week 4

6. Can you think of some more problems where using the Unitary Method is useful? What about at the market? Traveling a long journey or building a house?

7. We can relate proportion to percentage also. 100% means we have one whole. If we increase am amount by 50%, we add half to it. Other examples?

8. What would be your total if you increased 70 by 50%? How about increasing 70 by 100%? What other examples can you create using 50% and 25%?

9. Percentage increase: divide the difference between the original amount and the new amount by the original amount then multiply by 100. Examples?

10. There were 80 visitors yesterday and 120 today. What is the % increase? How would you calculate % decrease? Examples? Where are %'s used mostly?

Subject: Maths
Year group: Primary 7
Unit 3: Geometry

Week 10

1. What do you know about triangles and their properties? Draw 10 different triangles and explain how they are different. Angles? Symmetry? Length? Area?

2. Right angled triangles & Pythagoras Theorem. The square on the hypotenuse is equal to the sum of the squares on the other two sides. Draw these and make sure you have an accurate right angle.

3. Pythagoras: $a^2 + b^2 = c^2$ C is the longest side of the triangle, the hypotenuse. If we know the length of 2 sides, we can calculate the other. If a = 4 and b = 5, what is c? Can you write more examples?

4. Using Pythagoras theorem, can you find b if you know c and a? Can you find if you know c and b? Write some examples with a triangle to illustrate this.

5. If the longest side of a right-angled triangle is 13cm, what could the other sides measure? Can you remember how to use square roots? These are the inverse of square numbers. 4 is the square root of 16. 4 squared is 16. Other examples?

Week 11.

6. Check that you can remember how to calculate the lengths of sides in a right-angled triangle. Why is it useful to know about square roots too? Provide some 'True & False' examples to share.

7. A parallelogram has 4 sides. What is the difference between a square and a quadrilateral? A parallelogram has parallel opposite sides and equal opposite angles. It is not a slanting square though! Can you draw some?

8. Use your protractor if you have one to begin drawing a parallelogram with two angles of 60°. What length will you make the sides? Sketch another parallelogram with two sides that are 5cm long also.

9. How can you calculate the size of angles in a parallelogram if you know what one of them is? Explain your thinking using a diagram. How could you calculate the areas?

10. Thinking about triangles, how can you use what you know to draw and measure parallelograms. If a rhombus has 4 equal side lengths but no right angles, what can you say about it? Draw some to help you!

Subject: Maths
Year group: Primary 8
Unit 1: Number

Week 4

1. Can you express a decimal as a percentage? What would you say about 0.5 or 0.52? How does 0.6 compare to 0.06? What can you say about 0.91 and 0.19? What does 200% equal? How does this help your decimals? Provide some examples.

2. Can you express a percentage as a decimal? Is it just as straight forward? What does it mean to have 100% compared to 200% or 1% compared to 99%? Can you think of real-life examples? When would you use 5 and when would you choose to use decimals?

3. Which of these has the greatest value? 0.456 or 45%? 62% or 0.269? Create your own examples. Can you include more than 100%? How does that effect the decimal? Why is it useful to be able to divide by 100? Show your working.

4. If I needed double the amount of sugar for my cake, what percentage would that be? If needed half the amount of water in my drink, what percentage would that be? These are simple conversions. Create more complex, real life examples. Think about buildings, businesses and farming.

5. Create a 'Conversion Trio' to illustrate the relationship between percentages, fractions and decimals. This example is incorrect, can you explain why? 78% = 78/10 = 0.78. Create you own errors! Can you partner spot the mistake?

Week 5

6. In a closing-down sale a shop offers 50% off the original prices. What fraction is taken off the prices? If a dress was 160SSP originally, how much would it be now? What other bargains can you see??

7. Deng pays tax at the rate of 25% of his income. What fraction of Deng's income is this? Create some suggestions for his actual income and tax amount. What do you think about taxes?

8. Brian bought a cloth that was 1.75 metres long. How could this be written as a fraction? If he wanted to double this length or add 50% more, how much cloth would he get in each case? What price do you think each length would cost?

9. We have looked at %, decimals and fractions in real life. What would you say to younger learners about the importance of this aspect of mathematics? What examples would you share?

10. If yo were running your own business, which of these mathematical concepts do you think you would use the most? How would you check your work? Are there different types of business that would use different types of mathematics?

Subject: Maths
Year group: Primary 8
Unit 2: Measurement

Week 11.

