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| Ideas for Mathematical investigations — Levels 1 and 2 |

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| Number: Number concepts | | | |
| Investigation | Overview | Links to other Mathematics strands and topics | Possible links to other key learning areas and learning outcomes |
| How are numbers used in team games? | Students investigate numbers and representations of numbers in the context of team  games, such as soccer, where the game is modified to cater for different numbers of players  (e.g. 5-a-side, 7-a-side or 11-a-side). The investigation could include the numbers on the players’ uniforms, the number of uniforms required, the scoring system, the score board, the placement of players on the field, or different combinations of players that make up a team (e.g. two boys and three girls).  This investigation provides students with opportunities to identify, count, compare, order and represent whole numbers, and compare and describe different arrangements of objects  and numbers. | **Patterns and Algebra**   * Equivalence and equations | **HPE**  DCSPA 1.1, 1.2, 1.3  DCSPA 2.1, 2.2, 2.3 |
| How can shopkeepers use numbers to make it easy to use their shops? | Students investigate the establishment of a class shop. This may involve developing a numbering system for being served, arranging goods on shelves according to size (e.g. shoe boxes or children’s clothes) or pricing goods using small whole numbers. Once the class shop is established, students roleplay buying and selling the goods.  This investigation provides students with opportunities to develop understandings of position and order of numbers, counting, quantity of numbers, representations of numbers, how money is used in exchange for goods and services, and how subtraction is used to calculate the day’s takings.  Data collection activities could be included to investigate items associated with the class shop (e.g. students’ shoe sizes, favourite cereals). | **Number**   * Addition and subtraction   **Chance and Data**   * Data | Technology TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  SYS 1.1, 1.2  SYS 2.1, 2.2  **SOSE**  SRP 1.1, 1.2  SRP 2.1, 2.2 |
| Design your own board game using numbers in different ways. | Students investigate numbers used in games and puzzles with a view to designing a game  (e.g. Snap, Dominoes, board games, dice games).  This investigation provides students with opportunities to compare and order whole numbers  as they play games and compare scores, and to investigate parts of a whole as they combine  pieces of puzzles. Games and puzzles that require students to tender amounts of money could  be included. | **Chance and Data**   * Chance | Technology  TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  MAT 1.1, 1.2  MAT 2.1, 2.2 |
| Will I be a winner at the fair? | The school fair is coming up and there will be many stalls at which to spend money. At some of the stalls, players can win a prize, but which ones give the best chance of winning? Students conduct an investigation to find out which stalls will give them the best chance of winning a prize and the best ways to spend their money. | Chance and Data  * Chance | **SOSE**  PS 1.4  PS 2.4 |
| How many different ways are there to plant seeds or seedlings in our garden? | Students investigate the number of seeds or seedlings required to plant rows of different vegetables or flowers in the class garden. Opportunities may arise to investigate sharing the harvest from the garden.  This investigation could be extended to provide students with opportunities to demonstrate their understandings of location, direction and movement by exploring pathways created by ants or other insects, and to gather data about which plants are eaten by different insects. | **Number**   * Multiplication and division  Chance and Data  * Data   **Space**   * Location, direction and movement | **Science**  LL 2.1, 2.2, 2.3 |
| Set up the cash register for the shop today. | Students engage in roleplay as bank tellers or checkout operators in the class shop with the responsibility of giving customers the correct amount of money from withdrawals or as change. They work out different combinations of notes and coins that equal a given amount.  (Note: Provide some customers with different notes that create discussion about how to make up the change. Promote discussion about the amount in the cash register at the beginning of the day and at different times during the day.) | **Patterns and Algebra**   * Equivalenceand equations |  |
| Gob-stoppers or jellybeans: Is bigger always better? | Students measure and sort a variety of lollies according to different criteria such as length, mass, area or the number that fill a container. They use this information to help make decisions about how the lollies could be packaged for sale in a class lolly-shop.  This investigation provides students with opportunities to compare and order numbers and measure using balance scales, and standard and non-standard units of measure. It also provides opportunities for students to investigate equivalence and equations as they manipulate the combinations of lollies to balance the scales. | **Measurement**   * Length, mass, area, volume   **Patterns and Algebra**   * Equivalence and equations | **HPE**  PHIC 1.1, 1.2  PHIC 2.1, 2.2 |
