**K1**

The rubrics have been developed in three columns. The column ‘beginning’ aligns with the year level below and ‘exceeds expectations’ aligns with the year level above. The middle column combines ‘consolidating’ and ‘meets expectations’ which are both indicators of year level expectations. ‘Consolidating’ indicates that student learning is at year level expectations but is not fully consistent or independently achieved.

The outcomes are written in bold text. The indicators listed under each outcome are there to support understanding of the outcome. These are not in place as an exhaustive list, or exclusively the only indicators. Staff are strongly encouraged to use these indicators as a starting point for discussion and clarification.

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| Key for Levels of Achievement |

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| B = Beginning | C = Consolidating | ME = Meets Expectations | EE = Exceeds Expectation |
| The student has begun to demonstrate some evidence of achieving learning outcomes; however applies limited knowledge, skills and understandings. The student’s learning is below year level expectations at this time. | The student has demonstrated evidence of the learning outcomes. The student is practising skills and is developing knowledge and understandings. Learning is at year level expectations but is not fully consistent or independent | The student has demonstrated knowledge of the learning outcomes and is applying knowledge, skills and understandings consistently and independently. Learning is at year level expectations. | The student has demonstrated evidence exceeding the learning outcomes in a variety of ways and applies higher level knowledge, skills and understandings consistently. Learning exceeds year level expectations. |

| Beginning | Consolidating / Meets Expectations | Exceeds Expectations |
| --- | --- | --- |
|  | Match and Group Objects   * Match similar pictures or objects * Group objects together | Sort Familiar Objects   * Sort by a variety of criteria, e.g. size, colour, shape |
| **Shows Understanding of Daily Routines**   * Can follow simple daily routines | Recognise copy and create simple patterns in everyday situations   * Recognise and identify simple patterns - e.g.: day night, school day, patterns in the environment * Copy and continue simple repeating patterns, e.g. blue, red, blue, red…AB AB AB * Copy and continue simple repeating patterns, e.g. blue, red, blue, red…AB AB AB | Copy, create, describe and extend patterns in everyday situations using objects and drawings   * Create repeating and growing patterns using manipulatives, e.g. pattern blocks, beads, multilink cubes. * Identify and describe a pattern rule using simple language, e.g. “It’s a blue, red, blue, red pattern. |

**K2**

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| Beginning | Consolidating / Meets Expectations | Exceeds Expectations |
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| **Match and Group Objects**   * Match similar pictures or objects * Group objects together | Sort Familiar Objects   * Sort by a variety of criteria, e.g. size, colour, shape | Sort and classify familiar objects and explain the basis for these classifications.   * Sort and classify by a variety of criteria, e.g. size, colour, shape * Sort and classify patterns into like groups, e.g. all ABAB patterns together, all ABCABC patterns together. |
| **Recognise, copy and create simple patterns in everyday situations**   * Recognise and identify simple patterns - e.g.: day night, school day, patterns in the environment * Copy and continue simple repeating patterns, e.g. blue, red, blue, red…AB AB AB | Copy create, describe and extend patterns in everyday situations using objects and drawings   * Create repeating and growing patterns using manipulatives, e.g. pattern blocks, beads, multilink cubes. * Copy and continue simple repeating patterns, e.g. blue, red,, blue, red…AB AB AB * Identify and describe a pattern rule using simple language, e.g. “It’s a blue, red, blue, red pattern. | Copy, extend, create and describe patterns with objects and drawings   * Can identify the part of the pattern that is repetitive (find the core of the pattern) * Translate a pattern by representing it in a different way e.g. ABAB as Car, Truck, Car, Truck or  * Create repeating and growing patterns in a variety of ways e.g. manipulatives (pattern blocks, beads, multilink cubes), symbols etc. * Repeat a pattern in a different medium, e.g. clap a pattern made with blocks. * Identify, observe and describe patterns in real life, e.g. in the environment (carpet tiles, wall paper etc.) in nature (seasons, simple life cycles, day/night.) |
|  |  | Recognise patterns in the number system   * Recognise the Base Ten pattern when counting to 100, e.g. exploring patterns on a hundred square * Recognise simple number patterns, e.g. 1+1=2, 1+2=3 and model them using manipulatives, e.g. multilink cubes to make a staircase pattern. |
|  |  | Investigate and describe number patterns formed by skip counting   * Copy and continue number patterns. E.g. skip counting in 10s. |

**Year 1**

The rubrics have been developed in three columns. The column ‘beginning’ aligns with the year level below and ‘exceeds expectations’ aligns with the year level above. The middle column combines ‘consolidating’ and ‘meets expectations’ which are both indicators of year level expectations. ‘Consolidating’ indicates that student learning is at year level expectations but is not fully consistent or independently achieved.

