MENTAL MATHS & PROBLEM SOLVING

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October-December

Unit Mental Maths & Problem Solving	
Lesson 1	**Timing** 1 hour
	Resources
Introduction Ask the pupils: *T: Are numbers important? Where can you see numbers around?* Write examples of numbers on the board; telephone number, a number of grams, capacity or money, number plate, code of a mobile, area, percentage. Explain to the pupils that numbers are in our everyday lives.	
Activity 1 "Bounding Numbers" Show PPT1 SD 1/ 2. Ask the children for the complement number. Make use of a number line drawn on the board if needed. Show them the rest of slides. Children answer individually on their whiteboards. Review polygons. Show SD 12. Children write answers for the complement number on their whiteboards	Whiteboards PTT1
Activity 2 "Patterns everywhere!" Show images with examples of sequences from real life and ask them questions about them: *What can you see here? Have you ever seen these images around you? What repetition/ pattern do you see from these images? Can you see any pattern on the class? What about your everyday life?* ***(SD 1/2)*** *Which patterns can you see in the nature? (seasons, birds emigrating the same months, talk about the effects of pollution in nature patterns, like temperature…)* Use those examples to explain the meaning of "pattern". Play song 1 and ask the children to click their fingers following the rhythm. Write numbers representing the sequences on the board if needed and ask them to find a sequence. Play song 1 and ask the pupils to identify a musical pattern. Draw some visual sequences on the board and ask the pupils to predict the next term: α β β α β β β α β β β ___ Show PPT2 SD 3/4/5/6 and ask them to <u>recognise</u> a possible pattern. Let the children think about every question given. Ask them to describe them ***(You can project or write the frame L.S 1 on the board)*** *T: What are the next three numbers? What about the tenth number?* *T: What do you notice about negative numbers when you count backwards?*	Any song with strong rhythm PTT2 L.S 1
Activity 3 "What comes next?" Display worksheets 1,2,3 on a table. Let the pupils choose one according to their needs. Ask them to start the activities. As soon as they show they understand the sequences, ask them to do the rest as homework. Pupils should express the rule in numerical terms ***(L.S 1).*** Ask the pupils to explain the patterns they observed (pay attention on the units, tens and hundreds)	PTT2 (SD 5) WS 1, 2, 3 L.S 1

Unit Mental Maths & Problem Solving	
Lesson 2	**Timing:** 1 hour
	Resources
Activity 4 " Warming up symbols and words" Write a problem on the board and ask the pupils: *which words may tell us what type of calculation to do? How do you decide it is a multiplication/ division/ addition or subtraction problem?* Get the children to group together the cards from the WS 4(cut out) that mean add, take away, times and share. Tell them to stick the cards on the WS 5 .Once they finish, correct it by showing and explaining the mind map of the four calculations PTT3. It will be used as a wall reference chart **Challenge!** Give pupils the "Symbol tree" Tell them that they will need to look at that tree in order to solve some problems. Write on the board: *Right* ⇨ *addition* *Left* ⇨ *subtraction* Give them an example. Tell them: "*We start on the cube that says "start".* Then, I 'm going to read a problem and you decide if you have to use addition or subtraction to solve it. Do you go to the right or to the left? (point to letter B) Now we are in letter B. I 'm going to read another problem and you decide if you have to use subtraction or addition to solve it. Do you go to the right or to the left?" (Keep on with) Give pupils some more examples until they understand how it works. Give the pupils WS 5.2. Ask them to cut it along the lines (one worksheet for two pupils). Tell them they will listen to (maximum) 16 problems and they decide on the operation they need to solve them. Then, they look at WS 5.3 and they decide to go right or left according to the operation they need for the problem. Each set has 4 rectangles where they draw pictures to represent the operation they used to solve the problem. Combine the problems. These are some examples: (+) • *You are having a barbeque with some friends. You have sausages which weighs 500g and hamburgers which weighs 350g* *But how many sausages and how many hamburgers do they have?* • *Your computer and play station are broken and you 'd like to buy new ones. The computer costs 600 € and the play station 300 €* • *How much money will you need to buy them? You add up the text messages you have sent in the last 2 months. January 21, February 12 and March 30. How many text messages you have you sent?* • *You count up how many stamps you have earned in the last 3 games. 15 stamps yesterday and 10 stamps today. How many stamps do you have?* (-)	WS 4/ 4.1 WS5 PPT3