| How can we grow all our favourite foods in our edible garden? | Students investigate the establishment of an edible garden with groups of students being able to select a given number of plants from a specified list. The numbers and combinations of plants could vary. For example, a group of Year 1 students might choose a combination of 10 plants from five varieties of seedlings available, while a group of Year 3 students could be offered more varieties and the option to choose more than 10 plants. Students collect data to identify favourite produce prior to selecting their plants. This investigation provides students with opportunities to explore patterns involved in planting by investigating companion planting to reduce insect damage (e.g. tomato, marigold, tomato, marigold) and to investigate different combinations of whole numbers that make the same total. | **Number**   * Addition and subtraction * Multiplication and division  Patterns and Algebra  * Patterns and function * Equivalence and equations   **Chance and Data**   * Data | Science  LL 1.1, 1.2, 1.3  LL 2.1, 2.2, 2.3  **HPE**  PHIC 1.2  PHIC 2.2 |
| What flavours of milk does the tuckshop need to order? | Students collect data about the most popular flavours of milk among the students and the number being sold at the tuckshop. They present the data to the tuckshop convener to help in the ordering of milk. | Chance and Data  * Data |  |

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| Number: Addition and subtraction | | | |
| Investigation | Overview | Links to other Mathematics strands and topics | Possible links to other key learning areas and learning outcomes |
| How can we grow all our favourite foods in our edible garden? | Students investigate the establishment of an edible garden with groups of students being able to select a given number of plants from a specified list. The numbers and combinations of plants could vary. For example, a group of Year 1 students might choose a combination of 10 plants from five varieties of seedlings available, while a group of Year 3 students could be offered more varieties and the option to choose more than 10 plants. Students collect data to identify favourite produce prior to selecting their plants. The establishment of a garden provides opportunities to explore patterns involved in planting and in the produce.  This investigation provides students with opportunities to investigate different combinations of whole numbers that make the same total. | **Number**   * Number concepts * Multiplication and division  Patterns and Algebra  * Patterns and functions * Equivalence and equations   **Chance and Data**   * Data | Science  LL 1.1, 1.2, 1.3  LL 2.1, 2.2, 2.3  **HPE**  PHIC 1.2  PHIC 2.2 |
| Does McDonald have too many animals on his farm? | Students take on the role of environmental inspectors to investigate the damage caused by the ‘feet’ of all the animals on McDonald’s farm. They research the number of each variety of animal on a nearby farm and calculate the total number of ‘feet’. Students refer to existing data sources supplied by the teacher about how many feet/animals can fit in a holding yard or pen before the animals are caused any distress (e.g. four feet may be the optimum number for one square metre of  holding yard). | **Number**   * Number concepts |  |
| Which lollies go into which bags? | Students make up lolly bags for a fete. Each bag is to hold a combination of different lollies to make up a given number depending on students’ prior learning (e.g. up to 10 lollies for students working towards Level 1 or larger numbers for students working towards Level 2). For example, one bag of 30 lollies might hold 15 jellybeans, three gummy bears, six freckles and six mints.  This investigation may be extended to include the mass of the bags of lollies. For example, how many mints would need to be added to a bag to make it the same weight as a bag of 30 jellybeans? There are also opportunities for students to investigate multiplication and division when evenly sharing the lollies into the bags. | **Number**   * Multiplication and division  Patterns and Algebra  * Equivalence and equations |  |
| How do you like your burgers? | The class is holding a ‘burger and drink’ day to raise funds. Students need to find out how many burgers and drinks will be needed, which burger fillings and drinks students prefer, the appropriate size drink to offer, and how much packaging (wrapping paper, paper bags and/or boxes) is required. They could also investigate the costs of materials and the sale price necessary to make a profit. | **Measurement**   * Length, mass, area and volume  Chance and Data  * Data | **HPE**  PHIC 1.2  PHIC 2.2 |
| How does equal sharing work in the classroom? | Students develop an understanding of the concept of equal sharing and equal groups when they distribute class resources or contribute to a class collection. For example, students may understand that there are enough counters in the container for every student to have four each, or that every student will need to contribute $2 to collect $50 for a fund raiser. | **Number**   * Multiplication and division |  |