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| Beginning | Consolidating / Meets Expectations | Exceeds Expectations |
| --- | --- | --- |
| **Sort Familiar Objects**   * Sort by a variety of criteria, e.g. size, colour, shape | Sort and classify familiar objects and explain the basis for these classifications.   * Sort and classify by a variety of criteria, e.g. size, colour, shape * Sort and classify patterns into like groups, e.g. all ABAB patterns together, all ABCABC patterns together, | Investigate, describe, and represent patterns using numbers and other symbols   * Identify “one step” patterns, e.g. double or add three. * Identify and describe rules in patterns in a formal way, e.g. “Each time the number increases by 2.” * Use manipulatives to show a pattern made with numbers, e.g. use multilink cubes to show how numbers double. * Predict future terms using a recognised rule, e.g. “The third number will be 6 when we keep adding 2.” |
| **Copy create, describe and extend patterns in everyday situations using objects and drawings**   * Create repeating and growing patterns using manipulatives, e.g. pattern blocks, beads, multilink cubes. * Copy and continue simple repeating patterns, e.g. blue, red,, blue, red…AB AB AB * Identify and describe a pattern rule using simple language, e.g. “It’s a blue, red, blue, red pattern. | Copy, extend, create and describe patterns with objects and drawings   * Can identify the part of the pattern that is repetitive (find the core of the pattern) * Translate a pattern by representing it in a different way e.g. ABAB as Car, Truck, Car, Truck or  * Create repeating and growing patterns in a variety of ways e.g. manipulatives (pattern blocks, beads, multilink cubes), symbols etc. * Repeat a pattern in a different medium, e.g. clap a pattern made with blocks. * Identify, observe and describe patterns in real life, e.g. in the environment (carpet tiles, wall paper etc.) in nature (seasons, simple life cycles, day/night.) | Recognise patterns in the number system and describe number patterns formed by skip counting   * Write a number pattern to fit a growing pattern made with manipulatives, e.g. “Since I added two blocks each time, my number pattern increases by 2.” * Describe number patterns formed by counting in 2’s, 5’s and 10’s * Use the constant function on a calculator to reproduce and extend a pattern. * Predict future terms using a recognised rule, e.g. If it the pattern is 4, 6, 8, 10, what would come next? What would come before the first term? |
|  | Recognise patterns in the number system   * Recognise the Base Ten pattern when counting to 100, e.g. exploring patterns on a hundred square * Recognise simple number patterns, e.g. 1+1=2, 1+2=3 and model them using manipulatives, e.g. multilink cubes to make a staircase pattern. | Identify and describe the inverse relationship between addition and subtraction   * Recognise number properties that might help predict a pattern, e.g. odd and even or inverse relationships (7-2=5 and 5+2=7). * Use number properties (e.g. inverse) to solve addition and subtraction problems to 20, e.g. If 8 + 7 = 15, then what is 15 - 8? * Create number families for related digits, e.g. 3+4=7, 4+3=7, 7-3=4, 7-4=3 |
|  | Investigate and describe number patterns formed by skip counting   * Copy and continue number patterns. E.g. skip counting in 10s. | Identify and describe patterns in odd and even numbers   * Recognise the pattern of odd and even numbers * Using the rule of odd and even numbers, predict the next number in a given sequence. |

**Year 2**

The rubrics have been developed in three columns. The column ‘beginning’ aligns with the year level below and ‘exceeds expectations’ aligns with the year level above. The middle column combines ‘consolidating’ and ‘meets expectations’ which are both indicators of year level expectations. ‘Consolidating’ indicates that student learning is at year level expectations but is not fully consistent or independently achieved.

