

Year 6+: Assessment Task Card

6+.1

Unit
1

Powers and Square Numbers

- 1 Provide the student with a sheet of paper and a number, such as 60, and have them list all the factors of that number.
- 2 Ask the student to identify if the number is prime and why or why not.
- 3 Ask the student to identify the next prime number after 60.
- 4 Have the student express 60 as a product of its prime factors.
- 5 Have the student find the square of 60.

Number and place value

Investigate index notation and represent whole numbers as products of powers of prime numbers (ACMNA149) 

Investigate and use square roots of perfect square numbers (ACMNA150) 

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Unit
1

Powers and Square Numbers

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1** Review with the student how to find factors. Tools such as calculators and tables charts could be used. Revise processes that will support the student to find all the factors of the particular number.
- Q2 & 3** Review with the student the definition of a prime number. Revise the list of prime numbers from zero to 100.
- Q4** Revise with the student various methods of finding prime factors, such as using factor trees or calculators. Have them practise expressing the number as a product of the prime factors, e.g. $5 \times 3 \times 2^2$. Have the student check their answers by expanding the expression.
- Q5** Revise the term 'square' with the student. Have them find the square of smaller and related numbers, e.g. 6^2 and 10^2 , before moving to larger numbers. The student could use a calculator to check their answers.

Number and place value

Investigate index notation and represent whole numbers as products of powers of prime numbers (ACMNA149) 

Investigate and use square roots of perfect square numbers (ACMNA150) 

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Unit
2

Place Value and Laws of Computation

- 1 Provide the student with a sheet of paper and give them an equation to solve, such as $(2 + 6) + 7 = ?$
- 2 Ask the student to write a detailed explanation of how they solved the equation.
- 3 Provide the student with an equation to solve, such as $3 \times (4 + 8) = ?$
- 4 Ask the student to write a detailed explanation of how they solved the equation.
- 5 Ask the student to identify one of the laws of computation, describe it and provide an example.

Number and place value

Apply the associative, commutative and distributive laws to aid mental and written computation (ACMNA151) 

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Unit
2

Place Value and Laws of Computation

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 & 2** Review with the student how to solve the equation. When solving the brackets, order of operations could be reviewed. Look at how the order of addition is irrelevant to the overall answer.
- Q3 & 4** Review with the student how to either expand the brackets and solve, or complete the brackets first and solve. Revisit that the order of the process does not affect the answer.
- Q5** Revise the different laws of computation: distributive, associative and commutative. Have the student match examples and the laws.

Number and place value

Apply the associative, commutative and distributive laws to aid mental and written computation (ACMNA151) 

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Unit
3

Measurement (Area and Volume)

Resources: ruler

- 1 On a sheet of paper, have the student draw a 5 cm × 10 cm rectangle to scale (with a ruler) and label it.
- 2 Have the student find the area of the shape.
- 3 Have the student draw a diagonal line across the centre and find the area of one of the triangles.
- 4 Pose the problem: 'The rectangle you have drawn is the base for a rectangular prism with a height of 12 cm. Find the volume of the prism.'

Using units of measurement

Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving

(ACMMG159) 

Calculate volumes of rectangular prisms (ACMMG160) 

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Unit
3

Measurement (Area and Volume)

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 Have the student practise drawing shapes to scale with a ruler. The student could use grid paper as a guide. Check that the ruler and scale are being used correctly.
- Q2 Revisit how to find the area of a square and rectangle, through the use of a formula. Revisit the formula from the unit.
- Q3 Revisit the fact that the area of a triangle is half that of a square or rectangle. Review the formulas as well, checking that the student is substituting the correct values.
- Q4 Revisit strategies for solving problems, e.g. underlining key terms. The student could draw diagrams from word problems to allow them to see the visual representation, which may make it easier for them to relate to the formula.