| How can shopkeepers use numbers to make it easy to use their shops? | Students investigate the establishment of a class shop. This may involve developing a numbering system for being served, arranging goods on shelves according to size (e.g. shoe boxes or children’s clothes) or pricing goods using small whole numbers. Once the class shop is established, students roleplay buying and selling the goods.  This investigation provides students with opportunities to develop understandings of position and order of numbers, counting, quantity of numbers, representations of numbers, how money is used in exchange for goods and services, and how subtraction is used to calculate the day’s takings.  Data collection activities could be included to investigate items associated with the class shop (e.g. students’ shoe sizes, favourite cereals). | **Number**   * Number concepts   **Chance and Data**   * Data | Technology TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  SYS 1.1, 1.2  SYS 2.1, 2.2  **SOSE**  SRP 1.1, 1.2  SRP 2.1, 2.2 |

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| Number: Multiplication and division | | | |
| Title of investigation | Overview | Links to other Mathematics strands and topics | Possible links to other key learning areas and learning outcomes |
| How does equal sharing work in the classroom? | Students develop an understanding of the concept of equal sharing and equal groups when they distribute class resources or contribute to a class collection. For example, students may understand that there are enough counters in the container for every student to have four each, or that every student will need to contribute $2 to collect $50 for a fund raiser. | **Number**   * Addition and subtraction |  |
| Which lollies go into which bags? | Students make up lolly bags for a fete. Each bag is to hold a combination of different lollies to make up a given number depending on students’ prior learning (e.g. up to 10 lollies for students working towards Level 1 or larger numbers for students working towards Level 2). For example, one bag of 30 lollies might hold 15 jellybeans, three gummy bears, six freckles and six mints.  This investigation may be extended to include the mass of the bags of lollies. For example, how many mints would need to be added to a bag to make it the same weight as a bag of 30 jellybeans? There are also opportunities for students to investigate multiplication and division when evenly sharing the lollies into the bags. | **Number**   * Addition and subtraction |  |
| Don’t be a copycat dealer. How many ways can you find to deal cards for the games you play? | Students investigate different ways of dealing the required number of cards for their favourite card games. For example, in a game of six-card Fish, the dealer may deal the cards individually, in groups of two or groups of three. They investigate other games that involve dealing cards and suggest ways the cards can be grouped to make the dealing.  This investigation provides students with opportunities to demonstrate their understanding of balance as they create different combinations of cards. | Patterns and Algebra  * Equivalence and equations |  |
| How can we use numbers to pack food to sell on the cake-stall at the fete? | Students investigate ways of sharing cakes, slices and biscuits that have been donated to the class food-stall for a fete. They make up equal groups of items for sale (e.g. five trays with six pieces of chocolate slice on each, or 10 biscuits in each of 10 bags). Students working towards Level 2 could work out how much money they will receive if they sell all the items. For example, if trays of the chocolate slice are sold for $2 a tray, they could experiment with methods of calculating how much five trays at $2 each are worth. |  |  |
| How many different patterns can you find around the school? | Students explore the school and classroom environment in search of patterns that are made up of numbers of objects (e.g. three small pavers followed by a large one on a pathway, ten rows of 10 on the hundreds board, three lots of three windows on a classroom wall). They design an environment such as a classroom or play area that uses repeating patterns with groups of tiles/pavers etc. | Patterns and Algebra  * Patterns and functions |  |
| What different combinations of plants can we select to grow in our edible garden and make sure that our favourites are planted? | Students investigate the establishment of an edible garden with groups of students being able to select a given number of plants from a specified list. The numbers and combinations of plants could vary. For example, a group of Year 1 students might choose a combination of 10 plants from five varieties of seedlings available, while a group of Year 3 students could be offered more varieties and the option to choose more than 10 plants. Students collect data to identify favourite produce prior to selecting their plants.  This investigation provides students with opportunities to explore patterns involved in planting by investigating companion planting to reduce insect damage (e.g. tomato, marigold, tomato, marigold) and to investigate different combinations of whole numbers that make the same total. | **Number**   * Number concepts * Addition and subtraction  Patterns and Algebra  * Patterns and function * Equivalence and equations   **Chance and Data**   * Data | Science  LL 1.1, 1.2, 1.3  LL 2.1, 2.2, 2.3  **HPE**  PHIC 1.2  PHIC 2.2 |
| How many different ways are there to plant seeds or seedlings in our garden? | Students investigate the number of seeds or seedlings required to plant rows of different vegetables or flowers in the class vegetable garden. Opportunities may arise to investigate sharing the harvest from the garden.  This investigation could be extended to provide students with opportunities to demonstrate their understandings of location, direction and movement by exploring pathways created by ants or other insects, and to gather data about which plants are eaten by different insects. | Number   * Number concepts   **Space**   * Location, direction and movement | **Science**  LL 2.1, 2.2, 2.3 |
