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| **Create a litter collection pictogram** | | | | | |
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| Collecting litter around school and creating a tally chart and pictogram | | | | | |
| **Subject(s):** Mathematics and Science  **Approx. time:** 50 – 75 minutes | |  | | | **Key words / Topics:**   * Animal habitats * Litter * Pictogram * Rubbish * Tally chart * Waste |
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| **Stay safe** |  | | |  | |
| Whether you are a scientist researching a new medicine or an engineer solving climate change, safety always comes first. An adult must always be around and supervising when doing this activity. You are responsible for:    • ensuring that any equipment used for this activity is in good working condition  • behaving sensibly and following any safety instructions so as not to hurt or injure yourself or others    Please note that in the absence of any negligence or other breach of duty by us, this activity is carried out at your own risk. It is important to take extra care at the stages marked with this symbol: ⚠ | | | | | |
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| **Suggested Learning Outcomes** | |  | | |  |
| * To know that litter is waste that has been left somewhere where it is not wanted. * To collect different types of litter and record the data in a tally chart. * To create a pictogram of the data collected. | | | | | |
| **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 collecting different types of litter, recording the data in a tally chart and creating a pictogram.  When litter is thrown on the floor it not only looks awful but can have a very bad effect on animals and wildlife. It is ‘litter-ally terrible’! | | | | | |
| **Purpose of this activity**  In this activity learners will develop their knowledge and understanding of litter and how data can be recorded and displayed. They will collect different types of litter and record the amount of each type found in a tally chart. They will then learn how to create a pictogram to visually display the data collected.  This activity could be used as a main activity to develop knowledge and understanding of methods of recording and displaying data, or as part of a wider scheme of learning focussing on statistics. It could also be used to teach aspects of the science curriculum, such as the impact of human activity on animals and their habitats. | | | | | |
| **Activity** | |  | | | **Teacher notes** |
| **‘What is litter’ discussion (5-10 minutes)**  Teacher to explain that litter is waste that has been left somewhere it is not wanted. Teacher to ask learners for examples of litter that they have come across or previously seen.  **Preparation to go outside (2-5 minutes)**  Teacher to explain that learners are going to go outside and collect as many different items of litter as they can and record the number of each type found in a tally chart.  Examples of litter types could include:   * Crisp packets * Chocolate/sweet wrappers * Paper bags * Plastic bags * Drinks bottles * Drinks cans   Teacher to put learners into small groups and hand out equipment needed to collect the litter. Learners to put on coats etc. so that they are ready to go outside.  **Collecting the litter (20-30 minutes)**  Learners to decide who in the group is going to pick up the litter and who is going to write down what has been found. Learners to then collect as many pieces of litter as they can and keep a record of each type found on their tally chart.  Once the litter has been collected and recorded it should be disposed of in an appropriate manner, such as in the school recycling station.  **Pictogram of litter found (20-30 minutes)**  Learners to return to the classroom. Teacher to demonstrate how to create a pictogram.  Learners to create their own pictograms based on the information in their tally charts. They should create and use an appropriate graphic for each type of litter. | |  | | | **What is litter introduction**  The ‘what is litter’ slide in the teacher presentation be used to introduce learners to what is meant by litter and discuss examples of it. For example, chocolate wrappers, drinks cans/bottles, paper/plastic bags etc.  **Collecting the litter**  Learners could be placed into small groups to collect and record the litter found. This could be based around a location such as the playground or school field. Appropriate risk assessments will need to be in place for going outside and collecting the litter. Learners must have access to appropriate equipment such as litter collection sticks and gloves (no litter should be handled directly).  Learners should be advised to be aware of and not to pick up anything that looks potentially dangerous, such as broken glass (the teacher should be advised immediately if this is the case). There must be either bin liners available to place the litter into once collected, or easy access to the school recycling station.  **Producing a tally chart and pictogram**  The ‘tally chart of litter found’ slide could be printed and used as a handout for learners to record a tally and total of the types of litter found, prior to completing the pictogram. If any litter does not fall into one of the given categories it can be classified under ‘other’, or the sheet could be edited to include additional types.  Once the tally has been completed for each type of litter, the total number of each type should be added up and recorded under the ‘total’ column.  The ‘pictogram of litter found’ slide could be printed and used as a handout for learners to create their pictogram, or more able learners could construct one from scratch on blank paper. Learners should use their tally chart to aid them and create a suitable graphic for each litter type. Go through how to complete the pictogram in advance of learners doing so, with examples as appropriate. |