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| Beginning | Consolidating / Meets Expectations | Exceeds Expectations |
| --- | --- | --- |
| **Sort and classify familiar objects and explain the basis for these classifications.**   * Sort and classify by a variety of criteria, e.g. size, colour, shape * Sort and classify patterns into like groups, e.g. all ABAB patterns together, all ABCABC patterns together |  |  |
| **Copy, extend, create and describe patterns with objects and drawings**   * Can identify the part of the pattern that is repetitive (find the core of the pattern) * Translate a pattern by representing it in a different way e.g. ABAB as Car, Truck, Car, Truck or  * Create repeating and growing patterns in a variety of ways e.g. manipulatives (pattern blocks, beads, multilink cubes), symbols etc. * Repeat a pattern in a different medium, e.g. clap a pattern made with blocks. * Identify, observe and describe patterns in real life, e.g. in the environment (carpet tiles, wall paper etc.) in nature (seasons, simple life cycles, day/night.) | Investigate, describe, and represent patterns using numbers and other symbols   * Identify “one step” patterns, e.g. double or add three. * Identify and describe rules in patterns in a formal way, e.g. “Each time the number increases by 2.” * Use manipulatives to show a pattern made with numbers, e.g. use multilink cubes to show how numbers double. * Predict future terms using a recognised rule, e.g. “The third number will be 6 when we keep adding 2.” | Investigate, describe and represent patterns with numbers and other symbols   * Identify and create “two step” linear patterns, e.g. double add three. * Identify and contrast attributes of growing and repeating patterns. * Use manipulatives to prove predictions, e.g. continue a toothpick pattern or continue a number pattern with multilink cubes. * Predict the nth term in problems using constant addition or subtraction with numbers to 100, e.g. 6, 11, …, 21, 26, |
| **Recognise patterns in the number system**   * Recognise the Base Ten pattern when counting to 100, e.g. exploring patterns on a hundred square * Recognise simple number patterns, e.g. 1+1=2, 1+2=3 and model them using manipulatives, e.g. multilink cubes to make a staircase pattern.   **Investigate and describe number patterns formed by skip counting**   * Copy and continue number patterns. e.g. skip counting in 10s from zero. | Recognise patterns in the number system and describe number patterns formed by skip counting   * Write a number pattern to fit a growing pattern made with manipulatives, e.g. “Since I added two blocks each time, my number pattern increases by 2.” * Describe number patterns formed by counting in 2’s, 5’s and 10’s * Use the constant function on a calculator to reproduce and extend a pattern. | Explore and describe number patterns in multiplication facts   * Identify multiplication as repeated addition and division as repeated subtraction when finding multiplication facts. * Identify the relationships between different multiplication facts. E.g. 4 times table is double two times. |
| Identify missing elements in patterns   * Identify the missing number/s is a number sequence e.g 3, ? , 9, 12, ?, ?, 21 |
|  | Identify and describe the inverse relationship between addition and subtraction   * Recognise number properties that might help predict a pattern, e.g. odd and even or inverse relationships (7-2=5 and 5+2=7). * Use number properties (e.g. inverse) to solve addition and subtraction problems to 20, e.g. If 8 + 7 = 15, then what is 15 - 8? * Create number families for related digits, e.g. 3+4=7, 4+3=7, 7-3=4, 7-4=3 | Identify and describe the inverse relationship between addition and subtraction   * Use number properties (e.g. inverse) to solve addition and subtraction problems to 100 e.g. If 28 + 7 = 35, then 35 – 28 =? |
|  | Identify and describe patterns in odd and even numbers   * Recognise the pattern of odd and even numbers * Using the rule of odd and even numbers, predict the next number in a given sequence. | Identify and describe patterns in odd and even numbers (including even + even = even)   * Recognise and discuss the patterns of odd and even numbers e.g. Odd + Odd, Even + Even, Odd + Even, Odd + Odd + Even * Use the rules of odd and even numbers; predict the next number in a given sequence. |

**Year 3**

The rubrics have been developed in three columns. The column ‘beginning’ aligns with the year level below and ‘exceeds expectations’ aligns with the year level above. The middle column combines ‘consolidating’ and ‘meets expectations’ which are both indicators of year level expectations. ‘Consolidating’ indicates that student learning is at year level expectations but is not fully consistent or independently achieved.