- *You buy two bags of shopping at the supermarket. Bag 1 weighs 1000 g. and bag 2 weighs 75 g. How much heavier is bag 1?*
- *You save some money to pay for your new DVD. You have 30 and the DVD costs 25. How much do you have left?*
- *You are choosing a new mobil phone. Phone A costs 112 € and phone B costs 97 €. How much money do you save if you buy phone B?*
- *You are using some sugar to make some cakes. You had 500 g and you use 430 g. How much flour do you have left?*
- *A jar holds 50 sweets. You eat 23, how many sweets are left in the jar?*

(×)

- *You buy 4 CDs for your collection. The cost of 1 is 20 € How much do 4 cost?*
- *In each box there are 6 eggs. How many in 6 boxes of eggs?*
- *You work out how many calls you've made. Calls per week 11. How many calls did you make in 8 weeks?*
- *You work out how many litres of water you drink in 6 days. You drink 4 litres per day*

(÷)

- *There are 28 monkeys in a zoo and 4 cages. How many monkeys in each cage?*
- *You want to buy some DVDs. You have 28 €. How many can you buy if each costs 7 €?*
- *You and a friend buy some sweets and share the cost. The sweets are 48 €. How much will each of you pay?*
- *You work out how much you spend on train journeys over 5 days. Total cost 35 €. How much did you each pay per day?*

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<tr><td>Lesson 3</td><td>Timing 1 hour</td></tr>
<tr><td></td><td>Resources</td></tr>
<tr><td>Activity 5 “Domino number bonds””

Give a card to each child or one for each pair. The teacher reads the question on her card. Then, the pupil with the number bond she is looking for reads his/ her card and his/ her question. The turn, then, passes player to player.</td><td>Game 1</td></tr>
<tr><td>Activity 6 “Digit cards”

Show the flash player “Moving_digits” to explain how to divide and multiply a number by 10/100 using digit cards. In groups of two, ask the pupils to answer the following questions:
T: Tell me a quick way of multiplying a number by 10/ 100
T: What happens to the digits?
T: Tell me how many groups of 55s are there in 5500? How do you know?
T: How many are there in 100 groups of 6?
Ask children what pattern they can see. Examine symmetry and point out use of zeros as place value holders.
Draw a place value mat:
<table><tr><td>Th</td><td>H</td><td>T</td><td>U</td></tr><tr><td></td><td>3</td><td>8</td><td>2</td></tr><tr><td>3</td><td>8</td><td>2</td><td>0</td></tr></table>.</td><td>Flashplayer “moving digits” from http://nationalstrategies.standards.dcsf.gov.uk/node/47770
Crown Copyright

Also download from the Complementary Resources</td></tr>
<tr><td>Activity 7 “ Divide and multiply by 10/100”

Give whiteboards and markers. Pupils look at different calculations from the web about multiplying and dividing numbers by 10 and 100. They answer individually. Discuss any problem they may need. Ask the pupils how they got the answer. Include decimals. (L.S 2)

