|  |  |
| --- | --- |
| **Experiences and Outcomes (Bundled)** | |
| **MNU 2-03a** *Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others.*  **MNU 2-03b** *I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods.*  **MNU 2-07a** *I have investigated the everyday contexts in which simple fractions are used and can carry out the necessary calculations to solve related problems.*  **MNU 2-09a** *I can manage money, compare costs from different retailers and determine what I can afford to buy.*  **MNU 2-11b** *I can use the common units of measure, convert between units of the metric system and carry out calculations when solving problems.*  **MNU 2-11c** *I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object.*  **MNU 2-22a** *I can conduct simple experiments involving chance and communicate my predictions and findings using the vocabulary of probability*. | |
| **Learning Intentions (Broad to fit with Es and Os)** | **Success Criteria (created with children)** |
| 1. I can select the most appropriate strategy to solve a calculation; 2. I can work out addition and subtraction calculations using formal methods; 3. I can use a range of mental strategies for addition and subtraction for an extended range of numbers; 4. I can convert a fraction to a decimal fraction and can talk about the position and value of the digits; 5. I can explain what a percentage is and how it relates to fractions and decimals; 6. I can find a simple percentage of an amount using my knowledge of fractions; 7. I can compare deals and offers and talk about what represents best value; 8. I can measure lengths accurately using appropriate equipment; 9. I can use my measurements to calculate the perimeter and area of a variety of different squares and rectangles; 10. I can talk about how likely something is to happen, and can justify my choices; 11. I can order events on a simple probability scale. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assessment – Ongoing/Hinge Questions (Numbers indicate the Learning Intentions)** | | | **Assessment – Holistic Assessment for end of unit of work** |
| **1+2+3.** How are you going to solve this problem?  What operation will you require to use?  How do you know that this will work?  Can you prove to me that will work?  Are there any materials which could help you solve this problem? Could you act this out or draw a picture to help you?  Are there any words which might give you a clue to the operation to use?  Can you estimate what you think the answer roughly might be?  Read the problem again. Does your answer make sense?  Do you need to use any particular units?  Is the question about people, pounds, boxes, teams or something else?  **4+5+6.** There are 40 children in P5, 20 of them have shoe size 4. What percentage is this? How many different ways could you calculate the answer to this question? What is as a decimal fraction and as a percentage? Where do you see percentages used in everyday life? When would you need to be able to work out a percentage of something?  **7.** A tin of beans costs 60p and they are available on a ‘three for the price of two’ offer. How much does one tin cost in the offer? Would you buy the single tin of beans or thee for the price of two? Why? When might a ‘three for two’ offer not be useful to the buyer? What do reduce and reduction mean?  **8+9.** How many cms are there in 1.63m? How many mms? How did you work that out?  How do you find the perimeter of a compound shape?  How do you work out the perimeter of a rectangle if you know the area?  What do we need to consider when we try to solve a problem involving measure?  What maths will you use to solve this problem?  Does that answer make sense?  **10+11.** How could a very good chance be described in numbers? How else?  What is the chance of throwing a 7 with this dice? What about an even number? What about zero? How do you know?  Who uses the idea of chance in real life? Anyone else? | | | In preparation for the school show you need to paint the box below to create a prop. It will need 2 coats of paint. How much paint is needed to paint the box? Explain how you worked out how much paint is needed.    1.6 metres  The paint is currently on sale in 2 different shops. In both shops 1l of paint will cover The following offers are available:  PAINT WORLD – 2l tins - £5 – 30% off  PAINT LAND – 3l tins - £8 – buy one get one free  Which shop would you buy your paint from and why?  The prop is going to be used as a dice for a giant in the show. In order for the giant to be released from the cage he needs to roll a 5. Predict how likely it is that he will be released within 10 rolls of the dice? How can you investigate your prediction? |
| **Planned Activities** | **Evaluation and Reporting (Against LIs and Success Criteria)** | **Next Steps** | |