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| Beginning | Consolidating / Meets Expectations | Exceeds Expectations |
| --- | --- | --- |
| **Investigate, describe, and represent patterns using numbers and other symbols**   * Identify “one step” patterns, e.g. double or add three. * Identify and describe rules in patterns in a formal way, e.g. “Each time the number increases by 2.” * Use manipulatives to show a pattern made with numbers, e.g. use multilink cubes to show how numbers double. * Predict future terms using a recognised rule, e.g. “The third number will be 6 when we keep adding 2.” | Investigate, describe and represent patterns with numbers and other symbols   * Identify and create “two step” linear patterns, e.g. double add three. * Identify and contrast attributes of growing and repeating patterns. * Use manipulatives to prove predictions, e.g. continue a toothpick pattern or continue a number pattern with multilink cubes. * Predict the nth term in problems using constant addition or subtraction with numbers to 100, e.g. 6, 11, …, 21, 26, | Investigate and represent patterns using words, symbols, numbers and tables   * Identify different types of growing patterns e.g. two-step patterns, square patterns, multiplication patterns using a 100s chart * Build sequences of simple shapes, e.g. triangles, squares, L shapes which increase systematically in size and write the equivalent number pattern * Identify the starting number and the constant multiplier needed to generate a number sequence, e.g. 6, 12, 24, 48 could have the rule, start with 6 and keep doubling * Use mathematical language to describe patterns (terms, objects, linear, growing, square etc.) |
| **Recognise patterns in the number system and describe number patterns formed by skip counting**   * Write a number pattern to fit a growing pattern made with manipulatives, e.g. “Since I added two blocks each time, my number pattern increases by 2.” * Describe number patterns formed by counting in 2’s, 5’s and 10’s * Use the constant function on a calculator to reproduce and extend a pattern. * Predict future terms using a recognised rule, e.g. If it the pattern is 4, 6, 8, 10, what would come next? What would come before the first term? | Explore and describe number patterns in multiplication facts   * Identify multiplication as repeated addition and division as repeated subtraction when finding multiplication facts. * Identify the relationships between different multiplication facts. E.g. 4 times table is double two times.   Identify missing elements in patterns   * Identify the missing number/s is a number sequence e.g 3,? ,9, 12,  ?, ?, 21 | Identify rules for patterns to predict future terms   * Identifies and continues linear patterns * Identifies and continues growing patterns * Predict the nth term in problems using constant addition or subtraction. |
| **Identify and describe the inverse relationship between addition and subtraction**   * Recognise number properties that might help predict a pattern, e.g. odd and even or inverse relationships (7-2=5 and 5+2=7). * Use number properties (e.g. inverse) to solve addition and subtraction problems to 20, e.g. If 8 + 7 = 15, then what is 15 - 8? * Create number families for related digits, e.g. 3+4=7, 4+3=7, 7-3=4, 7-4=3 | Identify and describe the inverse relationship between addition and subtraction   * Use number properties (e.g. inverse) to solve addition and subtraction problems to 100 e.g. If 28 + 7 = 35, then 35 – 28 =? | Explore and describe patterns in multiplication and division facts including their inverse relationship   * Identify and create patterns using multiplication (2s, 3s, 4s 5s and 10s) and addition or subtraction. e.g. 4 X 1 +2, 4 x 2 +2, etc. * Solve problems using properties and relationships of multiplication and division i.e. inverse relationship, multiples and factors. |
| **Identify and describe patterns in odd and even numbers**   * Recognise the pattern of odd and even numbers * Using the rule of odd and even numbers, predict the next number in a given sequence. | Identify and describe patterns in odd and even numbers (including even + even = even)   * Recognise and discuss the patterns of odd and even numbers e.g. Odd + Odd, Even + Even, Odd + Even, Odd + Odd + Even * Use the rules of odd and even numbers; predict the next number in a given sequence. | Identify and describe properties of prime and composite numbers   * Identify prime numbers in the tables up to 10X * Identify prime numbers on a 100 square * Identify the factors of composite numbers up to 10X * Use knowledge of factors to solve multiplication and problems e.g. 18 X5 is  (9 X 2) X 5. |
|  |  | Solve equivalent number sentences involving addition and subtraction to find unknown quantities   * Use number properties (e.g. inverse) to mentally solve addition and subtraction problems e.g. 83-28+ 28+? = 83, 23 +? = |