http://www.bbc.co.uk/skillswise/numbers/wholenumbers/multiplication/multiply10and100/worksheet.shtm</td><td>WEB Page
Whiteboards
L.S 2</td></tr>
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Unit Mental Maths & Problem Solving	
Lesson 4	**Timing** 1 hour
	Resources
Recall how to divide and multiply by 10/100 by doing some exercises from the last day: http://www.bbc.co.uk/skillswise/numbers/wholenumbers/multiplication/multiply10and100/worksheet.shtm	
Activity 8 "Do it in one minute!" Hand out worksheets, pupils chose one of the models and have one minute to complete as much as possible. Show the answers. Pupils then mark their own work. Get the answers from the pupils. Discuss any problems they may have. (They can repeat it again and then they are expected to get more next tie). If not, they can finish it for homework. Differentiation is by outcome as the 2 worksheets incorporate different levels.	WS 6/ 6.1
Activity 9 "Amazing Animals!!" Put the pupils into groups of 3 maximum. They play in turns. Show the PTT 4 "Amazing animals!!" Tell the pupils "*You are going to do a quiz"* They choose a speaker for the group. Group 1 chooses a photograph with an interesting question. 1. ask learners to predict the answers to the facts while they are on the screen, do one example as a whole class then present each problem one by one so the pupils can calculate them at their own speed. Use the slides to check the answers with the whole class. 2. ask learners to predict the answers to the facts while they are on the screen, do one example as a whole class on the board then teachers hand out cards with the problems on them so individuals or small groups can do them at their own speed. Use the slides to check the answers with the whole class. In order to find the answer, they work another problem out. As a plenary, ask how they got the answers. (**L.S. 3)**	Sand clock PPT 4 L.S 2

Unit Mental Maths & Problem Solving	
Lesson 5 **Timing** 1 hour	
	Resources
Activity 10 "Help Molly!" Pupils (individually or in groups) using a computer try to help Molly cross the valley by jumping over to the next term in the sequence.	http://www.bbc.co.uk/schools/ks1bitesize/numeracy/sequences/index.shtml
Activity 11 "Bonds Wheel" Display a wheel for each pupil. They spin the centre wheel until all the solutions revealed are correct (in pairs) Encourage them to be the first!	Game 2
Activity 12 "Throw the dice!" Chose one colour counter and throw the dice. If you, for example, throw "2" and "4" you can either use "24" or "42" Subtract your number from 200 and look for that complement number on the board. Put one counter on the number. If the answer has already gone, you will miss a go! **Less able** pupils can chose different tables with different difficulty	Game 3
Activity 13 " Role-play" Ask the pupils to look for the prizes of the products they will use in the role-play in internet. Set up your classroom to represent a street, with each table being a shop if possible (there are four shops: bakery, butchery, department store and fruit shop). Hand out the cards and take turns to be the shop keeper and the customers. Each shop has also a pack of money and a money table WS 4.3. Ask the learners who own a shop to prepare a card saying what shop they own. Start the role-play. Each customer goes to the shops he/ she want. Then, throw the dice. The first dice shows the number to choose from the horizontal axis. The second dice shows the number to look at the vertical axis. Then, ask the pupils to look at the coordinates and that is the money they can spend on that shop. Monitor the activity for testing and solve problems, which you can feedback afterwards. Try not to intervene too much. Some prices are given in Kg. Pupils will multiply. **Less able** pupils: use interactive game for practising some money problem	Game 4.1/2/3/4 L.S 3 Dice (2)

http://www.primaryresources.co.uk/online/money1.swf http://www.teachingmoney.co.uk/eurosite/wb/CLASSchangeEURO.html http://www.teachingmoney.co.uk/eurosite/wb/crazycafeEURO.html http://www.teachingmoney.co.uk/eurosite/games/picknmixEURO.html	