| How does equal sharing work in the classroom? | Students develop an understanding of the concept of equal sharing and equal groups when they distribute class resources or contribute to a class collection. For example, students may understand that there are enough counters in the container for every student to have four each, or that every student will need to contribute $2 to collect $50 for a fund raiser. | **Number**   * Addition and subtraction |  |

| Patterns and Algebra: Patterns and functions | | | |
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| Investigation | Overview | Links to other Mathematics strands and topics | Possible links to other key learning areas and learning outcomes |
| A matter of design: Which patterns will we use for our costumes? | Students explore repeating and growing patterns to create a colourful, eye-catching design for a costume to be used in a class performance. |  | The Arts VA 1.1, 1.2, 1.3  VA 2.1, 2.2, 2.3  **Technology**  TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  MAT 1.1, 1.2  MAT 2.1, 2.2 |
| Patterns on paper: What designs could we use? | Students investigate patterns before creating patterns to be used as designs on wrapping paper for class gifts to special people. The designs could be made using a variety of materials such as vegetable prints or pictures cut from magazines and stamps. |  | The Arts VA 1.1, 1.2, 1.3  VA 2.1, 2.2, 2.3 |
| How many different patterns can you find around the school? | Students explore the school and classroom environment in search of patterns that are made up of numbers of objects (e.g. three small pavers followed by a large one on a pathway, ten rows of 10 on the hundreds board, three lots of three windows on a classroom wall). They design an environment such as a classroom or play area that uses repeating patterns with groups of tiles/pavers etc. | Number  * Multiplication and division |  |
| What different combinations of plants can we select to grow in our edible garden and make sure that our favourites are planted? | Students investigate the establishment of an edible garden with groups of students being able to select a given number of plants from a specified list. The numbers and combinations of plants could vary. For example, a group of Year 1 students might choose a combination of 10 plants from five varieties of seedlings available, while a group of Year 3 students could be offered more varieties and the option to choose more than 10 plants. Students collect data to identify favourite produce prior to selecting their plants.  This investigation provides students with opportunities to explore patterns involved in planting by investigating companion planting to reduce insect damage (e.g. tomato, marigold, tomato, marigold) and to investigate different combinations of whole numbers that make the same total. | **Number**   * Number concepts * Addition and subtraction * Multiplication and division  Patterns and Algebra  * Equivalence and equations   **Chance and Data**   * Data | Science  LL 1.1, 1.2, 1.3  LL 2.1, 2.2, 2.3  **HPE**  PHIC 1.2  PHIC 2.2 |

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| Patterns and Algebra: Equivalence and equations | | | |
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| Plan to eat 10 healthy foods every day. What could they be? | Students take on the role of designers for ‘Healthy Hampers’ or ‘Family Feasts’. Each student selects a combination of 10 items to include in the hamper, from an available selection. For example, a student might choose five apples, three bottles of fruit juice and two health bars from a selection of food items.  This investigation provides students with opportunities to explore the idea of balance by investigating variety in their diet over a week. In similar investigations students could explore combinations of ten flowers to create a bunch for a gift or combinations of 10 toys to donate  to a charity. |  | **HPE**  PHIC 1.2  PHIC 2.2 |
| Our motto is ‘Everyone gets to play’. Work out how we can do this with our class. | Students make up combinations of 10 students to form fair teams to compete in different games. They select from predetermined categories such as boys and girls, or students who are seven years old, more than seven years old or less than seven years old. |  | **HPE**  DCSPA 1.2  DCSPA 2.2 |
| What combinations of lollies would make the most interesting lolly bags to sell at a fete? | Students make up lolly bags for a fete. Each bag is to hold a combination of different lollies to make up a given number depending on students’ prior learning (e.g. up to 10 lollies for students working towards Level 1 or larger numbers for students working towards Level 2). For example, one bag of 30 lollies might hold 15 jellybeans, three gummy bears, six freckles and six mints.  This investigation may be extended to include the mass of the bags of lollies. For example, how many mints would need to be added to a bag to make it the same weight as a bag of 30 jellybeans? There are also opportunities for students to investigate multiplication and division when evenly sharing the lollies into the bags. | **Number**   * Addition and subtraction * Multiplication and division |  |
