Mapping Fetac Level 3 Mathematics 3N0929 & Khan Academy
by Sorcha Moran
sorcha.moran@gmail.com

Introduction

Below is a mapping of FETAC Level 3 Mathematics 3N0929 to Khan Academy. This document is laid out as follows:

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
FETAC reference	Required learning outcome as defined by FETAC	Relevant tutorials and exercises on Khan Academy	Gaps between Khan Academy and FETAC	Previous knowledge/Core skills learner will need to know in order to fully understand and achieve learning outcome

- All text in this colour is a hyperlink to a complete tutorial of videos and exercises on Khan Academy that the learner can work through in a logical order.

- All text in this colour is a hyperlink directly to the exercises.

Suggested uses for this document:
1. The document can be used as a resource for teachers. Teachers can easily reference the relevant exercises to their current class and make recommendations to the class/group based on this. This is a good way to make sure that everyone understands the current material before moving on to the next topic.

2. The document can be given to the students. This is a very powerful learning tool as you are handing the responsibility of learning over to the students themselves. Each learner can work at their own pace and fill their individual learning gaps while being guided by the document to ensure they meet the specific learning outcomes required. The document can also be used by the learner as a check-list so that they can follow their own progress. It would be a good idea to print a weekly progress report for each student, and add a signed copy to their portfolio. The learner's portfolio would then only need revision worksheets at the end of each unit as proof of learning.

3. The document can be used as a combination of the above. Each learner works at their own pace, but the teacher can also recommend specific exercises each week so that there is a focus topic. The teacher will then be aware of any difficulties learners are having before each class. The beginning of class can be used for a group discussion on this particular topic and for project work.

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.1	Explain the concepts of natural numbers (N), integers (Z), and real numbers (R)	1. Pre-Algebra -> Fractions -> Number Sets videos: a. Number sets b. Number sets 1 c. Number sets 2 d. Number sets 3 2. Arithmetic -> Negative Number Basics a. Negative numbers on the number line b. Negative numbers on the number line without reference to zero c. Ordering negative numbers d. Number opposites 2. Arithmetic -> Decimals -> Decimals on a Number Line a. Decimals on the number line 1 b. Decimals on the number line 2 c. Decimals on the number line 3 3. Arithmetic -> Fractions -> Understanding Fractions a. Fractions on the number line 1	1. Worksheet testing understanding of terminology of Natural Numbers, Integers and Real Numbers	1. Pre-Algebra -> Arithmetic Properties -> Place Value a. Place value b. Understanding place value 2. Arithmetic -> Fractions -> Understanding Fractions a. Recognising fractions 1 b. Identifying numerators and denominators 3. 4th Grade -> Fractions -> Rewriting Fractions as Decimals a. Fractions as a division by 10 or 100 b. Fractions as a division by a multiple of 10 4. 4th Grade -> Fractions -> Decimals and Fractions a. Converting decimals to fractions 1 5. Arithmetic -> Decimals -> Conceptualizing Decimals and Place Notation a. Writing and interpreting decimals b. Comparing decimal place value

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.2	Demonstrate equivalence between common simple fractions, decimals and percentages by conversion e.g. 1/2 = 0.5 = 50%	1. Pre-Algebra -> Decimals -> Converting between Fractions and Decimals a. Converting fractions to decimals b. Converting decimals to fractions 1 c. Converting decimals to fractions 2 2. Pre-Algebra -> Decimals -> Intro to Percentages a. Converting decimals to percents b. Converting percents to decimals	1. Fractions to percentages 2. Percentages to fractions 3. Simple equivalent fractions, decimals & percentages	1. Pre-Algebra -> Fractions -> Dividing Fractions a. Understanding fractions as division 2. Pre-Algebra -> Decimals -> Moving the Decimal to Multiply and Divide by 10 a. Fractions as a division by 10 or 100 b. Understanding moving the decimal 3. Pre-Algebra -> Decimals -> Conceptualizing Decimals and Place Notation a. Writing and interpreting decimals b. Comparing decimal place value c. Money and decimal place value intuition 4. Pre-Algebra -> Decimals -> Intro to Percentages series of videos
1.3	Express simple ratios as fractional ratios e.g. 1 : 2 = 1/3 : 2/3	1. Pre-Algebra -> Ratios, Proportions, Units, and Rates -> Ratios and Proportions 2. 6th Grade -> Ratios, Rates and Percentages -> Ratios a. Representing ratios 2. 6th Grade -> Ratios, Rates and Percentages -> Ratio Word Problems a. Ratio word problems b. Solving ratio problems with tables	1. Expressing ratios as fractional ratios	1. Pre-Algebra -> Fractions -> Dividing Fractions a. Understanding fractions as division