Unit Mental Maths & Problem Solving	
Lesson 6	**Timing** 1hour
	Resources
Activity 14 "Adjusting" Show the PPT 5 and ask the questions shown. Write possible answers on the board. (SD 1,2,3 and 4) P: *I can add 571 + 30 and then plus 5 (addition)* *I can add the units first and then the tens (partitioning)* Explain that when subtracting numbers like 29, 28, 27 pupils can subtract to the nearest ten (-30) and then adjusting by adding +1, + 2, +3 (SD 5) Ask a pupil to interpret the calculation using a number line Show SD 5 and demand the pupils to answers the questions. Write possible answers on the blackboard P*: I can subtract 606 – 30 and then minus 5* *I can subtract the units first and the tens (partitioning)* Pupils answer the calculations on the last slide using whiteboards. As plenary, ask them to explain the method they used to do the calculation (L.S 5)	PPT5 L.S 4
Activity 15 "Number Chain" Ask the pupils (one by one) to clap his/her hands three times and say a number. Ask to put their hands up to those who said odd numbers or even numbers (give some examples if needed). *T: "Did you say **more** **even** or **odd** numbers?"* Write the result on the board. *T: "Those who said an even number must add 29. Those who chose an odd number will subtract 11"* Start saying a 3 digit number.	

Unit Mental Maths & Problem Solving	
Lesson 7	**Timing**1 hour
Activity 16 "Real life problems" Pupils practice "*Read, plan, work and check*" strategy for problem solving. Show the problems of addition and subtraction from the BBC Web. Use the section B without answers. Help pupils identify key words of the problems. Write the sentences on the board: *P: "I think the result is….", or "I am sure the result is…"* Pupils answer on the whiteboards and explain the operation they used to solve it. Ask the pupils how they can check if the answer is right (introducing the term *inverse operation)* When subtracting, reinforce the questions where the inverse operation is needed: "*How many left?" "How many do you need?" and "How many do you owe?"* Introduce the need of inverse operation for solving "missing information".	www.bbc.cuk/ skillswise/
Activity 17 " Inverse operation" To end the lesson, show the pupils PPT 6 about the uses of inverse operations. They will write the answers of SD 2 and 3 on their whiteboards. Make the example of the first one. After that, ask them: *T: Can you think on a money problem where you need to use inverse operation to solve it?* Show them previous examples of problems involving inverse operation to solve them (in pairs)	PPT6 whiteboards

Unit Mental Maths & Problem Solving	
Lesson 8	**Timing** 1 hour
	Resources
Activity 18 " Reordering numbers" Write on the board the following numbers inside a big circle and let the pupils think on the answer: *500 + 700 + 400 + 600 + 300 + 500 + 200 + 100 + 800 + 900* *T: "What is the result of this addition?"* *"How would you add these numbers quickly?"* Explain pupils the quickest way of doing it by adding those numbers which totals multiples of 100. *500 + 700 + 400 + 600 + 300 + 500 + 200 + 100 + 800 + 900* Use arrows to show number pairs	
Activity 19 "Task: going on holidays!" (Cross-curricular link to Geography) Project PPT 7 and show SD 1. *T: "What country is this, Where are we? Do you like travelling? Let's plan a trip…"* Put the children in groups of (maximum) 4. Ask: *T: "Who has visited these communities? This one is…* (point at them and ask the pupils to identify each one) T:"What can you see in…?" Ask the pupils to predict any feature from each community. After that, show them pictures of each community and write vocabulary needed. Finally, they chose one to travel to. *T: What transport would you chose? Is it the only option?* Hand out WS 7 according to the pupils' community of interest and tell them to interpret what they see. *T: Imagine you can go using 2 types of transport, What options are there to choose from? What problems should you try to avoid? (ex. repeating the same transport)* *What is the answer of the problem? Are there many? What did the diagram look like?* When they finish, ask them to report all the possible combinations. Write on the board: *P: I can go by (transport) and by (transport)to (name of the city)* Ask the pupils what else they need when travelling. *T: What would you put in your suitcase?* In groups of 3-4, hand out game 6 and WS 8. Pupils complete the table by reading the clues. Ask pupils to use the rectangles on each suitcase for writing the grams and calculation the total of weight. Finally, they explain which suitcase would they choose for travelling if they could choose and why. **Answers: Luke ⟹ D, C, J, K, Q, R** **Paul ⟹ E, F, L, M, N, P** **Sara ⟹ G, H, O, A, B, I**	PPT 7 L.S 5 WS 7.1/7.2/7.3/7.4/ 7.5/7.6/7.7 "travel suitcase" cards and WS 8