**Year 4**

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| Beginning | Consolidating / Meets Expectations | Exceeds Expectations |
| --- | --- | --- |
| **Investigate, describe and represent patterns with numbers and other symbols**   * Identify and create “two step” linear patterns, e.g. double add three. * Identify and contrast attributes of growing and repeating patterns. * Use manipulatives to prove predictions, e.g. continue a toothpick pattern or continue a number pattern with multilink cubes. * Predict the nth term in problems using constant addition or subtraction with numbers to 100, e.g. 6, 11, …, 21, 26, | Investigate and represent patterns using words, symbols, numbers and tables   * Identify different types of growing patterns e.g. two-step patterns, square patterns, multiplication patterns using a 100s chart * Build sequences of simple shapes, e.g. triangles, squares, L shapes which increase systematically in size and write the equivalent number pattern * Identify the starting number and the constant multiplier needed to generate a number sequence, e.g. 6, 12, 24, 48 could have the rule, start with 6 and keep doubling * Use mathematical language to describe patterns (terms, objects, linear, growing, square etc.) | Investigate and represent patterns using words, symbols, numbers, tables and graphs   * Creates a variety linear patterns and represents the patterns using symbols, numbers, tables and graphs * Creates growing patterns and represents the patterns using symbols, numbers, tables and graphs * Identify, describe and continue patterns linking pairs of numbers on a coordinate grid or in a table * Follow a rule based on multiplication, division or simple fractions to generate a sequence, e.g. start with 81 and find one-third of the number each time. |
| **Explore and describe number patterns in multiplication facts**   * Identify multiplication as repeated addition and division as repeated subtraction when finding multiplication facts. * Identify the relationships between different multiplication facts. E.g. 4 times table is double two times.   **Identify missing elements in patterns**   * Identify the missing number/s is a number sequence e.g 3,? ,9, 12,  ?, ?, 21 | Identify rules for patterns to predict future terms   * Identifies and continues growing patterns. * Predict the nth term in problems using constant addition or subtraction. | Identify rules for patterns to predict future terms   * Identifies and continues linear patterns in a variety of situations by identifying the rule. * Identifies and continues growing patterns in a variety of situations by identifying the rule. * Represent the rule of a pattern by using a function machine * Predict the nth term * Record the rule for a simple linear pattern as algebraic expression. * Record the rule for a simple growing pattern as algebraic expression. |
| **Identify and describe the inverse relationship between addition and subtraction**   * Use number properties (e.g. inverse) to solve addition and subtraction problems to 100 e.g. If 28 + 7 = 35, then 35 – 28 =? | Explore and describe patterns in multiplication and division facts including their inverse relationship   * Identify and create patterns using multiplication (2s,3s, 4s 5s and 10s) and addition or subtraction. e.g. 4 X1 +2, 4 x 2 +2, etc * Solve problems using properties and relationships of multiplication and division i.e. inverse relationship, multiples and factors. |  |
| **Identify and describe patterns in odd and even numbers (including even + even = even)**   * Recognise and discuss the patterns of odd and even numbers e.g. Odd + Odd, Even + Even, Odd + Even, Odd + Odd + Even * Use the rules of odd and even numbers; predict the next number in a given sequence. | Identify and describe properties of prime and composite numbers   * Identify prime numbers in the tables up to 10X * Identify prime numbers on a 100 square * Identify the factors of composite numbers up to 10X * Use knowledge of factors to solve multiplication and problems e.g. 18 X5 is  (9 X 2) X 5. | Identify and describe factors and multiples of whole numbers   * Predict the nth term in problems using constant multiplication or division, e.g. 2, 6, …, 54, 162, … * Represent constant addition and multiplication sequences of decimal fractions with materials or diagrams, e.g. show 0.3, 0.6, 0.9 by jumping along a number line |
|  | Solve equivalent number sentences involving addition and subtraction to find unknown quantities   * Use number properties (e.g. inverse) to mentally solve addition and subtraction problems e.g. 83 -28 +28 +? = 83, 23 + ? = | Solve equivalent number sentences involving multiplication and division to find unknown quantities   * Identify and create patterns using multiplication (up to 10 x 10) and addition or subtraction, e.g. 9 x 8 + 2, 9 x 8 + 2, etc. * Solve problems using strategies involving the associative (10.4 x 40 = 10.4 x 10 x 4) and commutative (21 x 13 = 13 x 21) laws. |