1. What do you already know about calculating the area of a shape? What do you need to know? Why would you do this?

2. The area (A) is the amount of a surface covered by a boundary. The units we use are m^2, cm^2, km^2 and…what have we missed? Can you give some example areas?

3. To convert an area in cm to an area in m, what do you need to do? What about the opposite? Convert $0.075m_2$ to cm_2. You need to multiply 0.075 by 1000.

4. How do you calculate the area of a rectangle? What units would you use to calculate the area of a football pitch? What do you estimate that to be?

5. How would you calculate the area of your classroom floor? How do you think this compares to the school office floor?

Week 12

6. A farmer has a rectangular garden of length 800m & width 650m. Calculate the area of the garden on hectares. 1 Hectare = 10 000m²

7. A sports field has length of 65m and a width of 52m. What is the area of its playing surface? Is this big enough for a football game?

8. A piece of fabric has an area of 10.8m². What do you think the dimensions are? Is this enough to make a bedsheet?

9. How do you compare finding the area of a rectangle to finding the area of a square? Which is easier? What squares are around you? Area?

10. What is the area of a square with a perimeter measuring 25cm, 16cm and 81cm? How do you think we could calculate the area of a cube?

Subject: Maths
Year group: Secondary 1
Unit 2: Measurement

Week 5

1. The metric system is based on the kilogram and the metre. What can you say about cm, mm, g, Kg, cm and m? What about place value?

2. For each of the units described yesterday, present an example of something you would, and would not measure using that unit.

3. Often, we need to convert from one unit to another. Why might we need to do that? Create some examples to describe items at home.

4. The perimeter of a polygon is found by adding the lengths of all the sides. Describe the perimeter of something larger and smaller than your classroom.

5. Draw some irregular shapes and estimate then measure the perimeter. How close were you? Can you improve your estimate?

Week 6

6. Remember circles? Radius and circumference? To find the area of a circle we use this calculation, $A = \pi r^2$ where π = 3.14159. Create an example.

7. A circular lake has a radius of 2.5 m. Find the area of the lake. If the radius were double the length, how would this effect the area?

8. A goat is tied to a post by a rope 5.4 m long. What maximum area can the goat graze? If the rope was only 2.7m long, what would the grazing area be?

9. The circumference of a circle = π x diameter. If a bicycle wheel has a radius of 35cm, what is the circumference and size of the tyre needed?

10. Thinking about circles, area and perimeter, what other examples can you think of to apply these calculations to? Designer? Builder? Cook?

Subject: Maths
Year group: Secondary 1
Unit 2: Measurement

Week 11

1. What do you think the difference is between volume and capacity? One is about space and one is about liquid… Talk about where you have heard these terms.

2. We measure the amount of space (volume) taken up by 3d object using cubic units. How do you think this relates to areas? Give an example?

3. Find a box and measure/estimate the length, width and height of the box – it's dimensions. Multiply these together to find the volume. Another example?

4. Estimate the volume of a dice. What units do you need to use? Can you convert this to a larger unit? Does this conversion help you?

5. Thinking about circles, how would you find the volume of a cylinder? If this was a glass of water, you would be measuring capacity!

Week 12

6. Pyramid and cones have a flat base and an apex (point). To calculate the volume:
   V = 1/3 (base area x height) How does this compare to a cuboid?

7. If a square based pyramid is 7cm wide and has a height of 12cm, what is its volume? How does this compare to a cone with a radius of 7cm, 12cm tall?

8. What calculations could you make to show how to calculate the volume of a triangular based pyramid? What can you remember about triangles??

9. The volume of a sphere = $4/3\ \pi r^3$. Can you explain why this might be? Think about circles and proportion. What is the volume of a sphere, where r = 9?

10. Where might you need to calculate capacity carefully? What could be the consequences of errors? Where is volume more important?

Subject: Maths
Year group: Secondary 2
Unit 1: Numerical Concepts

Week 1

1. Different currencies have different value. The foreign exchange rate determines the value of one currency compared to another. What currencies do you know? Can you describe buying a can of coke in a number of different currencies or a small car?

2. What do you think determines the exchange rate? Is it fixed? Why do you think that? What can you say about the exchange rate in South Sudan over the last 5 years? How has this effected spending and daily life?

3. In June 2020, $1(US Dollar) was worth 130 SSP. If a visitor to S Sudan has $50, how much SSP do they have and what could they buy? How does this compare to what could be bought with $50 in 2015? More examples?