| Set up the cash register for the shop today. | Students engage in roleplay as bank tellers or checkout operators in the class shop with the responsibility of giving customers the correct amount of money from withdrawals or as change. They work out different combinations of notes and coins that equal a given amount.  (Note: Provide some customers with different notes that create discussion about how to make up the change. Promote discussion about the amount in the cash register at the beginning of the day and at different times during the day.) | Number  * Number concepts |  |
| Don’t be a copycat dealer. How many ways can you find to deal cards for the games you play? | Students investigate different ways of dealing the required number of cards for their favourite card games. For example, in a game of six-card Fish, the dealer may deal the cards individually, in sets of two or sets of three. They investigate other games that involve dealing cards and suggest ways the cards can be grouped to make the dealing.  This investigation provides students with opportunities to demonstrate their understanding of balance as they create different combinations of cards. | **Number**   * Multiplication and division |  |
| How are numbers used in team games? | Students investigate numbers and representations of numbers in the context of team games, such as soccer, where the game is modified to cater for different numbers of players  (e.g. 5-a-side, 7-a-side or 11-a-side). The investigation could include the numbers on the players’ uniforms, the number of uniforms required, the scoring system, the score board, the placement of players on the field, or different combinations of players that make up a team (e.g. two boys and three girls).  This investigation provides students with opportunities to identify, count, compare, order and represent whole numbers, and compare and describe different arrangements of objects  and numbers. | **Number**   * Number concepts |  |
| Gob-stoppers or jellybeans: Is bigger always better? | Students measure and sort a variety of lollies according to different criteria such as length, mass, area or the number that fill a container. They use this information to help make decisions about how the lollies could be packaged for sale in a class lolly-shop.  This investigation provides students with opportunities to measure using balance scales, and standard and non-standard units of measure. It also provides opportunities for students to investigate equivalence and equations as they manipulate the combinations of lollies to balance the scales. | **Number**   * Number concepts   **Measurement**   * Length, mass, area and volume | **HPE**  PHIC 1.2 |
| Your class is organising an edible garden and you have lots of plants to choose from. How will you decide which plants to choose and how many? | Students investigate the establishment of an edible garden with groups of students being able to select a given number of plants from a specified list. The numbers and combinations of plants could vary. For example, a group of Year 1 students might choose a combination of 10 plants from five varieties of seedlings available, while a group of Year 3 students could be offered more varieties and the option to choose more than 10 plants. Students collect data to identify favourite produce prior to selecting their plants. The establishment of a garden provides opportunities to explore patterns involved in planting and in the produce.  This investigation provides opportunities for students to investigate different combinations of whole numbers that make the same total. | **Number**   * Number concepts * Addition and subtraction * Multiplication and division  Patterns and Algebra  * Patterns and functions   **Chance and Data**   * Data | Science  LL 1.1, 1.2, 1.3  LL 2.1, 2.2, 2.3  **HPE**  PHIC 1.2  PHIC 2.2 |

| Measurement: Length, mass, area and volume | | | |
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| Gob-stoppers or jellybeans: Is bigger always better? | Students measure and sort a variety of lollies according to different criteria such as length, mass, area or the number that fill a container. They use this information to help make decisions about how the lollies could be packaged for sale in a class lolly-shop.  This investigation provides students with opportunities to compare and order numbers and measure using balance scales, and standard and non-standard units of measure. It also provides opportunities for students to investigate equivalence and equations as they manipulate the combinations of lollies to balance the scales. | **Number**   * Number concepts   **Patterns and Algebra**   * Equivalence and equations | **HPE**  PHIC 1.1, 1.2  PHIC 2.1, 2.2 |
| How do you like your burgers? | The class is holding a ‘burger and drink’ day to raise funds. Students need to find out how many burgers and drinks will be needed, which burger fillings and drinks students prefer, the appropriate size drink to offer, and how much packaging (wrapping paper, paper bags and/or boxes) is required. They could also investigate the costs of materials and the sale price necessary to make a profit. | Number  * Addition and subtraction  Chance and Data  * Data | **HPE**  PHIC 1.2  PHIC 2.2 |
| How far did the three bears walk? | Students re-enact the story of *Goldilocks and the three bears* to estimate how far the bears walked on the morning that Goldilocks visited. Students investigate how long Goldilocks may have spent in their house and use their estimations to calculate how far a person would walk in that time. Other opportunities for measuring are provided when students investigate the recipe for porridge and the sizes of the porridge bowls, the bears’ house and furniture. | **Measurement**   * Time |  |