| **SAY**  **1+2+3**. ADDITION - Ask a child to call out any 3-digit number and write it on the board. Now choose another child to say a 2- or 3-digit number and write this on the board. All children add the numbers on their mini-whiteboards using column addition. Keep the original number but choose another child to say a new 2-digit number and repeat. Extend to include more than two numbers if appropriate.  SUBTRACTION – Number Talks – Subtraction using removal – pages 215/216.  MULTIPLICATION - Number Talks - Breaking Factors into Smaller Factors, page 285 of Number Talks resource.  DIVISION – Number Talks – Partial Quotients, page 291/292  **4+5+6.** Call out a decimal and have the class answer with the equivalent percentage. Try giving some simple fractions for children to answer with the equivalent percentage or vice versa. Children can then work as a pair and take turns to answer each other.  **7.** On the board write: **a** double, then divide by 3 **b** half the price **c** quarter the price and subtract. Children discuss with a partner which of the calculations they would use to work out the cost of one item when offered the following deals: **1** 50% off **2** three for the price of two **3** 25% off **4** buy one get one free.  **8+9.** On the board write a measurement or a word relating to measurement. Children work in small groups and make up as many questions as they can with this as the answer e.g. 10cm – What is double 5cm? What is one tenth of a metre? How else can you write 0.1m?  **10+11. How likely?** Draw a 0–1 probability scale on the board. Read out some statements and give each a letter. Tell children to discuss in pairs where on the scale the statement would go. Read out these statements: A I will cycle to school tomorrow. B I play on the computer. C I go to swimming training lessons. D I go to the cinema on a Saturday. E I will see an elephant on the way home.  After each statement, ask different pairs to write the letter on a sticky note and to stick it in position on the scale. Discuss the results. Extend by asking children to think of a statement of their own and where that would be placed. |  |  | |
| **WRITE**  **1+2+3.** Children to work in co-operative learning groups of 4 to produce a “How To” guide for each of the four number operations, that can be used by pupils in lower classes.  **4+5+6.** Write some percentages on the board, e.g. 50%, 20%, 10% and 20%. These are the result of a survey of children’s favourite sports. 50% football, 20% hockey, 10% running, 20% basketball. Give the class different total numbers of children in the survey and ask them to work out how many voted for which sport each and present their findings to the class, explaining how they worked out each answer.  Children to complete Chapter 12 of Teejay Maths Textbook 2a – pages 107-111 and/or Chapter 12 of Teejay Maths Textbook 2b – pages 124/125  **7.** Give children some examples of deals and offers (e.g. juice 70p but half price; six-pack of sweets at £1·80; 50p crisps available using BOGOF, etc.). Working individually, children work out the price of one of each of the items and put them in order from cheapest to most expensive. Discuss the order they created and the strategies they used. Ask them to make their own examples of different deals for several items for others to work out and order.  **8+9.** Write one or more measurements/measurement words on the board. Children work in pairs or small groups and make up a word problem using the given words or measurements. Collate the examples together and children choose different ones to solve. They then share the solutions with the class, explaining the different steps they used to solve the problem.  Children could also solve some words problems e.g. Teejay Maths Textbook 2a – Chapter 13, pages 119, 120  **10+11.** Give sets of three words from this list (*chance, good chance, poor chance, rarely, often, impossible, improbable, highly unlikely, unlikely, even chance, likely, highly likely, possible, probable, certain, definite*) to pairs of children and ask them to make up three different sentences to show examples of when they might be used, for example, I **rarely** go to the zoo; We **often** go to the supermarket on a Saturday. After a few minutes, ask them to share their sentences with the rest of the class and for the class to put their thumbs up or down if they think each one has been used appropriately. |  |
| **MAKE**  **1+2+3.** SUBTRACTION - Children use a set of 0–9 number cards to create a 4-digit number and a 3-digit number. They subtract the smaller number from the larger and investigate subtractions that have an answer close to 2000, 3000, 4000, 5000, etc. They display these subtractions for their peers.  **4+5+6.** Adverts often use percentages to sell products. Find examples of this or ask children to gather examples as a homework task. The advert might say 80% of people said they preferred conditioner X and in the corner of the screen it says the number of people asked. Children can create a display showing the examples and calculations to prove what is being claimed. You could set questions based on these, e.g. **This advert says they asked 240 people and 96 preferred margarine. What percentage should their advert say?** Children work this out and then reveal the advertised percentage. Discuss how this can be used to mislead people too.  **7.