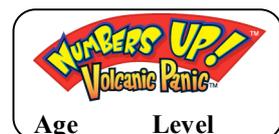
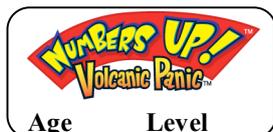


## WA Mathematics K-9 Curriculum Objectives Addressed Within Numbers Up! Volcanic Panic



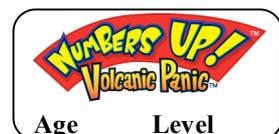
Age	Level	WA Level	Understand Numbers	Understand Operations	Calculate
4-6	1-6	Level 1	<p><b>Reads, writes and says small whole numbers, using them to say how many things there are, makes collections of a given size, and describes order</b></p> <p><b>Matches number names to numerals</b>  <b>Says number names in order</b>  <b>Says how many are in a collection</b>  <b>Uses first, second, third, etc. to indicate position in a sequence</b>  <b>Distributes small collections equally</b></p>	<p><b>Visualises operations involving small numbers</b></p> <p><b>Visualises small numbers as groupings of other numbers</b>  <b>Combines and separates collections in order to represent small numbers in different ways</b></p>	<p><b>Uses counting and other strategies to mentally solve problems involving small numbers</b></p> <p>Can find hidden numbers mentally to at least 10                      Can say the number sequence of 2's</p>
6-9	7-11	Level 2	<p><b>(a) Reads, writes, says and counts with whole numbers to beyond 100, using them to compare collections sizes and describe order</b></p> <p>Read &amp; write the numbers in order to beyond 100                      Count on or back from any number to 100                      Can choose counting as a strategy to produce equivalent</p>	<p><b>Understands the meaning and connections between counting, number partitions, addition and subtractions</b></p> <p>Can select an appropriate operation to deal with a given situation                      Understands situations involving comparison and difference, and complementary addition and subtraction</p>	<p><b>Counts, partitions and regroupes in order to add and subtract one- and two-digit numbers.</b></p> <p>Can remember many basic addition facts and work out others                      Can identify and use the relationship between addition and subtraction                      Can count forwards and backwards by 10 from a provided starting point</p>

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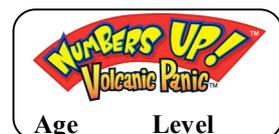
Age	Level	WA Level	Understand Numbers	Understand Operations	Calculate
			<p>collections</p> <p><b>(b) Understands the meaning of half and quarter, splitting quantities into fair shares and partitioning quantities repeatedly into halves</b></p> <p>Can understand <i>half</i> as a quantitative unit</p> <p>Can split a whole into equal parts to produce a number of fair shares</p>	<p>Can deal with hidden number questions</p> <p>Can identify multiplication as repeated addition</p> <p>Can use a range of everyday language for addition and subtraction operations</p>	
9-10	12-17	Level 3	<p><b>(a) Reads, writes, says, counts with and compares whole numbers into the thousands, money and familiar measurements</b></p> <p>Reads and writes any whole number into the thousands</p> <p>Can distinguish and order whole numbers</p> <p>Can count up and down in tens from any starting number</p> <p>Can produce standard partitions of two-and three-digit numbers</p>	<p><b>Understands the meaning, use and connections between the four operations on whole numbers, and uses this understanding to choose appropriate operations and to construct and complete simple equivalent statements.</b></p> <p>Understand that multiplication can be used for repeated addition situations</p> <p>Can select an appropriate division to deal with sharing and grouping</p>	<p><b>Adds and subtracts whole numbers and amounts of money, and multiplies and divides by one-digit whole numbers, drawing mostly on mental strategies for doubling, halving, adding to 100, and additions and subtractions derived from basic facts.</b></p> <p>Can remember basic addition facts and many multiplication facts</p> <p>Can partition 2-digit numbers to assist in</p>