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| **Differentiation** | |  | | |  |
| **Basic** | |  | | | **Extension** |
| Collect items of litter in advance for learners to classify in the classroom.  Provide learners with a stamp to produce their pictogram, instead of them drawing the pictures of each litter type individually. | |  | | | Discuss the different types of materials that the litter is made from and whether or not they could be recycled.  Discuss the possible environmental effects of litter – what effect does it have on animals and their habitats? |
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| **Resources** | |  | | | **Required files** icon-docicon-pdficon-ppt |
| * Examples of litter for the class discussion * Environment with litter that can be collected, such as the school playground or playing fields * Clipboards and pencils (for completing tally charts whilst outside) * Litter picking sticks and gloves * Bin bags, access to recycling bins and/or other method of disposal for the litter collected | |  | | | icon-ppt Create a litter collection pictogram presentation  icon-pdf Tally chart handout  icon-pdf Create a little collection pictogram handout |
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| **Additional websites** | |  | | |  |
| * **Herefordshire council – Primary litter resource pack:** Collection of resources designed to highlight the problems caused by litter and explain how schools can organise a litter pick. <https://www.herefordshire.gov.uk/download/downloads/id/13401/stop_the_drop_primary_school_litter_resource_pack.pdf> * **Bitesize – Understanding pictograms:** Class clip video explaining what a pictogram is. <https://www.bbc.co.uk/bitesize/clips/zg4d2hv> | | | | | |
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| **Related activities (to build a full lesson)** | |  | | |  |
| **Starters** (Options)   * Discuss what is meant by litter and look at different examples of it. | | | **Extension** (Options)   * Discuss the different types of materials that the litter is made from and whether or not they could be recycled. * Discuss the possible environmental effects of litter – what effect does it have on animals and their habitats?   **Plenary**   * Discuss the findings of the activity – what type of litter was there the most/least of according to the pictogram? How could the amount of this litter be reduced in future? | | |

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| **The Engineering Context** film |
| * Engineers are required to use mathematics knowledge and skills regularly as part of their everyday job. It is therefore essential that they have a good grasp of basic concepts, such as collecting and recording data. * Environmental engineers are tasked with improving the quality of the natural environment around them. The more they understand about this, the better they can do their jobs. |

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| **Curriculum links** | |
| **England: National Curriculum**  Mathematics  KS2 Year 2 Statistics:   * interpret and construct simple pictograms, tally charts, block diagrams and simple tables * ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.   Science  KS2 Year 4 Living things and their habitats:   * recognise that environments can change and that this can sometimes pose dangers to living things. | **Northern Ireland Curriculum**  KS1 - Mathematics and Numeracy  Handling data:   * collect data, record and present it using real objects, drawings, tables, mapping diagrams, simple graphs and ICT software * discuss and interpret the data.     KS2 – The world around us  Interdependence:   * the effect of people on the natural and built environment over time. |
| **Scotland: Curriculum for Excellence**  Numeracy and Mathematics  Information handling:   * MNU 1-20a * MNU 1-20b * MNU 1-21a   Sciences  Biodiversity and interdependence:   * SCN 2-02a | **Wales: National Curriculum**  Mathematics  KS2 - Using data skills:   * represent data using lists, tally charts, tables and diagrams.   Science  KS2 – Interdependence of organisms:   * how humans affect the local environment, e.g. litter. |
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| **Assessment opportunities** | | |
| * Formal teacher assessment of written information presented on tally charts and pictograms. * Questioning of learners during class discussions at the beginning and end of the activity. | | |
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