Unit Mental Maths & Problem Solving	
Lesson 9	**Timing** 1 hour
	Resources
Activity 20 "Beehive" Write: ***Adjusting (+) Inverse operation (-), Adjusting (–) Adding several numbers and Inverse operation(+)*** on different pieces of paper. Copy some of the calculations shown on the worksheet on the board. Put pupils in groups of four and give each group one of the pieces of paper with a mental strategy on it. Tell pupils to decide which operations are associated with the mental strategy in the group they have. After some minutes ask the groups to share ideas with the rest of the class. Give out the game worksheet. Give each pupil a number 1-2-3 and the fourth one plays the role of the teacher. Tell the pupils that they must cross the board, moving from hexagon to hexagon. The first one to cross into the castle is the winner. Show them how to play. Throw the dice. Say the number (e.g 5) as *What is it?* Explain that this means they have to move the counter to a hexagon with the mental strategy: "*Inverse Operation (-)".* If they do it wrong, they miss a turn. Tell them that two pupils can not be on the same hexagon. If they can't play, they wait until the others have had a turn. The pupil who is the teacher, makes sure everyone speaks English and writes any calculations the pupils don't know on a piece of paper. They take turns to be the teacher. When the game is finished, write on the board those calculations the pupils didn't know.	Game 5
Activity 21 "Balance" Put pupils in groups of four and give them a balance. Explain how a balance works and how to use the weights. Ask the pupils to weigh two objects (a piece of cork and a ball of iron). A third pupil plays the role of teacher and makes sure everyone uses English. They place one object on the pan and predict which one is heavier, report what they observed and write the conclusions. Give them the worksheet, where they will predict, observe and report their experiment.	Balance WS9 L.S 6
Activity 22 "Who's got…?" Put the pupils into groups of five. Pupil 4's role is to check that the group only speaks English and puts the cards in the correct order. Display 4 cards each and put 4 face down on the table. The pupil with the card "Start here" puts his/her card face up on the table and reads: *T: "I have got 139. Who has got 29 more?* Then, the pupil who has the solution says it and reads the following question *P: "I have got 159. Who has got…?* They take turns from player to player but if someone can not make a move he/ she must take another card from the table. If they still can not go, he/ she must miss a turn. The winner is the first pupil with no cards left.	Game 6

Less able children can have the number sentence written next to their cards.	
Activity 23 "x/ ÷ 10, 100 domino" The cards are shuffled and then all turned face-down on the table. The players decide who has the first move and then place the first card on the table. (As the turn passes) They take turns from player to player but if someone can not make a move he/ she must take another card from the table. If they still can not go, he/ she must miss a turn. A game ends when a player plays all his cards. (Max. 4 pupils)	Game 7