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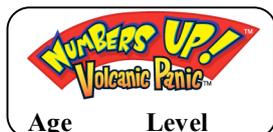
Age	Level	WA Level	Understand Numbers	Understand Operations	Calculate
			<p>Can round numbers up or down to the nearest 10 or 100 to serve a specific purpose such as estimation</p> <p>Can use the decimal point in representing quantities and money</p> <p><b><i>(b) Reads, writes, says and understands the meaning of unit fractions, flexibly partitioning and rearranging quantities to show equal parts</i></b></p> <p>Can link the sharing into a number of portions with the language of unit fractions</p> <p>Can separate objects and collections into equal parts to show unit fractions</p> <p>Can place unit fractions in order</p> <p>Can describe and record simple fraction equivalences</p> <p>Can read and write fractional notation</p> <p>Can use basic</p>	<p>Can match word problems with calculations</p> <p>Can use the multiplication/division relationship to state division facts from known multiplication facts and to solve missing number problems</p> <p>Understands the terms <i>multiple</i>, <i>factor</i> and <i>prime</i>, and use them appropriately</p>	<p>mental addition and subtraction</p> <p>Can estimate sums and products by rounding to a single digit number</p>

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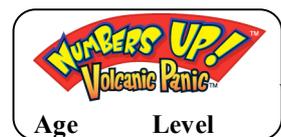
Age	Level	WA Level	Understand Numbers	Understand Operations	Calculate
			<p>division facts to find a unit fraction of a whole number</p>		
11-12	18-21	Level 4	<p><b>(a) Reads, writes, says, counts with and compares whole numbers into the millions and decimals (equal number of places)</b></p> <p>Can count forwards and backwards from any whole number            Can use place value to read, write, say and interpret large whole numbers            Can understand the multiplicative nature of the relationship between places for whole numbers            Can use models to represent decimals            Can rewrite a decimal as a fraction            Can count in decimal fractions</p> <p><b>(b) Reads, writes, says and understands the meaning of fractions and for readily</b></p>	<p><b>Understands the meaning, use and connections between the four operations on whole and decimal numbers, and uses this understanding to choose appropriate operations (whole multipliers and divisors) and to construct and complete simple equivalent statements.</b></p> <p>Can select appropriate operations to deal with situations involving whole large numbers and decimal fractions (whole number multipliers and divisors)            Can plan a short sequence of calculations for a familiar situation            Can decide what needs to be calculated and therefore what</p>	<p><b>Calculates with whole numbers, money and measures (at least multipliers and divisors to 10), drawing mostly on mental strategies to add and subtract two-digit numbers and for multiplications and divisions related to basic facts.</b></p> <p>Can remember most basic multiplication facts and can mentally extend to multiplying one-digit numbers by ten multiples            Can partition double digit numbers in order to mentally multiply and divide by small single digit numbers            Can add and subtract money and measures with the same number of decimal places            Can multiply and divide measurements and</p>

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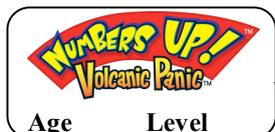
Age	Level	WA Level	Understand Numbers	Understand Operations	Calculate
			<p><b>visualised fractions, estimates their relative size and shows equivalence between them</b></p> <p>Can state fractional equivalents in word and symbols Can use equivalences that are readily visualised to compare and order fractions</p>	<p>information to use Can use number operations to complete and justify number sentences without completing the calculations Can generate missing numbers which obey a constraint Can solve missing number problems</p>	<p>amounts of money by a single digit number Can mentally find unit fractions of numbers which are multiples of the fraction</p>
12-13	22-23	Level 5	<p><b>(a) Reads, writes, says and understands the meaning, order and relative magnitude of whole and decimal numbers and negative integers.</b></p> <p>Understands the multiplicative relationship between decimal places Can partition decimals in standard ways Can use place value to partition decimals flexibly Can use whole number powers and</p>	<p><b>Understands the meaning, use and connections between the four operations on whole, decimal and fractional numbers, and uses this understanding to choose appropriate operations including where fractional and decimal multipliers are divisors are required</b></p> <p>Can use multiplication in calculating amounts from simple familiar rates Can select an appropriate division to deal with</p>	<p><b>Calculates with whole numbers, decimals and fractions (well-known equivalences, whole number multipliers and divisors), drawing mostly on mental strategies for whole numbers, money and readily visualised fractions.</b></p> <p>Can mentally multiply double digit by single digit numbers Can mentally add and subtract fractions using well-known equivalences where the proper fraction parts do not</p>