Using units of measurement

Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving (ACMMG159) 

Calculate volumes of rectangular prisms (ACMMG160) 

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Unit
4

Fractions

- 1 Provide the student with a sheet of paper and give them three fractions, such as $\frac{3}{4}$, $\frac{2}{3}$ and $\frac{4}{5}$. Have the student draw a number line and locate each fraction on the number line.
- 2 Ask the student to select two of the given fractions and add them together, recording the equation.
- 3 Ask the student to choose a different combination of the given fractions and find the difference, recording the equation.
- 4 Have the student multiply the last combination of fractions together, and record the equation.
- 5 Have the student select one of their equations and use it to write a word-based problem.

Real numbers

Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152) **AC**

Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153) **AC**

Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154) **AC**

Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155) **AC**

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Unit
4

Fractions

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 Have the student practise drawing number lines and placing fractions that have common denominators. Work with fractions less than 1. When moving to fractions with different denominators, a fraction wall could be used as support.
- Q2 Review how to add fractions with common denominators, before moving to fractions with different denominators. Modelling equipment could be used to support student understanding.
- Q3 Review how to subtract fractions with common denominators, before moving to fractions with different denominators. Modelling equipment could be used to support student understanding.
- Q4 Revise how to multiply fractions. Begin with a whole number multiplied by a fraction, then move to a fraction multiplied by a fraction. Modelling equipment could be used to support understanding.
- Q5 Use word problems from the unit to scaffold the student. Have the student clearly identify the process (e.g. addition, subtraction) and the fraction in the problem, then solve the problem, which will help to clarify ideas.

Real numbers

Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152) **AC**

Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153) **AC**

Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154) **AC**

Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155) **AC**

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Unit
5

Decimals, Fractions and Percentages

- 1 Provide the student with a sheet of paper and give them a percentage, such as 65%, to express as a fraction and simplify if required.
- 2 Have the student express 65% as a decimal.
- 3 Have the student represent this information in a table that has two rows of data. For example:

	Decimal	Fraction	Percentage
a	0.65	$\frac{65}{100} = \frac{13}{20}$	65%
b			

- 4 In the second row, have the student include their own example that results in a fraction larger than 65%.
- 5 Have the student write a brief explanation of how they selected their number.

Real numbers

Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157) 

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Unit
5

Decimals, Fractions and Percentages

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 Review how to express fractions from percentages. BLM 9 'Decimal Grid: Hundredths' could be used to support student understanding.
- Q2 Review how to express decimals from percentages (expressing out of 100). If this is too difficult, the student could use a calculator.
- Q3 Revisit the presentation of the three representations in a table by revisiting Lesson Plan 3, Tuning In.
- Q4 & 5 The student could check their examples using a number line, to confirm that they are larger.

Real numbers

Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157) 

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Unit
6

Patterns and Algebra

Resources: two dice

- 1 Roll the dice. Ask the student to form an equation with the numbers rolled and record it on a sheet of paper.
- 2 Have the student record five related equations.
- 3 Have the student create a pattern with the two numbers.
- 4 Have the student use the two numbers to write a word problem that requires a missing number equation to solve it.

Patterns and algebra

Introduce the concept of variables as a way of representing numbers using letters (ACMNA175) 

Create algebraic expressions and evaluate them by substituting a given value for each variable (ACMNA176) 

Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177) 

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Unit
6

Patterns and Algebra

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 & 2** Review fact families and how to find the various equations. Revisit the charts students constructed in Lesson Plan 1, Independent Tasks, Task 1.
- Q3** Revisit different number patterns. This could be completed through the use of the Learning Objects or by developing simple patterns and moving to more complex patterns. Begin with patterns based on geometry before moving to more abstract patterns.
- Q4** Present examples of word problems, and deconstruct them, e.g. there are two numbers, there is a problem to solve, there is a context and so on.