4. If a person living in Juba has 30 000 SSP, how many US dollars is that equivalent to approximately. Is this enough to buy a flight to Nairobi? How many SSP does a person need to buy a car for $5 500?

5. In June 2020, 100 SSP was worth £0.60. What is £1 worth in SSP? If a visitor to Juba spends the equivalent of £75, how many SSPs have they spent? What could they buy for this in the current climate? If the exchange rate goes up, so you have more SSP to £1, is that good for the economy? Why?

Week 2

6. In June 2020, 1 SSP is worth 0.8 Kenyan Shilling (KES). How many KES to 300 SSP? How many $ do you think that is and how many £? It is useful to be able to calculate exchange rates across these currencies. Why do you think that is? What about tourism in this context?

7. Create a money guide for visitors from the UK, Kenya and the US to help them understand costs and currency in South Sudan. Can you get some ideas from your local market and your local shops? What about travel? How much does that cost?

8. The dollar is described to be one of the strongest currencies in the world. Why do you think this is the case? What influences this strength? What are the consequences of currencies that fluctuate dramatically? What do we know about interest rates? How are these calculated and developed?

9. How much do you know about salaries in South Sudan? How do daily rates compare across industries and businesses? How do think these compare to jobs in Kenya or Uganda? Is there any advantage to working in Uganda? What effect does this have on the economy in S Sudan?

10. Create some currency checks for your partner. Can they convert £ to $ and SSP to £ and $ to SSP? Create some realistic problems about shopping for a family celebration or a journey to another part of the country.

Subject: Maths
Year group: Secondary 2
Unit 2: Geometric figures & Pythagoras Theorem

Week 6

1. Can you estimate the surface area of a box of tools? What units do you need to use and what calculations? What about a match box?

2. Surfaces are known as faces on 3d, solid shapes. How many different faces can you see on solid shapes around you? Which has the largest area?

3. How many 3D shapes can you name? Write an example calculation for each of them to describe their surface area. What properties do you need to know about?

4. What is the relationship between surface area and volume? When are each of these calculations used? In what circumstances for what reasons?

5. What is the difference between volume & capacity? Can you give an example of 2 different 3D shapes with the same capacity?

Week 7

6. Shapes have lines, vertices and faces. We can draw these on a 2D grid, a Cartesian plan or x(horizontal) and y(vertical) axis. Look for some examples of grids like this.

7. The origin is the intersection of the y and x axis. Perpendicular. We plot coordinates (x,y) to explain positioning. How far is (3,6) from (3,13)?

8. Plot coordinates for points of a square. How are these related? Draw a rectangle. What is the relationship between coordinates now?

9. Draw a triangle on the cartesian plain. Look at the diagonal lines. Can you draw 4 different triangles starting from the same first coordinate?

10. If we extend the x and y axis to negative numbers, we create a cross grid. Compare (4,5) to (-4,5) and (2,9) to (2,-9). Create more examples to check.

Subject: Maths
Year group: Secondary 3
Unit 2: Geometric figures & Pythagoras Theorem

Week 2

1. Logarithms: the number of times a base-number needs to be multiplied by itself to get a number you need. The log of 100 = 2. 10 x 10 is 100. Another example?

2. 2^3, = 8. 2 is the base and 3 is the exponent (or the power or logarithm.) Check you understanding. 4^3 =? 8^2 =? 6^3 =?

3. $2^3 = 8$ is known as the index notation while log2 8 = 3 is the logarithmic notation. log(10) is 1 (because 10_1 =10). Other examples?

4. How do logarithms relate to other areas of mathematics? Finding the volume? Finding surface areas? Provide some examples.

5. In general, if $a^2 = c$, then $\log_a c = b$. Can you create similar expressions? Think about science, especially Chemistry. Can you see any connections?

Week 3.

6. There are a number of rules known as the laws of logarithms. First Law: LogA + LogB = logAB. Create some examples to show this is true.

7. Second Law: logA – logB = log A/B. Create some examples to show this to be true. How does it compare to the first law?

8. Logarithms put numbers on a human-friendly scale. Instead of dealing with millions & trillions, we can talk about 10 to the power 6. Other examples?

9. How do think interest rates are related to logarithms? What can you find out about implicit growth rates? Logarithms are how we find how fast we are growing!

