Kawakawa Mathematics Passport	Name:

Number and Algebra

1. Adding and Subtracting

1L3	1L4
	Integer arranging (positive and negative numbers)
	Integer addition (positive and negative numbers)
	Word problems 1-3

2. Multiplying and Dividing

2L3	2L4
	Integer multiplication (positive and negative numbers)
	Integer division (positive and negative numbers)
	Word problems 4 - 6

3. Counting and Place

3L3	3L4	3L5
	Decimals to word matching	Standard form
	Place value decimals	Significant figures
	Move point (e.g. 3.04 x 100 = 304)	
	Decimals on number lines	
	Comparing decimals	
	Rounding decimals	
	Decimal addition	
	Decimal subtraction	

Decimal multiplication
Decimal division e.g. 0.16 divided by 4
Word problems money

4. Fractions

4L3

4L4

Equivalent fractions
Compare fractions
Addition different denominators
Subtraction different denominators
Add mixed numbers (mixed fractions) same denominator
Add mixed numbers different denominators
Multiplication

4L5

Divide fractions
Multiply mixed numbers
Add mixed numbers
Subtract mixed numbers same denominator
Subtract mixed numbers different denominator

5. Fractions and Percentages

5L3

5L4

Convert and compare decimals and percentages
Convert and compare fractions and decimals

5L5

Convert fraction to decimal
Convert decimal to fraction
Convert fraction to percentage
Convert percentage to fraction

6. Fractions, Decimals, and Percentages

6L4

Percentage of	e.g. 17% of 50 = ?
Backwards of	e.g. ?% of 50 = 12
Inverse of	e.g. 17 = 20% of ?

6L5

Proportion word problems e.g. if 6 oranges cost $8, how much would it cost for 3 oranges?

7. Rates and Ratios

7L4
Equal ratios e.g. does 2:5 equal 8:20?
Equal "fraction of amounts" e.g. does 36% of $25 equal 18% of $50?
Equal "sharing of division" e.g. when do I get the most orange juice per person if I share 3 bottles between 5 people versus 5 bottles between 9 people?
Reciprocal of fraction e.g. if you paint 2/3 of a house in 1 hour then how long should it take you to paint the whole house?

7L5
Ratios and rates
Ratio word problems

8. Equations and Expressions

8L3

8L5
Expand brackets e.g. $3s(5s + 7)$
Quadratic expansion e.g. $(x + 2)(x + 7)$

9. Properties of Numbers

9L3

9L4
Calculate powers / exponents e.g. $4^3 = ?$
Calculate factorials e.g. $4! = ?$
Family of facts addition / subtraction
Family of facts multiplication / division

9L5
Factor trees
Greatest common factor
Exponents e.g. $4^3 = ?$
Exponents and multiplication e.g. $2x^2 . 3x^4 = ?$
Exponents, powers of products e.g. $(8d^2)^3 = ?$
Exponents, powers of quotients e.g. $(r^6 / r^3)^2 = ?$
Exponents and division e.g. $4y^2 / 8y^3 = ?$

10. Generalise Properties of Operations

10L4
Collect like terms
Words to algebra
Expanding brackets e.g. 4(3 + 4g) = ?
Factorising simple linear equation. e.g. 4x + 16 = 4(x + 4)

10L5
Factorise simple quadratic e.g. x(x+1) = ?
Factorise quadratic e.g. (x+2)(x+1) = ?

11. Linear and Quadratic Equations

11L4
Substitution
Solve equations e.g. x + 6 = 11. Show Working!
Solve equations e.g. 4x = 24. Show Working!

