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| **Halloween maze game** | | | |
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| Using directions to guide pupils through a table maze. | | | |
| **Subject(s):** Maths  **Approx time:** 30 - 60 minutes | |  | **Key words / Topics:**   * Maze * Instruction * Direction * Movement * Fractions * Angles |
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| **Suggested Learning Outcomes** | |  |  |
| * To be able to follow a set of verbal instructions to successfully navigate a maze. * To understand the importance of clear instructions when instructing others. * To be able to use mathematical vocabulary to describe position, direction and movement. | | | |
| **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 developing understanding of geometric directions and involves giving verbal instructions to allow learners to successfully complete a table maze.  Clear instructions and correct vocabulary are important to ensure that the learners know how to complete the maze. This activity could be used as a starter or main activity to introduce geometry, position and direction | | | |
| **Activity** | |  | **Teacher notes** |
| **Introduction (5-10 minutes)**  Teacher to explain that learners are going to perform a maze activity. Learners will be giving each other instructions to allow them to successfully navigate a table maze path.  Teacher to split the class into pairs – one member of the pair will give instructions, the other will use those instructions to navigate the maze. The learner being given the instructions must wear a blindfold. | |  | This activity needs to be carried out in pairs.  **Blindfold Maze**  When giving instructions learners should only use one command at a time. It must be made clear that the learner given the instructions can only complete each instruction as it is given and cannot do anything else. The teacher could explain that this is how robots work.  If time is an issue then this activity could be done with just one pair, with the rest of the class watching and commenting on the performance. |
| **Navigating the maze (20-40 minutes)**  Blindfolded learners navigate the maze using only the instructions given by their partner. Only one instruction can be given at a time, after which the learner following the maze must execute that instruction exactly as it has been given. Each instruction should only be one statement at a time. For example, ‘turn left’ followed by ‘stop’ when they are facing the right direction, followed by ‘walk forward 2 steps’ etc.  **Discussing the results of the activity (5-10 minutes)**  Teacher to discuss with leaners the links between what they have just done and how programmable systems such as robots work. A programmable system cannot do anything until it is given a set of instructions. It can only carry out instructions exactly as they are given. It is very important that these instructions are clear, concise and enable the system to do what it is required to do. This set of instructions is called a program and each separate instruction is a line of programming code. | |  | As an alternative to working in pairs, learners could instead be out into groups of three, with one learner acting as an observer who can give feedback at the end of the activity.  The maze route can be altered depending on the size of the classroom or hall used. It is suggested that routes are marked on the floor with masking tape, but again this will depend on the classroom and what is appropriate for the flooring type. In a classroom the maze could also be made by repositioning desks, although in this case the blindfolded participant must be warned to move very slowly and carefully to avoid injury from collisions.  All pairs should be able to navigate the maze, although some may make mistakes and/or need to correct these as they go along. This may necessitate some teacher feedback during the activity. |
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| **Differentiation** | |  |  |
| **Basic** | |  | **Extension** |
| Some learners may benefit from being given example commands. For example, this could take the form of an ‘instruction bank’ given as a handout.  The maze layout can be increased or decreased in difficulty depending on the ability levels of the learners. | |  | Ask learners to navigate the maze again, but this time only using a limited set of specific commands given at the start by the teacher.  Directional instructions could be limited to the use of fractions or angles, to guide the blindfolded learner. |
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| **Resources** | |  | **Required files** icon-docicon-pdficon-ppt |
| * Projector/Whiteboard * Make a maze with tables or use masking tape or other suitable method of marking out the maze layout. * Blindfolds | |  | Teacher presentation – Halloween maze game  icon-pdf Halloween maze game handout |
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| **Additional websites** | |  |  |
| * **Bitesize** – Moving in different directions**:** <https://www.bbc.co.uk/bitesize/clips/zdkwmp3> * **Bitesize** – Describing and giving directions**:** <https://www.bbc.co.uk/bitesize/clips/zf7xn39> * **Bitesize** – How to follow directions:<https://www.bbc.co.uk/bitesize/clips/z7kwmp3> * **Bitesize** – Sense of direction – blind and partially sighted people:<https://www.bbc.co.uk/bitesize/clips/zx6pvcw> | | | |
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| **Related activities (to build a full lesson)** | |  |  |
| **Starters** (Options)   * Teacher to explain, from the presentation, what a maze is and discuss following directions * Show Bitesize video, How to follow directions:<https://www.bbc.co.uk/bitesize/clips/z7kwmp3> | **Extension** (Options)   * Use fractions or angles to guide a blindfolded learner through the maze. * Watch Bitesize video Sense of direction – blind and partially sighted people: <https://www.bbc.co.uk/bitesize/clips/zx6pvcw>   **Plenary**   * Discuss the activity and how easy/difficult it was to give/follow instructions. * Explain how robots follow simple instructions to operate. | | |
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| **The Engineering Context** film |
| * When engineers program robots they need to very clear in their instructions to avoid any confusion. For example, the Mars Rover must follow very detailed instructions to help it move safely on the planet and send back pictures. |

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| **Curriculum links** | |
| **England: National Curriculum**  Maths  KS1 Year 1 geometry – position and direction   * describe position, direction and movement, including whole, half, quarter and three-quarter turns. | **Northern Ireland Curriculum**  KS1 Shape and space   * understand angle as a measure of turn; understand and give instructions for turning through right angles |
| **Scotland: Curriculum for Excellence**  Numeracy and mathematics  Shape, position and movement - angle, symmetry and transformation   * MTH 0-17a | **Wales: National Curriculum**  Mathematics  Using measuring skills – area and volume, angle and projection   * Y3 recognise that two right angles make a half turn, and that four right angles make a full turn |
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| **Assessment opportunities** | | |
| * Informal teacher assessment of the activity through observing the task and Q&A. | | |
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