Patterns and algebra

Introduce the concept of variables as a way of representing numbers using letters (ACMNA175) 

Create algebraic expressions and evaluate them by substituting a given value for each variable (ACMNA176) 

Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177) 

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Unit
7

Data Representation

Resources: two different coloured dice, ruler

- 1 Provide the student with two different-coloured dice and a sheet of paper. Have them roll the dice several times to create 2-digit numbers and collect data in their preferred method.
- 2 Have the student create a stem-and-leaf plot of their data.
- 3 Have the student write three questions about their data.

Data representation and interpretation

Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169) **AC**

Construct and compare a range of data displays including stem-and-leaf plots and dot plots (ACMSP170) **AC**

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Unit
7

Data Representation

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1** Review the process of collecting data. Look at different examples, including a list and a tally chart.
- Q2** Revisit a stem-and-leaf plot. Look at examples and have the student identify the main features. In this case, the student could complete an ordered stem-and-leaf plot.
- Q3** Have the student practise interpreting data displays by looking at examples from the newspaper or the internet, and then making statements or asking questions about the data. Encourage the student to ask questions about the actual data rather than the presentation of the data.

Data representation and interpretation

Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169) **AC**

Construct and compare a range of data displays including stem-and-leaf plots and dot plots (ACMSP170) **AC**

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Unit
8

Percentages

Resources: 10-sided dice

- 1 Have the student roll the 10-sided dice, then multiply the number rolled by 10. On a sheet of paper, have the student express this number as a percentage, e.g. 60%.
- 2 Have the student find the percentage from Question 1 of the following (e.g. 60% of 40):
 - a 40
 - b 20kg
 - c \$100
 - d 200m
- 3 Have the student use their percentage to express it as a quantity of another number, e.g. 60% of 50 is 30.
- 4 Ask the student to write their percentage as: 60% were red cards and 40% were black cards, totalling 100. Have the student express the number of red cards to black as a ratio, e.g. 6:4 (= 3:2).

Real numbers

Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies

(ACMNA158) **AC**

Recognise and solve problems involving simple ratios (ACMNA173) **AC**

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Unit
8

Percentages

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 Review what a percentage is and what it represents.
- Q2 Revisit how to find the percentage of an amount, using calculators if required.
- Q3 Have the student practise identifying the percentage as one quantity of another. The student may wish to work backwards or use a process of trial and error.
- Q4 Revisit the format of expressing ratios as one quantity compared to another. Work with modelling equipment to aid the student's understanding.

Real numbers

Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies

(ACMNA158) **AC**

Recognise and solve problems involving simple ratios (ACMNA173) **AC**

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Unit
9

Prisms and Solids

Resources: 3D shape, seven 1 cm cubes

- 1 Have the student identify a 3D shape and, on a sheet of paper, record its name and the different features such as the number of faces.
- 2 Have the student sketch and label three views of the 3D shape.
- 3 Give the student seven 1 cm cubes and ask them to build a structure. Have them describe and sketch the structure.
- 4 Ask the student to list three examples where 3D representations (drawings) are used in real life.

Shape

Draw different views of prisms and solids formed from combinations of prisms (ACMMG161) 

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Unit
9

Prisms and Solids

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 Review the names of different 3D shapes. This could be completed as a matching activity. Revisit the different features of objects, such as faces and edges. Have the student write definitions in their books to refer to.
- Q2 Review different views of objects. The student could be supported with activities such as matching the view to an image. The student could take digital photos of their views and match them to particular groups of objects.
- Q3 BLM 14 'Isometric Dot Paper' could be used to support the student with their sketching. Encourage the student to work in smaller sections, building to the whole diagram.
- Q4 Review where 3D representations are used. Look in newspapers and magazines. Examples include designing items, house plans, patterns, logos, computer games and programming.

Shape

Draw different views of prisms and solids formed from combinations of prisms (ACMMG161) 

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Unit
10

Transformation and Symmetry

Resources: three copies of BLM 15 'Cartesian Plane' on each of which you have drawn a translation, a reflection or a rotation

- 1 Show the student the diagram of the translation and have them identify the transformation and the coordinates of the final shape.
- 2 Show the student the diagram of the reflection and have them identify the transformation.
- 3 Ask, 'Does this shape have line symmetry?' Have the student record their answer on a sheet of paper.
- 4 Show the student the diagram of the rotation and have them identify the transformation.
- 5 Ask, 'Does this shape have rotational symmetry?' Have the student record their answer.