| Classroom clean-up: Design mix and match containers for a tidy classroom. | Students design and create containers or systems that can be used to keep the classroom tidy and well organised.  They measure personal and class belongings and storage containers to inform their designs.  (Note: This investigation is connected to the Technology sourcebook module, *Classroom  clean-up*.) |  | Technology TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  MAT 1.1, 1.2  MAT 2.1, 2.2  SYS 1.1, 1.2  SYS 2.1, 2.2 |
| Tailor made: Who will the clothes fit? | People have donated new clothing of all sizes to the class dress-up box and it is overflowing. How can the number of items in the dress-up box be reduced? How can measurement be used to sort and categorise the clothing that would best fit the class? What data could help with the investigation?  Students need to consider different ways of setting up the clothing for easy access. They may also investigate clothing design and manufacture. This investigation is linked to the Technology key learning area. This investigation could be developed further when there are props and other play resources that promote the measurement of mass, area and volume. | **Chance and Data**   * Data | **Technology**  TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  MAT 1.1, 1.2  MAT 2.1, 2.2  SYS 1.1, 1.2 SYS 2.1, 2.2 |

| Measurement: Time | | | |
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| How far did the three bears walk? | Students re-enact the story of *Goldilocks and the three bears* to estimate how far the bears walked on the morning that Goldilocks visited. Students investigate how long Goldilocks may have spent in their house and use their estimations to calculate how far a person would walk in that time. Other opportunities for measuring are provided when students investigate the recipe for porridge and the sizes of the porridge bowls, the bears’ house and furniture. | **Measurement**   * Length, mass, area and volume |  |
| Where will I go and what will I see at the fair? | The school fair is coming up and there will be many visitors to the school. Students create a visitors’ guide that will help family and friends decide what they would like to see and when. The guide should show where special items and displays are located. Students use their understandings of sequencing time, and creating and interpreting simple maps to make a visitors’ guide that includes a timetable of the day’s events. | **Space**   * Location, direction and movement |  |
| How have clocks changed? | Students investigate the design of contemporary and historical clocks, such as water clocks, sundials, analogue and digital clocks, and contemporary and historical calendars to further develop their understandings of units and conventions of time. They design clocks and calendars for various purposes (e.g. a ‘clock’ or timing device to show the passage of time during the lunch break, a calendar to show sporting or growing seasons) and justify their choices. |  |  |
| It’s a date. What do I do now? | Students develop a class calendar for each term to show holidays and special events. They consult with teachers and other members of the school community to find out ‘what’s on when’. The calendar could include information about seasons and religious holidays. For significant school events, such as sports day, daily timetables could be constructed. |  |  |

| Chance and Data: Chance | | | |
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| Will I be a winner at the fair? | The school fair is coming up and there will be many stalls at which to spend money. At some of the stalls, players can win a prize, but which ones give the best chance of winning? Students conduct an investigation to find out which stalls will give them the best chance of winning a prize and the best ways to spend their money. | **Number**   * Number concepts | **SOSE**  PS 1.4  PS 2.4 |
| Guess who’s coming to visit? | Students make predictions about which special guests are likely to visit their school or classroom during the coming term (e.g. fireman, doctor, ambulance officer, local councillor). They collect data from other classes on forthcoming units of work that may involve such visits. At the end of the term, Level 2 students could compare their predictions of who would visit with actual events. | **Chance and Data**   * Data |  |
| Will it rain on our parade? | In the days leading up to a special school event (e.g. sports day, book week parade), students keep a daily record of the weather and use the information to predict what the weather will be like on their special day.  This investigation also provides students with the opportunity to collect and display data about the weather. | **Chance and Data**   * Data |  |
| Who will be leader next time? | Students investigate the likelihood of being chosen as a leader when a number of different selection methods are used. They investigate a variety of ways to choose a leader (e.g. pulling a name out of a hat, picking a letter that begins a surname from a collection of Scrabble tiles, choosing the number closest to the one in the teacher’s head, using alphabetical order). They decide which ways are fair and give reasons for their decisions. |  |  |