Unit Mental Maths & Problem Solving	
Lesson 10	**Timing** 1 hour
	Resources
Activity 24 "Partitioning" (Whole group) Show SD 1 and 2. Tell pupils they are going to learn a new mental method for adding and subtracting 3 digit numbers: partitioning. Show SD 1 and stop after showing the question. Recall understanding of place value by giving them the example. Show SD2. Explain the visual and the way of splitting a number into hundreds, tens and units in order to subtract or add it to another one (SD 3). Finally, explain when subtracting more difficult operations (DS 4 and 5)In SD 5 ask the pupils if there are any more blocks to cross out in order to subtract the correct amount from the operation (527-348) and use the computer to cross out the blocks	PPT 8
Activity 25 "Do it before it disappears" Individually and using their whiteboards, pupils try to answer some mental calculations shown on the board before they disappear. Go quite slowly so the learners have time to do the calculation. ***Less able pupils***: put the students in pairs. Tell them to cut out the base 10 blocks from the second worksheet. Ask them to represent each addition and subtraction on WS 10 by using base 10 blocks on the table. They do letters a), b) and c) in order. Go around the class to check their understanding of place value of each digit.	Whiteboards PPT8 (SD4) WS 10
Activity 26 "Task: looking for a hotel" *T: "Do you remember your holiday destination?* Split the class into groups according to those made in activity 18. Pupils do a role play. In each group and in turns: • one pupil takes the role of the teacher • another pupil the role of customer who is going on holidays • the other pupil is the travel agent. Display the travelling catalogues according to the pupils' destinations and help them with a possible dialogue to follow (Game 8). Agree on an amount of money to spend. Ask the pupils to ask the travel agent for the services they want. They suggest the best accommodation by estimating according to the money they have. Then they decide how many days they will stay in each place. Tell them to use trial-and-improvement methods to work out the best combination. The customer can write the information given on the board (WS11) when needed. *T: What sort of room, services and food can you have for no more than … euros?* *What are the answers to this problem? What different ways can you show to make the same amount?* Explain that a shared bathroom and shared room means that other people they do not know will use it as well!!	Travelling catalogs of Spanish provinces or see Game 8 WS11

Unit Mental Maths & Problem Solving	
Lesson 11	**Timing** 1 hour
	Resources
Activity 27 "Maths through Music" Whole group. Recall sequences from lesson 1 activity2. *Today we are going to work with the sequences using music. Do you think music follows any pattern?* • *3_6_9_12 (+3)* Tell pupils to listen to the music to recall what they did in lesson 1. Stop the music then ask which rhythms they heard. Play the music again to check their ideas. Draw the sequence 3, _____, 9, _____ on the board then ask them to listen once again and to count the notes so they can complete the sequence. *How many notes will be played for the next number in the sequence?* • 1_2_3_4_5_6_7_8 Do the same but playing the music *escaladelcroze* and drawing the sequence 1, ___,___, ___,___,___,___8	Music 3_6_9 And *escala del croze* (song) by Cristina Bota
Activity 28 "Three in a row" Groups of three. Throw the dice. If the number you get is odd, locate the word "odd" where you prefer, so that you can arrange 3 in a row. The first player who gets three in a row wins. The third pupil takes the role of teacher and checks everyone speaks English. They all take turns to be the teacher	Game 9
Activity 29 "Music Code!" Group work **Multiple numbers**: tell pupils to listen to the music. Stop it and then ask if they heard any rhythms. Play again to check their ideas. Draw the sequence: 2,_____,8 on the board then ask them to listen once again and to count the notes so they can complete the sequence. *How many notes will be played for the next number in the sequence? Will 12 be in the sequence?* **Odd/Even numbers:** play the second piece of music and ask pupils what kind of notes heard? Elicit high and low. Tell the pupils to listen to the music and identify <u>high and low</u> notes by putting their hands up: *Put your right hand up when you listen to a <u>high notes</u> and your left hand when the note is <u>low.</u>* Play the music and check their response. Ask them how many beats they can count in the music (15). Tell them to look at the first number sequence on their worksheet *How many numbers are there?* Explain they are going to listen again and they have to write "H" (high note) or "L" (low note) next to each number. Play the music. Ask them: *Do the high notes represent odd or even numbers?* After that, tell them to look at the sequence underneath and explain they are going to listen again. This time they have to write a number in time to	Music: multiples and odd/even notes By Cristina Bota WS 12

the music. Play it once more so they can finish it or check it. Check which numbers they wrote and put the whole sequence on the board. Pupils listen to the music once more and this time they decide what kind of numbers the high notes and low notes represent. (high = even and low= odd). Pupils look at the sequence and find a pattern for the unit digits. Ask them what the next two numbers are. What are the next 2 numbers in the sequence? Will 100 be in the sequence?	

