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| **Calculate journey times** | | | |
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| An activity to compare journey times for different modes of transport | | | |
| **Subject(s):** Maths  **Approx time:** 60 - 85 minutes |  | | **Key words / Topics:**   * Division * Multiplication * Distance * Speed * Time * Hours * Minutes * Seconds |
| **Suggested Learning Outcomes** |  | |  |
| * To be able to solve a contextual problem using division and multiplication * To understand how to calculate different journey times for alternative modes of transport | | | |
| **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 an activity to calculate and compare different journey times using alternative modes of transport.  **Purpose of this activity**  In this activity, learners will calculate the time required by different modes of transport to travel specified distances. It allows students to apply their maths skills in a practical application.  This could be used as a one-off main lesson activity to develop basic maths skills in context. | | | |
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| **Activity** |  | | **Teacher notes** |
| **Introduction (5-10 minutes)**  Teacher to explain that learners are going to calculate the times taken to complete the same journey using different methods of transport.  **Demonstration of calculation (10-15 minutes)**  Teacher to explain the relationship between distance, speed and time and share the speeds of each mode of transport with the learners. Teacher to demonstrate how to calculate the journey time using the distance and the speed of a car.  **Who’s fastest activity (25 to 35 minutes)**  Learners to complete the Who’s fastest activity sheet, calculate the times of the journeys and ranking the modes of transport from fastest to slowest.  **Plenary (10-15 minutes)**  Discuss which mode of transport was the fastest. Which mode of transport would the learners use? Why?. |  | | This activity could be carried out as individuals or in pairs.  The relationship between distance speed and time is presented in visual form as a triangle as this approach is used later in school (for example for Ohms Law).  Time = distance / speed  Speed = distance / time  Distance = speed x time  The transport speeds are estimates based on typical values, found using the most common search engine. Any statistics or data on transport speeds used in this activity are solely for the purpose of this activity and may not be an accurate reflection of actual current times, which may vary due to seasonal, environmental or legal limitations, for example.  The journey time for the aircraft should allow 3 hours for check in, security and boarding at the airport.  When deciding which mode of transport to use, learners could be guided to consider factors such as cost, environmental impact, and relative locality of train stations and airports. |
| **Differentiation** |  | |  |
| **Basic** |  | | **Extension** |
| Provide a partially completed table or a spreadsheet set up to calculate the time. |  | | Learners could work out the time for a journey of their own choice. |
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| **Resources** |  | | **Required files** icon-docicon-pdficon-ppt |
| * Pencils * Calculators |  | | Calculate journey times presentation  Calculate journey times handout |
| **Additional websites** |  | |  |
| * **Bitesize – Using multiplication to create models:** <https://www.bbc.co.uk/bitesize/clips/z26n34j> * **NRich Multiplication & Division KS1**:<https://nrich.maths.org/13782> * **Snappymaths: Multiplication & Division KS1:** <http://www.snappymaths.com/multdiv/multdiv.htm> | | | |
| **Related activities (to build a full lesson)** |  | |  |
| **Starters** (Options)   * Discuss how maths is used to help solve problems when you have to calculate journey times. * Quickly revise simple division and multiplication problems. | | **Extension** (Options)   * Learners could work out the time for a journey of their own choice.   **Plenary**   * Discuss which mode of transport was the fastest.  Which mode of transport would the learners use? Why? | |

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| **The Engineering Context** film |
| * Comparing results is vital to the way engineers work – it helps to make things more efficient. Alternative modes of transport have a different impact on the environment, so a transport engineer will work out the best transport method to suit a particular situation, for example, the use of trams in a city. |

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| **Curriculum links** | |
| **England: National Curriculum**  Maths  KS1 Year 3 Number – multiplication and division   * Write and calculate mathematical statements for multiplication. * Solve problems … involving multiplication … including … correspondence problems in which n objects are connected to m objects.   KS1 Year 3 Number – measurement   * estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours. | **Northern Ireland Curriculum**  Mathematics and numeracy  KS1 Operations and their applications   * understand the operations of addition, subtraction, multiplication and division (without remainders) and use them to solve problems.   **Wales: National Curriculum**  Mathematics  KS2 Using number skills – calculate using mental and written methods   * use mental strategies to multiply and divide 2-digit numbers by a single digit number. |
| **Scotland: Curriculum for Excellence**  Numeracy and mathematics   * MNU1-03a, MNU2-10a | KS2 Using measuring skills - time   * calculate start times, finish times and durations using hours and minutes. |

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| **Assessment opportunities** |
| * Formal teacher assessment of the completed tables * Informal assessment of learner’s contribution to the plenary discussion |