| Design your own board game using numbers in different ways. | Students investigate numbers used in games and puzzles with a view to designing a game  (e.g. Snap, Dominoes, board games, dice games).  This investigation provides students with opportunities to compare and order whole numbers as they play games and compare scores, and to investigate parts of a whole as they combine  pieces of puzzles. Games and puzzles that require students to tender amounts of money could  be included. | **Number**   * Number concepts | Technology  TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  MAT 1.1, 1.2  MAT 2.1, 2.2 |

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| Chance and Data: Data | | | |
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| What is hiding in my backyard? | Students collect and record data about the types of minibeasts and birds in their backyards at different times of the day/month/year. They display the data using picture graphs, lists or tables, draw conclusions about the number and types of minibeasts in their backyard and the reasons for variation. They describe the location of the minibeasts and birds using the language of location, direction and movement or by marking the locations on simple maps  or plans. | Space   * Location, direction and movement | **Science**  LL 1.1, 1.2, 1.3  LL 2.3 |
| Organise lunchtime activities for classes in the school. | Students investigate the preferred lunchtime activities of early years students and the amount of sporting equipment available for their use to support arguments for the purchase of more and varied equipment and for increased access to particular areas of the school grounds. |  | **HPE**  DCSPA 1.4  DCSPA 2.4 |
| How do you like your burgers? | The class is holding a ‘burger and drink’ day to raise funds. Students need to find out how many burgers and drinks will be needed, which burger fillings and drinks students prefer, the appropriate size drink to offer, and how much packaging (wrapping paper, paper bags and/or boxes) is required. They could also investigate the costs of materials and the sale price necessary to make a profit. | Number  * Addition and subtraction   Measurement   * Length, mass, area and volume | **HPE**  PHIC 1.2  PHIC 2.2 |
| What different combinations of plants can we select to grow in our edible garden and make sure that our favourites are planted? | Students investigate the establishment of an edible garden with groups of students being able to select a given number of plants from a specified list. The numbers and combinations of plants could vary. For example, a group of Year 1 students might choose a combination of 10 plants from five varieties of seedlings available, while a group of Year 3 students could be offered more varieties and the option to choose more than 10 plants. Students collect data to identify favourite produce prior to selecting their plants.  This investigation provides students with opportunities to explore patterns involved in planting by investigating companion planting to reduce insect damage (e.g. tomato, marigold, tomato, marigold) and to investigate different combinations of whole numbers that make the same total. | **Number**   * Number concepts * Addition and subtraction * Multiplication and division  Patterns and Algebra  * Patterns and functions * Equivalence and equations | Science  LL 1.1, 1.2, 1.3  LL 2.1, 2.2, 2.3  **HPE**  PHIC 1.2  PHIC 2.2 |
| Guess who’s coming to visit? | Students make predictions about which special guests are likely to visit their school or classroom during the coming term (e.g. fireman, doctor, ambulance officer, local councillor). They collect data from other classes on forthcoming units of work that may involve such visits. At the end of the term, Level 2 students could compare their predictions of who would visit with actual events. | **Chance and Data**   * Chance |  |
| Will it rain on our parade? | In the days leading up to a special school event (e.g. sports day, book week parade), students keep a daily record of the weather and use the information to predict what the weather will be like on their special day.  This investigation also provides students with the opportunity to collect and display data about the weather. | **Chance and Data**   * Chance |  |
| How can shopkeepers use numbers to make it easy to use their shops? | Students investigate the establishment of a class shop. This may involve developing a numbering system for being served, arranging goods on shelves according to size (e.g. shoe boxes or children’s clothes) or pricing goods using small whole numbers. Once the class shop is established, students roleplay buying and selling the goods.  This investigation provides students with opportunities to develop understandings of position and order of numbers, counting, quantity of numbers, representations of numbers, how money is used in exchange for goods and services, and how subtraction is used to calculate the  day’s takings.  Data collection activities could be included to investigate items associated with the class shop (e.g. students’ shoe sizes, favourite cereals). | **Number**   * Number concepts * Addition and subtraction | Technology TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  SYS 1.1, 1.2  SYS 2.1, 2.2  **SOSE**  SRP 1.1, 1.2,  SRP 2.1, 2.2 |