** Challenge children to make up a board game to help them practise the skills of finding price reductions. The game board should have a number track that goes around an imaginary shop with different goods drawn on it, for example, tins of soup or beans, cereal boxes, household goods. Their track could start at the entrance to the shop and finish at the checkout. Then they make up some question cards with a picture of an item, a price written beside it and an offer (e.g. buy one get one free, three for the price of two, three for £10, 25% off, etc.). They could also make up and record a set of rules, such as: Start at number 1. Roll the dice and move that number of spaces along the track. If you land on an even number take a question card and work out how much the item costs with the offer. If you answer correctly pick up a counter. The winner is the player with the most counters at the checkout. They play their game with some friends, and amend any aspects of the game as needed.  **8+9.** Ask the children to work in groups and make up some multiple choice questions they could ask in a class survey, e.g. eye colour, favourite sport, shoe size, favourite day of the week. They take turns to come out to the front and ask the class to vote on each option, recording their answers. Then they work as a group to turn these into percentages of the overall number of children in the class, using a calculator if necessary. Children could display their findings as a poster. If possible they could collect data from other classes too. You could make up a survey, which they have to take home and ask members of their family and then analyse the numbers back in class.  **10+11. Making spinners** (pair of compasses, paper, card). Give children different statements and ask them to create a spinner to match these odds. For example, “Create a spinner where you have a 1 in 4 chance of spinning an even number.” They work in pairs to create the spinners and then record 20 test spins to see what happens. |  |
| **DO**  **1+2+3.** Children to complete several examples of word problems, choosing the correct operation each time, and peer assessing with each other to justify their choices **i.e. Teejay Maths Book 2a, Chapter 1, pgs 10 and 26.**  Make some cards showing the operation symbols. Children randomly choose two cards and write a word problem using these operations. They swap and solve each other’s problems, explaining which operations they used and how they knew which operations to use.  **4+5+6.** Give children a number of patterns made of shaded and unshaded squares. They must then work out the percentages of shaded and unshaded squares. They can then write these as fractions and decimal fractions. The opposite can also be done – give children a percentage and they must then work out how may squares are shaded out of a given total and draw the corresponding patterns.  **7.** On the board write: **\_\_\_ pack for £\_\_\_\_.** Write in different numbers to represent the price of a multi-pack of an item. Working in pairs or individually, children work out the price of one item. They show their answer on their whiteboards and discuss the strategies used to work it out. Children could make up their own examples for the others to solve.  **8+9**. Give children an assortment of straight lines to measure. First they must estimate the length and then measure accurately to see how close their estimate was. Next they convert each of their answers into mm, cm or m, so that they have 3 answers for each line.  In groups of 3 – 4 each child draws some squares and rectangles on cm² paper. Combine them to make a compound shape, and draw around the outline on blank paper, creating 3 compound shapes this way. Swap their compound shapes with other groups and then work together to work out the area for each sections of their compound shape, and the total area as well. They can then display all the shapes that make up the compound shape in order of area – smallest to largest. The same can be done for the perimeter.  **10+11. Coloured cubes (1 blue, 3 red, 6 black), bag, paper or mini-whiteboards**  Show the cubes, ask children to count how many there are of each colour and list this on the board. Draw another probability scale with 0, and 1 marked. Put the cubes in the bag. Explain that you will take one out randomly but before you do, you want children to decide the probability of picking a blue cube/red cube/ black cube. Ask them to draw their own scale on plain paper or on their whiteboards and to work with a partner to write the colours in the appropriate places. They should also write the fraction (and percentage if they can) for each position. Ask them also to show the likelihood of pulling out a green cube. After they have done this, take feedback. Invite children to come to the board and to write on the scale where they think the colours would go, and to write the fraction and percentage: green 0; blue, 10%; red , 30%; black or, 60%. Of the colours in the bag, which colour cube is most likely to be pulled out? Which is least likely? Establish that they are black and blue cubes, respectively. Pull out 10 cubes one at a time, replacing them each time, and see if you pull out one blue, three red and six black. If you don’t, use this as an opportunity to discuss the idea that a probability scale only shows the likelihood of something happening (based on the numbers of things involved) – it can’t say what will actually happen. |  |