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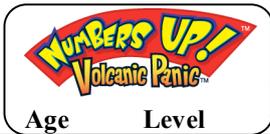
Age	Level	WA Level	Understand Numbers	Understand Operations	Calculate
			<p>square roots in describing things Can use whole negative numbers (integers) to compare and order measures Can locate negative numbers on a number line</p> <p><b>(b) Reads, writes, says and understands the meaning, order and relative magnitude of any fractions, straightforward ratios and percentages, and knows the more common equivalences between them</b></p> <p>Can compare two fractions diagrammatically Can express two fractions with a common denominator in order to decide which is bigger Can distinguish the ratio of parts to parts from the ratio of parts to whole Can recognise percentage as being a way of describing a ratio of part to</p>	<p>situations involving everyday rates such as price and speed Can use division in dealing with situations which involve dividing a smaller number by a larger number Understands the effects of multiplying and dividing by fractional and decimal numbers less than 1</p>	<p>add up to more than 1 Can mentally calculate unit fractions of whole number and decimal amounts Can use appropriate estimation strategies Can add and subtract decimals with unequal numbers of decimal places Can multiply and divide decimals by one digit numbers, interpret remainders for division and decide whether to round up or down Convert between fractions, decimals and percentages</p>

## WA Mathematics K-9 Curriculum Objectives Addressed Within Numbers Up! Volcanic Panic



Age	Level	WA Level	Understand Numbers	Understand Operations	Calculate
			<p>whole, using 100 as a common denominator                      Can interpret and use percentages to make straightforward comparisons                      Can use the more common equivalences between common fractions and percentages when comparing quantities</p>		
13-15	24-26	Level 6	<p><b><i>Reads, writes, and understands the meaning, order and relative magnitudes of positive and negative rational numbers and numbers expressed with integer powers</i></b></p> <p>Can use negative numbers to compare and order measures                      Can interpret integer powers                      Can contrast differences and ratios as a means of comparing things                      Can interpret published ratios and rates in order to make comparisons                      Can critically</p>	<p><b><i>Uses ratios and rates to describe the relationship between two quantities and finds one quantity from another in situations where familiarity with the context helps understand the ratio or rate.</i></b></p> <p>Can use a knowledge of contexts to select operations in situations involving familiar rates such as price, speed, scale, simple interest, etc                      Can check that an answer makes sense in its context                      Can identify assumptions</p>	<p><b><i>Calculates with positive and negative numbers, decimals, fractions and integer powers, using mostly mental strategies, including for frequently used fractions and percentages of amounts.</i></b></p> <p>Can mentally calculate percentages of amounts of money or measures to a suitable level of accuracy including using common fraction equivalents                      Use strategies such as rounding or partitioning to estimate</p>

## WA Mathematics K-9 Curriculum Objectives Addressed Within Numbers Up! Volcanic Panic



Age	Level	WA Level	Understand Numbers	Understand Operations	Calculate
			interpret alternative representations and published materials	needed to use a ratio Can use a method such as the unitary method to solve problems involving proportional quantities Can increase or decrease quantities in a given ratio or by a given percentage Can divide a quantity in a given ratio	percentages and decimals Make decisions about rounding up or down based on the purpose of the estimation Calculate with positive and negative numbers Evaluate integer powers