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| Beginning | Consolidating / Meets Expectations | Exceeds Expectations |
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| **Investigate and represent patterns using words, symbols, numbers and tables**   * Identify different types of growing patterns e.g. two-step patterns, square patterns, multiplication patterns using a 100s chart * Build sequences of simple shapes, e.g. triangles, squares, L shapes which increase systematically in size and write the equivalent number pattern * Identify the starting number and the constant multiplier needed to generate a number sequence, e.g. 6, 12, 24, 48 could have the rule, start with 6 and keep doubling * Use mathematical language to describe patterns (terms, objects, linear, growing, square etc.) | Investigate and represent patterns using words, symbols, numbers, tables and graphs   * Creates a variety linear patterns and represents the patterns using symbols, numbers, tables and graphs * Creates  growing patterns and represents the patterns using symbols, numbers, tables and graphs * Identify, describe and continue patterns linking pairs of numbers on a coordinate grid or in a table * Follow a rule based on multiplication, division or simple fractions to generate a sequence, e.g. start with 81 and find one-third of the number each time. | Investigate and represent patterns using words, symbols, numbers, tables and graphs   * Effectively represent linear and growing patterns in a variety of ways. * Identify differences in the graphs of a linear and growing pattern. * Identify the rule connecting pairs of positive or negative integers on a graph. * Identify the pattern in a sequence involving two operations and describe how each term in the sequence is related to the previous term, e.g. say the rule is start with $100 and add 50% each time. |
| **Identify rules for patterns to predict future terms**   * Identifies and continues linear patterns * Identifies and continues growing patterns * Predict the nth term in problems using constant addition or subtraction. | Identify rules for patterns to predict future terms   * Identifies and continues linear patterns in a variety of situations by identifying the rule. * Identifies and continues growing patterns in a variety of situations by identifying the rule. * Represent the rule of a pattern by using a function machine * Predict the nth term * Record the rule for a simple linear pattern as algebraic expression. * Record the rule for a simple growing pattern as algebraic expression. | Use algebraic expressions to record the rules for patterns   * Apply the rule written as an algebraic expression to predict a future term. * Identify the rule for a problem and use the identified function to solve the problem. * Record the rule for a linear pattern as algebraic expression. * Record the rule for a growing pattern as algebraic expression. |
| **Explore and describe patterns in multiplication and division facts including their inverse relationship**   * Identify and create patterns using multiplication (2s,3s, 4s 5s and 10s) and addition or subtraction. e.g. 4 X1 +2, 4 x 2 +2, etc * Solve problems using properties and relationships of multiplication and division i.e. inverse relationship, multiples and factors. | Identify and describe factors and multiples of whole numbers   * Predict the nth term in problems using constant multiplication or division, e.g. 2, 6, …, 54, 162, … * Represent constant addition and multiplication sequences of decimal fractions with materials or diagrams, e.g. show 0.3, 0.6, 0.9 by jumping along a number line | Continue and create sequences involving whole numbers, fractions and decimals   * Predict the nth term in equations using all four operations and fractional numbers. * Solve problems using patterns involving fractional quantities, e.g. as a fish grows it needs 1/6th more food each day, if it needs 1 spoon of food on day 5, how much food will it need on day 12? |
| **Identify and describe properties of prime and composite numbers**   * Identify prime numbers in the tables up to 10X * Identify prime numbers on a 100 square * Identify the factors of composite numbers up to 10X * Use knowledge of factors to solve multiplication and problems e.g. 18 X5 is  (9 X 2) X 5. |  |  |
| **Solve equivalent number sentences involving addition and subtraction to find unknown quantities**   * Use number properties (e.g. inverse) to mentally solve addition and subtraction problems ,e.g.  83-28+ 28+ ? = 83, 23 + ? = | Solve equivalent number sentences involving multiplication and division to find unknown quantities   * Identify and create patterns using multiplication (up to 10 x 10) and addition or subtraction, e.g. 9 x 8 + 2, 9 x 8 + 2, etc. * Solve problems using strategies involving the associative (10.4 x 40 = 10.4 x 10 x 4) and commutative (21 x 13 = 13 x 21) laws. | Identify and describe properties of square and triangular numbers   * Describe, create and extend the patterns of   §  Square numbers  §  Triangular numbers   * Describe the inverse relationship between square numbers and roots * Demonstrate exponents are repeated multiplication  (e.g. 4 to the 3rd power is 4 x 4 x 4) through models, drawings and use of manipulatives. |
|  |  | Explore the use of brackets and order of operations to write [number](http://www.australiancurriculum.edu.au/Glossary?a=M&t=Number) sentences   * Use the order of operations to solve problems including brackets |

**Year 6**

The rubrics have been developed in three columns. The column ‘beginning’ aligns with the year level below and ‘exceeds expectations’ aligns with the year level above. The middle column combines ‘consolidating’ and ‘meets expectations’ which are both indicators of year level expectations. ‘Consolidating’ indicates that student learning is at year level expectations but is not fully consistent or independently achieved.