Unit Mental Maths & Problem Solving	
Lesson 12	**Timing** 1 hour
	Resources
Activity 30 "Sequences through Geometry" Individually. Give out WS14 and ask the pupils to continue these sequences by drawing and writing the appropriate numbers. Recall by writing some examples on the board all kind of sequences studied last day.	WS13 WS 14
Activity 31 "Task: the tour" Brainstorm: ask the pupils to pay attention to the words you say: *January, February, Marc…What are these words?* Now listen*: January, February, March, April, June...* Skip some months of the years Split the pupils in groups (the ones from activity 18). You are on holiday and you want to go cycling, but there is a problem: all of you have to share the bikes with your brothers and sisters, so you have different days to go riding. Explain to the pupils they are going to find out the dates for their bikes to coincide. Follow the instructions and act it out using counters (pictures) of the bikes in order to solve the problem. Give each pair in each group a calendar and the instructions. *How should you record the dates on which A, B and C cycle?* *What pattern of dates can you see?* *How did you find the answer? How can you prove that you are correct?* Less able children: support pupils by starting the challenge off on the first day of a month so that they can see the mathematical pattern clearly. They can use common factors as well. More confident: explain how to solve the problem by looking for common factor. **Extension:** Repeat the same activity in a different context. Now a Scottish family is on holidays and they are renting a pedalo to go sailing in the lake. Unfortunately, pedalos for four people are very demanded, so it is hard for the family to sail together. Follow the same steps to work the problem.	WS 15 L.S 8 WS15.1

Unit Mental Maths & Problem Solving	
Lesson 13	**Timing** 1 hour
	Resources
Activity 32 "What is a multiple?" Write on the board: 2, 4, 8, __ *What's the next number?* Explain to the pupils the meaning of multiples: *the multiples of a number are simply its times table*. As some pupils the 7, 8, 9 times table. Put the numbers in the correct places on the Venn Diagram. Don't put them on top of each other. Find the multiples of number 3 and 2. *(Solution: common multiples are 6 and 10. Prime numbers out of the diagram are 0, 7 and 11)* ***Less able** pupils see video for 7, 8 and 9 times table:* ***http://www.youtube.com/watch?v=_hq4DbSJNTw&feature=PlayList&p=CDA95B148D8F5A22&playnext=1&playnext_from=PL&index=17 (7 times table)*** ***http://www.youtube.com/watch?v=r0L24qxQPbY (8 times table)*** ***http://www.youtube.com/watch?v=EhBAW3Sqxz (9 timestable)*** ***http://www.bbc.co.uk/schools/ks2bitesize/maths/number/multiplication/play.shtml*** ***A Handy Trick: to work out the number times 9, simply fold down that finger. For instance, to work out 7 × 9, fold the seventh finger. Now there are 6 fingers on the left and 3 on the right, so the answer is 63***	http://www.primaryresources.co.uk/online/venn.swf *Multiplication Grid WS16*
Activity 33 "Crack the code" (Individual-pair work) Tell the pupils they have to crack the code on the safe to open it. They need to drag tiles into gaps in the pattern and click unlock.	http://www.bbc.co.uk/schools/ks2bitesize/maths/number/number_patterns/play.shtml
Activity 34 "Guess the sequence!" Split the class into groups of 3. One plays the role of teacher and writes the answers that the other two say in a table. Every two games, they change the role of the teacher. Throw 4 dice and write the numbers on the board. Pupils have to choose the operation they want to do with those numbers. They get a number. Tell them to look for that number on the grid with the sequence of numbers they have to identify. The pupil in the role of teacher writes the results and makes sure they speak English.	Game 10 WS17
Activity 35 "Say examples of sequences & mental strategies" Split the class into groups of 3. One plays the role of teacher and writes the answers that the other two say in a table. Every two games, they change the role of the teacher. Throw 4 dice and write the numbers on the board. Pupils have to choose the operation they want to do with those numbers. They get a number. Tell them to look for that number on the grid with the example of the sequence of numbers they have to say. The pupils who are 'teachers' write the results and make sure their groups speak English.	Game 11 WS17