Location and transformation

Describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries (ACMMG181) 

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Unit
10

Transformation and Symmetry

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1** Use shapes to review the concept of translation. Have the student move each shape and identify the translation. Revisit how to read coordinates from a Cartesian plane. Remind the student about (x, y) ordering.
- Q2 & 3** Use shapes and mirrors to review the concept of reflection. Look at shapes that have line symmetry through reflection, and distinguish between those that are 'only' reflected. Work with simple familiar shapes.
- Q4 & 5** Review the concept of rotation. Have the student fix a corner of a shape and rotate it or have them rotate the shape on another sheet of paper and record each rotation in their book. Work with examples that can have one corner clearly identified, e.g. a right-angled triangle, or place a cross in the corner of a square. Review the term 'rotational symmetry', illustrating with examples.

Location and transformation

Describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries (ACMMG181) 

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Unit
11

Linear and Non-Linear Relationships

Resources: BLM 15 'Cartesian Plane', coloured pencils, ruler

- 1 Give the student a copy of BLM 15 'Cartesian Plane' and some points to plot.
- 2 Have the student draw a shape on their Cartesian plane and record the coordinates of the corners of the shape.
- 3 Provide the student with an equation, such as $y = x + 2$. Have them draw this as a line on their Cartesian plane, using their preferred method.
- 4 Ask the student to write an explanation of the method they used in Question 3.

Linear and non-linear relationships

Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point (ACMNA178) 
Solve simple linear equations (ACMNA179) 

Year 6+: Assessment Task Card

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Unit
11

Linear and Non-Linear Relationships

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1** Revisit how to plot coordinates on a Cartesian plane. Remind the student about (x, y) ordering and negative and positive values.
- Q2** Revisit how to read coordinates on a Cartesian plane. Remind the student about (x, y) ordering and negative and positive values. Remind the student to look for points that fall on an intersection rather than points in the middle of grids.
- Q3 & 4** Review the use of a table of values to scaffold the student in the drawing of the line. Have the student check values by looking at patterns in the number, e.g. x increasing by 1 and y decreasing by 3. Revisit how to extract information from the table, e.g. one x value for one y value.

Linear and non-linear relationships

Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point (ACMNA178) 
Solve simple linear equations (ACMNA179) 

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Unit
12

Chance

Resources: coloured pencils, ruler

- 1 Provide the student with a number of statements, e.g. 'The sun will set today', and have them record a chance statement to match, e.g. 'certain', on a sheet of paper.
- 2 Have the student draw a spinner that shows the chance of getting green is $\frac{1}{4}$.
- 3 Have the student record an example of rolling a dice that would give a 0.5 chance.
- 4 Ask the student to write two chance questions that could be asked about a pack of cards.

Chance

Construct sample spaces for single-step experiments with equally likely outcomes (ACMSP167) 

Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168) 

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Unit
12

Chance

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 Have the student complete matching activities of chance statements and examples. Revisit the class chart from Lesson Plan 1, Tuning In, for examples.
- Q2 Review the use of spinners, and how fractional amounts can be determined. NTO 6+.6 'Spinner' could be used. Revisit how to divide a circle into even segments.
- Q3 Revisit some of the results of rolling six- and 10-sided dice. Have the student look at different examples, such as rolling odd and even numbers. Encourage the student to convert the decimal to a fraction for ease of understanding.
- Q4 Revisit some of the results from Lesson Plan 3, Independent Tasks, Task 1, of drawing cards from a pack. Look at the different questions provided, e.g. about particular numbers, colours, suits or sets of criteria such as a red 3.