The outcomes are written in bold text. The indicators listed under each outcome are there to support understanding of the outcome. These are not in place as an exhaustive list, or exclusively the only indicators. Staff are strongly encouraged to use these indicators as a starting point for discussion and clarification.

|  |
| --- |
| Key for Levels of Achievement |

|  |  |  |  |
| --- | --- | --- | --- |
| B = Beginning | C = Consolidating | ME = Meets Expectations | EE = Exceeds Expectation |
| The student has begun to demonstrate some evidence of achieving learning outcomes; however applies limited knowledge, skills and understandings. The student’s learning is below year level expectations at this time. | The student has demonstrated evidence of the learning outcomes. The student is practising skills and is developing knowledge and understandings. Learning is at year level expectations but is not fully consistent or independent. | The student has demonstrated knowledge of the learning outcomes and is applying knowledge, skills and understandings consistently and independently. Learning is at year level expectations. | The student has demonstrated evidence exceeding the learning outcomes in a variety of ways and applies higher level knowledge, skills and understandings consistently. Learning exceeds year level expectations. |

| Beginning | Consolidating / Meets Expectations | Exceeds Expectations |
| --- | --- | --- |
| **Investigate and represent patterns using words, symbols, numbers, tables and graphs**   * Creates a variety linear patterns and represents the patterns using symbols, numbers, tables and graphs * Creates growing patterns and represents the patterns using symbols, numbers, tables and graphs * Identify, describe and continue patterns linking pairs of numbers on a coordinate grid or in a table * Follow a rule based on multiplication, division or simple fractions to generate a sequence, e.g. start with 81 and find one-third of the number each time. | Investigate and represent patterns using words, symbols, numbers, tables and graphs   * Effectively represent linear and growing patterns in a variety of ways. * Identify differences in the graphs of a linear and growing pattern. * Identify the rule connecting pairs of positive or negative integers on a graph. * Identify the pattern in a sequence involving two operations and describe how each term in the sequence is related to the previous term, e.g. say the rule is start with $100 and add 50% each time. |  |
| **Identify rules for patterns to predict future terms**   * Identifies and continues linear patterns in a variety of situations by identifying the rule. * Identifies and continues growing patterns in a variety of situations by identifying the rule. * Represent the rule of a pattern by using a function machine * Predict the nth term * Record the rule for a simple linear pattern as algebraic expression. * Record the rule for a simple growing pattern as algebraic expression. | Use algebraic expressions to record the rules for patterns   * Apply the rule written as an algebraic expression to predict a future term. * Identify the rule for a problem and use the identified function to solve the problem. * Record the rule for a linear pattern as algebraic expression. * Record the rule for a growing pattern as algebraic expression. |  |
| **Identify and describe factors and multiples of whole numbers**   * Predict the nth term in problems using constant multiplication or division, e.g. 2, 6, …, 54, 162, … * Represent constant addition and multiplication sequences of decimal fractions with materials or diagrams, e.g. show 0.3, 0.6, 0.9 by jumping along a number line | Continue and create sequences involving whole numbers, fractions and decimals   * Predict the nth term in equations using all four operations and fractional numbers. * Solve problems using patterns involving fractional quantities, e.g. as a fish grows it needs 1/6th more food each day, if it needs 1 spoon of food on day 5, how much food will it need on day 12? |  |
| **Solve equivalent number sentences involving multiplication and division to find unknown quantities**   * Identify and create patterns using multiplication (up to 10 x 10) and addition or subtraction, e.g. 9 x 8 + 2, 9 x 8 + 2, etc. * Solve problems using strategies involving the associative (10.4 x 40 = 10.4 x 10 x 4) and commutative (21 x 13 = 13 x 21) laws. | Identify and describe properties of square and triangular numbers   * Describe, create and extend the patterns of   §  Square numbers  §  Triangular numbers   * Describe the inverse relationship between square numbers and roots * Demonstrate exponents are repeated multiplication  (e.g. 4 to the 3rd power is 4 x 4 x 4) through models, drawings and use of manipulatives. | Can explain exponential notation and use it to express large numbers |
|  | Explore the use of brackets and order of operations to write [number](http://www.australiancurriculum.edu.au/Glossary?a=M&t=Number) sentences   * Use the order of operations to solve problems including brackets |  |