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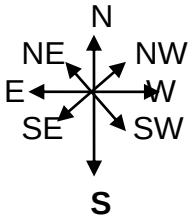
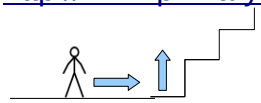
<tr><td>Activity 36 “Task on Geography: distance in maps!
Ask pupils: How can you calculate distances? How do you calculate the distance between the desk and table (use objects from the class from the closest to the farthest)? And the distance between the school and the building in front of the school? You are going on holidays and you need to know the distance in km in order to plan your time.
Show PPT8 “Travellingspain” SD1. Explain that
• Every map has a Map Scale which relates distance on the map to distance in the real world. For example, on this map of Spain this line represents 100.000 metres . Using the scale on a map, you can tell the actual distance between two points.
• Maps use map symbols to represent real-world things, such as buildings, trails, roads, bridges, and rivers (show the maps of their communities as an example)
• Maps use colors to share more information. Blue often means water, green means forest, and white means bare land (show any map of a community printed in colour)
• A map has a Legend which lists the symbols it uses and what they mean.
• A grid of imaginary lines called “coordinates” which help us when looking for a specific place on the map (show the ones of their communities)
• Cut a large piece of paper split into scales of the same distance as the one shown on the map. Use it to explain how to measure some distances
1 unit ⟹ 100.000 m
How many units are there from Barcelona to Madrid? How many metres? How many km?</td><td>PPT8 “Travelling spain” SD1</td></tr>
<tr><td>Activity 37 “ Distances in my community”
Trial and improvement problem solving strategy.
Hand out the worksheets (WS 18,19,20,21,22,23,24) to the corresponding group. Ask them to look carefully at the scale and calculate the distances they are asked for. Make sure they change units correctly when needed.
Use the digit cards software to recall how to divide and multiply a number by 1000 using digit cards. (Look at activity 5 from</td><td>WS 18, 19, 20, 21,22, 23, 24

Flash-player “Moving_digits”</td></tr>
</table>

lesson 2). Ask the pupils to predict the possible distance before checking	

Unit Mental Maths & Problem Solving	
Lesson 15	**Timing** 1 hour
	Resources
Activity 38 "North-south-east-west" Draw the four main cardinal directions on the board: North, South, East and West.  Explain to the pupils that, on a map, North is at the top, South at the bottom, West to the left and East to the right. Explain that the north on every Google map represents the "real north". Ask the pupils to look at the map of their communities and explain to the rest of the class where every province is on the map of Spain (PPT8) and also the distance in km Use *P: Burgos is 150 km to the North of Soria* *_____ is _____km to the _____of _____*	PPT8 Compass WS 18, 19, 10, 21, 22, 23, 24
Activity 39 "Coordinates" Ask pupils to go to the board in order to write and identify the coordinates given. Draw the picture on the board to make sure they can read in the correct order. http://www.primaryresources.co.uk/online/coordinates.swf http://www.primaryresources.co.uk/online/coordinates2.swf  Along and up	
Activity 40 "Task: a journey into town!" Trial and improvement problem solving strategy Hand out a map with a grid on it (WS25). You arrive in the city for your holidays and you get a map with the most important places. You decide to visit them, but you need to find out some distances in order to plan your time! Tell the pupils to complete the worksheet and explain what the scale represents in real life. After that, they solve the problem involving inverse operation. Answers (in order): • Fountain, cathedral, park, museum **Optional extension:** in pairs, tell them to write a problem like the ones shown to another pair of pupils. ***Less able pupils:*** include a longer scale following the standard	WS 25 WS 25.1

given on the worksheet, so that the pupil can measure any distance on the map with a ruler and calculate it using the bigger scale. That will show the actual metres.	

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Electronic Information

See the teacher notes