11L5
Solve the equations (linear only)
Find formula for given quadratic pattern

12. Noticing Patterns

12L3

12L4
Recognise simple pattern
Function tables
Plot line from function table

12L5
Find the next number in linear sequence
Find the next number in quadratic sequence
Calculate gradient given 2 points
Find gradient and intercept for given line
Gradient and intercept

Geometry and Measurement

13. Length

13L3	13L4	13L5
	Use a ruler to measure objects	Perimeter of complex shapes
	Choose appropriate units for situation	Circle circumference

14. Area

14L3	14L4	14L5
	Calculate area and perimeter of rectangles	Area of complex shapes
	Calculate area and perimeter of parallelograms	Area of trapeziums
	Calculate area and perimeter of triangles	Circle area
	Use appropriate units	

15. Volume

15L3	15L4	15L5
	Calculate volumes of cuboids	Complex shapes
	Use measuring devices	Cylinders

16. Mass and Weight

16L3	16L4
	Use scales

17. Time

17L3	17L4	17L5
	Read clock faces	Convert between units e.g. how many minutes in 3 months? e.g. how many seconds in 12 years?
	Perform calculations with time	Select appropriate units e.g. express 465768 seconds in appropriate units?
	Perform calculations with a calendar	

18. Temperature

18L3	18L4
	Read a thermometer

19. Read Scales, Timetables, and Charts

19L4
Read scales
Read timetables and charts

20. Unit Conversions

20L4
Convert units, e.g. m to cm, l to ml
Select best units
Convert length
Convert mass
Convert volume

21. Shape

21L3	21L4	21L5
	Measure angles with a protractor	Alternate angles
	Draw a given angle with a protractor	Corresponding angles
		Vertically opposite angles
		Interior angles of triangles
		Interior angles of quadrilaterals
		Interior and exterior angles of polygons

22. 2D and 3D Shape

22L3	22L4	22L5
	Construct 3d shapes from nets	Make a net for a given shape

23. Position and Orientation

23L3	23L4	23L5
	Use compass directions	Plot coordinate points in one quadrant
	Use grid references	Plot coordinate points in four quadrants
		Use compass points and scales on a map

24. Rotation, Translation, Reflection, and Enlargement Transformations

24L3	24L4
	Reflection
	Rotation
	Translation
	Enlargement

25. Pythagoras

25L5

Hypotenuse
Short side

26. Trigonometry

26L5

Sides using SOH CAH TOA
Angles using SOH CAH TOA

Statistics

27. The Enquiry Cycle

27L3

27L4

Explain how to use PPDAC
Selects appropriate graph for given problem
Pie graph
Stem and leaf
Time series
Scatter plot

27L5

Explain how to use PPDAC
Explain how to conduct a fair test
Cumulative frequency
Line of best fit
Identifier oultiers
Interpreting data e.g. there is a strong relationship between homework done and exam success.

28. Mean, Median, Mode, Range, and Quartiles

28L5

From a given data set, give the mean, mode, range, upper quartile, lower quartile, median.

29. Data Displays that Show Spread

29L5

Box and whisker
Explain the meaning of a “large spread about a mean”

30. Evaluating Claims about Statistics

30L3

30L4

Can write discussion about trends in a given data set

30L5

Can write a discussion about a data set. Mention the spread of the data. Mention whether the data provides strong evidence for a hypothesis, also note whether this hypothesis seems reasonable.

31. Probability

31L3	31L4	31L5
	Give a definition of probability, e.g. What does it mean to say that there is a 50% chance of getting heads in a coin toss?	Sample size, e.g. if I throw a fair dice 6 times and I never roll a '6', then is the dice broken?
		The results of past trials don't affect future events, e.g. if I toss a fair coin and get H, H, H then what is the probability that I next roll an H?

32. Describing and Calculating Probability

32L4	32L5
Give examples of when probability P is the following. P = 1, P = 0.5, P = 0	Modelling independent events e.g. draw the probability tree for throwing three coins and from this calculate the theoretical probability of H, H, H. Run an experiment and get an experimental probability of H, H, H. Compare these two values.
Give examples of when probability P is the following. P = 100%, P = 50%, P = 0%	Modelling dependent events e.g. Given a cup containing two green balls and two red balls. The balls are selected from the cup without replacement. Draw the probability tree for selecting two balls, and from this calculate the theoretical probability of selecting one red ball and one green ball. Run an experiment and get an experimental probability of this. Compare these two values.