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| **Countdown numbers game** |
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| Using maths skills to calculate numbers |
| **Subject(s):** Maths**Approx time:** 12 - 30 minutes |  | **Key words / Topics:** * Addition
* Subtraction
* Multiplication
* Division
* Random
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| **Suggested Learning Outcomes**  |  |  |
| * To be able to solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.
* To be able to solve problems involving multiplication and division.
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| **Introduction** |  |  |
| This is one of a set of resources developed to support the teaching of the primary national curriculum. They are designed to support the delivery of key topics within maths and science. This resource focusses on solving number problems using a spreadsheet based on the Countdown numbers game. It could be used as a lesson, as presented below, or as a starter activity in other maths lessons. |
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| **Activity** |  | **Teacher notes** |
| **Introduction (2-10 minutes)**Teacher to explain that learners are going to solve number problems based on the Countdown game. If necessary, the rules of the game should be explained, including the time allowed to compete the task. **The number game (10-20 minutes)**Invite learners to select the 5 random numbers and then write them on the whiteboard. If applicable, state the numerical operation type to be used. Then write up the calculated value from the spreadsheet.Start the timer. On conclusion, see which pupils are closest to the target and get selected pupils to present their solution. If necessary, use the mathematical operation listed in the spreadsheet can be used by the teacher to show the solution. |  | This activity could be carried out with pupils working individually or in small groups.The spreadsheet associated with this activity should be open on the teacher’s laptop or tablet. Learners should not be able to see this. The rules for the game and the selection of mathematical operations used can be adjusted to suit the level of the learners. The teacher should enter the five selected numbers in the white boxes of the spreadsheet. An appropriate result should be selected from the gold boxes. When the time is up the teacher may want to get the learners to share their answers on a wipeable board or verbally as time allows. |

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|  |  | **Typical game rules***Normal rules are:** Any number ranging from 1-100 may be entered in the five white squares.
* Normally a maximum of two ‘large’ numbers (values over 10) can be used.
* Players are given 30 seconds to use the numbers to see who can get nearest to the selected total number. They can use some or all of the numbers.
* A combination of addition with subtraction, multiplication and division may be used.

*Teachers may decrease the difficulty by:** Only using 1-digit numbers in 3 or 4 of in the white squares
* Increasing the time available to work out the solution
* Using only addition or subtraction

*Teacher may increase the difficulty by:** Using a range of 1-100 digits in the white squares.
* Using addition with subtraction and multiplication or addition with subtraction, multiplication and division
* Decreasing the time available to work out the solution.
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| **Differentiation** |  |  |
| **Basic** |  | **Extension** |
| Allow learners to only use addition or subtraction with selected numbers from 1-10 only. Extend the time required for each number solving task. |  | Use selected numbers from 1-100 including two ‘large’ numbers (vales over 10).Use the full range of numerical operations. Reduce the time allowed to solve the problems (not going lower than 30 seconds). |
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| **Resources** |  | **Required files** icon-docicon-pdficon-ppt |
| * Projector/whiteboard
* Timer
* Whiteboard marker pen
* Wipeable boards and markers a class set.
 |  | A close up of a sign  Description automatically generated Countdown numbers game spreadsheet |
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| **Additional websites** |  |  |
| * **YouTube** – the best numbers game on Countdown: <https://www.youtube.com/watch?v=0q6PT4ad6BY>
* **NRich Mental Addition and Subtraction:** <https://nrich.maths.org/public/topic.php?group_id=4&code=36>
* **NRich Mental Multiplication and Division:** <https://nrich.maths.org/public/topic.php?group_id=4&code=37>
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| **Related activities (to build a full lesson)** |  |  |
| **Starters** (Options) * Show the YouTube video that explains the Countdown game: <https://www.youtube.com/watch?v=0q6PT4ad6BY>
 | **Extension** (Options)* Run the game as pairs then a team table event with table v’s table.
* Play the game in reverse by giving the learners the total number and they work out the five numbers.

**Plenary*** Discuss the outcome of the games and that practice will improve the game.
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| **The Engineering Context** film |
| * An understanding of number combinations and number operations is vital for engineers who need to solve lots of interesting problems. For example, engineers designing a bridge must calculate its strength and the designers of circuits in mobile phones must calculate the values of the individual components needed.
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| **Curriculum links**  |
| **England: National Curriculum**MathsKS1 & KS2 Y2-Y6 Number – addition and subtraction and Number – multiplication and divisionSuch as, for example KS2 Y5/6 – Number* solve number problems and practical problems.
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
* solve problems involving multiplication and division.
 | **Northern Ireland Curriculum**Mathematics and numeracyKS1 Processes in mathematics – Communicating mathematically* understand mathematical language and be able to use it to talk about their work;
* represent work in a clear and organised way, using symbols where appropriate.

KS1 Number – Understanding number and number notation* count, read, write and order whole numbers, initially to 10, progressing to at least 1000.

KS1 Number – Operations and their application* understand the operations of addition, subtraction, multiplication and division (without remainders) and use them to solve problems.

KS2 Number – Operations and their application* engage in a range of activities to develop understanding of the four operations of number ...
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| **Scotland: Curriculum for Excellence**Maths - Number money and measure – Number and number processes* MNU1-03a to MNU4-03a
 | **Wales: National Curriculum** MathematicsKS2 – Using number skills – use number facts and relationships* E.g. Y3 recall 2, 3, 4, 5 and 10 multiplication tables and use to solve multiplication and division problems

KS2 – Using number skills – calculate using mental and written methods* E.g. Y6 add and subtract numbers using whole numbers and decimals;
* E.g. Y6 multiply 2- and 3-digit numbers by a 2-digit number;
* E.g. Y6 divide 3-digit numbers by a 2-digit number
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| **Assessment opportunities** |
| * Informal teacher assessment of calculations presented by pupils.
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