Chance

Construct sample spaces for single-step experiments with equally likely outcomes (ACMSP167) 

Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168) 

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Unit
13

Angles and Parallel Lines

Resources: ruler, protractor

- 1 Ask the student to draw and label a set of parallel lines on a sheet of paper.
- 2 Have the student describe the conditions for two lines to be parallel.
- 3 Have the student use a protractor to draw an angle of 50° and label it.
- 4 Have the student draw an example where they could use their knowledge of corresponding, alternate or co-interior angles to find the missing value.

Geometric reasoning

Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (ACMMG163) 

Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164) 

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Unit
13

Angles and Parallel Lines

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 Review the terminology of different lines and angles. The brainstorming work from Lesson Plan 1, Tuning In, could be revisited. The student could complete matching activities with cards of names/labels and examples.
- Q2 Review parallel lines and what makes a parallel line. Look for examples around the classroom.
- Q3 Revisit how to use a protractor. NTO 6+.7 'Measuring Angles' could be used. Make sure the student is reading the scale correctly. Review how to construct the angle, by using a ruler to draw one arm, measuring the desired angle, making a dot and using the ruler to draw the second arm.
- Q4 Revisit the investigating activities from the Independent Tasks, Task 1, in each of the lessons. Look at the difference between corresponding, alternate and co-interior angles and how they were solved. Have the student practise drawing simple examples, not to scale.

Geometric reasoning

Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (ACMMG163) 

Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164) 

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Unit
14

Triangles and Angles

Resources: ruler

- 1 Ask the student to draw and label a right-angled triangle on a sheet of paper.
- 2 Have the student label the right angle, another angle as 40° , and then find the missing angle.
- 3 Ask the student to write a description of how they found the missing angle.
- 4 Have the student draw a square using a ruler and label each of the angles in the square.
- 5 Ask the student to describe or draw how the angle sum of a triangle is related to the angle sum of a square.

Geometric reasoning

Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166) **AC**

Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165) **AC**

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Unit
14

Triangles and Angles

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1** Review the different types of triangles and related terminology. The student could complete matching activities with names and diagrams.
- Q2 & 3** Review angle sum of triangles. Have the student measure angles of triangles using protractors and add the angles to find the total. Some of the Learning Object activities could be revisited.
- Q4** Revisit the properties of a square and quadrilaterals, as well as the angle sum. Have the student measure the angles of squares and add to find the total.
- Q5** Revisit the relationship between triangles and squares, e.g. a triangle is half a square, hence the angle sum is also half. Explore this numerically as well as diagrammatically.

Geometric reasoning

Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166) **AC**

Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165) **AC**

Year 6+: Assessment Task Card

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Unit
15

Mean, Median and Mode

Resources: BLM 20 'Graphs', ruler

- 1 Provide the student with a copy of one of the graphs from BLM 20 'Graphs'. Have the student state the range of the data.
- 2 Have the student find the mean of the data.
- 3 Have the student find the median of the data.
- 4 Have the student state the mode of the data.
- 5 Ask the student to describe what would happen to the median and the mean if a really large value was added to the data.

Data representation and interpretation

Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171) 

Describe and interpret data displays using median, mean and range (ACMSP172) 

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Unit
15

Mean, Median and Mode

TARGETED ASSESSMENT

If the student is experiencing difficulty:

- Q1 Review what the range is (the difference between the largest and smallest value). Work with a numeric set of values before moving to graphical representation.
- Q2 Review what the mean of the data is and how to find it. Revisit some of the activities from Lesson Plan 1. Begin with small data sets before moving to larger ones.
- Q3 Revisit what the median of the data is and how to find it. Stress the importance of ordering the data values from smallest to largest to allow for ease of calculation.
- Q4 Revisit what the mode of the data is and how to find it. Activities from Lesson Plan 3 could be revisited.
- Q5 Have the student reconsider the effects of adding to data and the effects of this on the mean and median. Work with small data sets before moving to larger ones.

Data representation and interpretation

Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171) 

Describe and interpret data displays using median, mean and range (ACMSP172) 