| How many different ways are there to plant seeds or seedlings in our garden? | Students investigate the number of seeds or seedlings required to plant rows of different vegetables in the class vegetable garden. Opportunities may arise to investigate sharing the harvest from the garden.  This investigation could be extended to provide students with opportunities to demonstrate their understandings of location, direction and movement by exploring pathways created by ants or other insects, and to gather data about which plants are eaten by different insects. | **Number**   * Multiplication and division   **Space**   * Location, direction and movement | **Science**  LL 2.1, 2.2, 2.3 |
| What flavours of milk does the tuckshop need to order? | Students collect data about the most popular flavours of milk among the students and the number being sold at the tuckshop. They present the data to the tuckshop convener to help in the ordering of milk. | Number   * Number concepts |  |

| Space: Shape and line | | | |
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| Investigation | Overview | Links to other Mathematics strands and topics | Possible links to other key learning areas and learning outcomes |
| Create a movie star | Students are challenged to design and build a creature as a prototype for an animation project that has a shape based on specified geometric properties and that is able to stand up by itself. For example, the design brief might include a minimum of four plane shapes, three 3D shapes and two right angles. |  | The Arts VA 1.1, 1.2, 1.3  VA 2.1, 2.2, 2.3  **Technology**  TP 1.1, 1.2, 1.3, 1.4  TP 2.1, 2.2, 2.3, 2.4  MAT 1.1, 1.2  MAT 2.1, 2.2 |
| Make a game: It’s a Snap! | Students work cooperatively to create a card game based on the game of Snap*.* They investigate 3D and 2D shapes and represent them in a variety of ways on the blank cards (e.g. digital photos, drawings, cut-outs from magazines). They decide on the rules of the game using a democratic process. Rules could include the following: Snap when consecutive cards show the same shape in the same orientation; Snap when consecutive cards show the same shape from different viewpoints; Snap when consecutive cards show shapes having common characteristics. |  | **HPE**  EPD 1.4  EPD 2.4 |
| When is a shape not a shape? | Students investigate the properties of 3D shapes and objects and 2D shapes and how they can be changed through manipulation of concrete materials —for example, by:   * + folding or cutting rectangles of paper to make paper hats, paper planes, paper boats   + folding or cutting paper to make different-shaped flowers for a class mural   + folding squares of paper to make conversation starters (cruets)   + folding and cutting rectangles of paper to make Chinese lanterns   + folding and cutting squares of construction paper to make pinwheels   + manipulating modelling material to create shapes to make toys, houses, jewellery.   This investigation provides students with opportunities to investigate geometric properties of and terms associated with 3D shapes and objects and 2D shapes; to visualise and represent shapes and objects; and to make representations of shapes using nets. |  |  |

| Space: Location, direction and movement | | | |
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| Title of investigation | Overview | Links to other Mathematics strands and topics | Possible links to other key learning areas and learning outcomes |
| Where will I go and what will I see at the fair? | The school fair is coming up and there will be many visitors to the school. Students create a visitors’ guide that will help family and friends decide what they would like to see and when. The guide should show where special items and displays are located. Students use their understandings of sequencing time, and creating and interpreting simple maps to make a visitors’ guide that includes a timetable of the day’s events. | **Measurement**   * Time |  |
| What is hiding in my backyard? | Students collect and record data about the types of minibeasts and birds in their backyards at different times of the day/month/year. They display the data using picture graphs, lists or tables, draw conclusions about the number and types of minibeasts in their backyard and the reasons for variation. They describe the location of the minibeasts and birds using the language of location, direction and movement or by marking the locations on simple maps or plans. | **Chance and Data**   * Data | **Science**  LL 1.1, 1.2, 1.3  LL 2.3 |
| How many different ways are there to plant seeds or seedlings in our garden? | Students investigate the number of seeds or seedlings required to plant rows of different vegetables in the class vegetable garden. Opportunities may arise to investigate sharing the harvest from the garden.  This investigation could be extended to provide students with opportunities to demonstrate their understandings of location, direction and movement by exploring pathways created by ants or other insects, and to gather data about which plants are eaten by different insects. | **Number**   * Multiplication and division  Chance and Data  * Data | **Science**  LL 2.1, 2.2, 2.3 |
| Design an obstacle course for beginners | Students develop and draw a map of a simple obstacle course around the school grounds. They write instructions for others to follow using the language of location and movement (e.g. Go between the Year 7 room and the library, climb over the rope bridge and crawl through the pipe in the adventure playground, turn right, go forwards to the slippery slide). |  |  |