10. Logarithms keep things on a sensible scale! Decibels and Richter scales for example need to be flexible enough to cope! What do you know about these?

Subject: Maths
Year group: Secondary 3
Unit 2: Measurement and Geometry

Week 7

1. There are a number of reasons to estimate and approximate answers in mathematics. They guide our calculations and help us to check that our answers make sense and are reasonable. Can you estimate the time it will take you to walk home? The weight of your bike? The total capacity of the cups in your classroom? Your estimates are likely to be whole numbers.

2. We can round numbers to help us approximate. 63 +87 = approximately 60 + 90. Why did 63 change to 60 rather than 70 and 87 change to 90 rather than 80? Use a number line to help you explain. Here we rounded to the nearest 10. What happens when you round to the nearest 100?

3. Place value is important when you are rounding. Can you write some rules for rounding up or down? And how about a rule for rounding to the nearest 100, 1 000 and 10 000? Can you give an example of when you would need to use each?

4. Round these numbers to nearest 10 and 100. 839, 284, 288, 931, 628, 991. Multiply each of these numbers by 10. Now round them all to the nearest 1 000. What do you notice?

5. We can apply principles of rounding to decimal places too. Then we talk about rounding to 1 decimal (4.78 become 4.8) place or 2 decimal places (8.731 becomes 8.73). Create some of your own examples. When might this be used? Think about weight and currency.

Week 8

6. Significant figures (s.f) also help us to approximate. The first non-zero digit, reading from the left to the right in a number, is the first significant figure. In 52 963 for example, 5 is the first significant figure. 2 is the second significant figure and so on. Another example?

7. The number 38 290 has 5 significant figures. How would your round this to 2 significant figures? Why might you do that? What about 38 999 to 2 significant figures but also to 3 significant figures. What do you think happens when we involve decimals?

8. How many significant figures does 38.987 have? Can you round this to 2 significant figures? What advantage might this have? Round these numbers to 3 significant figures: 65.321, 356.82, 3.8721, 37289.1, 36.555. Add two of these numbers together and then round to 2 significant figures. What do you notice?

9. Describe the value of the number 4 in each of these numbers: 458, 4580. 0.458, 43.98, 4.58. Put these numbers in ascending order also. If you round each number to 2 significant figures, does it make your ordering easier?

10. Think about visiting the market and the budget you have to buy your food for two day. Write a shopping list that shows both exact/accurate amounts and items rounded in a useful way.

Subject: Maths
Year group: Secondary 4
Unit 1: Complex Numbers

Week 3

1. Remember that complex numbers are numbers that consist of two parts — a real number and an imaginary number. Think of algebra. How might you simplify this example: (3 + 2i) + (4 − 4i). So. 3 + 4 = 7. 2i – 4i = -2i. the result is 7- 2i. Can you create a similar example?

2. Try these examples too of complex numbers. Remember to look for the patterns! (−4 + 7i) + (5 – 10i), (3 + 4i) − (6 – 10i). How do you think you could multiply complex numbers?

3. Use the calculations above but insert 'real' items into the values for i. Talk about where these types of calculations could be useful. Where do negative numbers most frequently occur for example? Think about banking.

4. Moving on to multiplication, we need to try and simplify complex numbers for us to make simple calculations. Brackets help us to organise our thinking. (8 + 2i) (6 – i) How could we simplify this? Remember to keep your items together.

5. Can you verify this calculation? $(1 - i)^2 = -2i$. Explain your thinking and then create a similar calculation.

Week 4

6. Use what you know about complex numbers to create a true and false quiz for another learner. Explain any errors and be ready to justify your answers!

7. Complex numbers can be used to solve quadratics for zeroes. The quadratic formula solves $ax^2 + bx + c = 0$ for the values of x. If the formula provides a negative in the square root, complex numbers can be used to simplify the zero. Can you create some examples?

8. Complex numbers are used in electronics and electromagnetism. A single complex number puts together two real quantities, making the numbers easier to work with. For example, in electronics, the state of a circuit element is defined by the voltage (V) and the current (I).

9. Multiply and express in the form of a complex number $a + b\ i$. (−5 + 3i) (− 4 + 8i). Can you create a similar complex number?

10. The complex number system is an algebraic extension of the ordinary real numbers by the imaginary number *i***.** If $i = \sqrt{-1}$. Can you write a short explanation of complex numbers for leaners who are approaching this topic for the first time?