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.4	Give approximations by using strategies including significant figures and rounding off large natural numbers	1. 3rd Grade -> Place Value and Rounding -> Rounding a. Rounding to the nearest ten or hundred 2. Pre-Algebra -> Arithmetic Properties -> Rounding Whole Numbers a. Rounding whole numbers 3. 5th Grade -> Place Value and Decimals -> Rounding Decimals a. Rounding decimals b. Rounding decimals 2 4. Arithmetic -> Decimals -> Estimating and Rounding with Decimals a. Rounding decimals 5. Arithmetic -> Decimals -> Significant Figures a. Significant figures	1. Approximating using rounding and significant figures (large natural numbers)	1. Pre-Algebra -> Arithmetic Properties -> Place Value a. Place value b. Understanding place value

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.5	Use a calculator to perform operations requiring functions such as addition, subtraction, multiplication, division, percent, memory keys and the clear key		1. Using the calculator for basic functions	
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **natural numbers (N)**	1. Early Math -> Addition and Subtraction -> Basic Addition and Subtraction a. Addition within 5 b. Subtraction within 5 c. Put together d. Take apart e. Making 5 2. Early Math -> Addition and Subtraction -> Addition and Subtraction within 10 a. Making totals in different ways within 10 b. Making ten c. Making ten 2 d. Addition word problems within 10 e. Relate addition and subtraction f. Addition and subtraction within 10 g. Subtraction word problems within 10		

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **natural numbers (N)**	3. Early Math -> Addition and Subtraction -> Addition and Subtraction within 20 a. Addition within 20 b. Subtraction within 20 c. Addition and subtraction word problems within 20 Level 1 d. Addition and subtraction word problems within 20 Level 2 e. Addition and subtraction word problems within 20 Level 3 f. Addition and subtraction word problems within 20 Level 4 g. Adding three numbers h. Meaning of equal sign 1 4. Early Math -> Addition and Subtraction -> Addition and Subtraction within 100 a. Add within 100: Level 1 b. Add within 100: Level 2 c. Addition within 100 d. Subtract within 100: Level 1 e. Subtract within 100: Level 2 f. Subtract within 100 g. Addition using groups of 10: Level 1 h. Addition using groups of 10: Level 2 i. Addition and subtraction word problems within 100: Level 1 j. Addition and subtraction word problems within 100: Level 2 k. Addition and subtraction word problems within 100: Level 3		

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **natural numbers (N)**	l. Addition and subtraction word problems within 100: Level 4 m. Adding and subtracting on the number line word problems 5. Early Math -> Addition and Subtraction -> Addition and Subtraction within 1000 a. Add within 1000: Level 1 b. Subtract within 1000: Level 1 c. Add within 1000: Level 2 d. Subtract within 1000: Level 2 6. Arithmetic -> Addition and Subtraction -> Addition with Carrying a. Addition within 100 b. Addition within 1000 7. Arithmetic -> Addition and Subtraction -> Subtraction with borrowing (regrouping) a. Subtraction within 100 b. Subtraction within 1000		

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **natural numbers (N)**	8. 3rd Grade -> Multiplication and Division -> Concept of Multiplication and Division a. Meaning of multiplication b. Multiplying 1-digit numbers c. Meaning of division d. Basic division e. 1-digit division f. Relate division to multiplication 9. Arithmetic -> Multiplication and Division -> Starter Multiplication and Division Word Problems a. Multiplication and division word problems 10. 3rd Grade -> Multiplication and Division -> Applying Multiplication and Division a. Solving basic multiplication and division equations b. Relating division to multiplication word problems c. Multiplying by 2 d. Multiplying by 3 e. Multiplying by 4 f. Multiplying by 5 g. Multiplying by 6 h. Multiplying by 7 i. Multiplying by 8 j. Multiplying by 9		

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **natural numbers (N)**	k. Dividing by 2 l. Dividing by 3 m. Dividing by 4 n. Dividing by 5 o. Dividing by 6 p. Dividing by 7 q. Dividing by 8 r. Dividing by 9 s. Dividing by 10 t. Whole numbers on the number line 11. 3rd Grade -> Multiplication and Division -> Two-step Word Problems a. Two-step word problems with addition, subtraction, multiplication, and division 12. 3rd Grade -> Multiplication and Division -> Multiplying by Tens a. Multiply by tens b. Multiply by tens word problems 13. 3rd Grade -> Expressions and Patterns a. Properties of multiplication b. Math patterns 1 c. Patterns in multiplication tables		

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **natural numbers (N)**	14. 4th Grade -> Multiplication and Division -> Multiplication a. Multiplication without carrying b. Multiplication with carrying c. Multiplication using place value understanding d. Multiplying 2 digits by 2 digits 15. 4th Grade -> Multiplication and Division -> Multiplying Using Grids and Area Models to Visualize a. Multiplying 4 digits by 1 digit with visual models b. Multiplying 2 digits by 2 digits with area models 16. 4th Grade -> Multiplication and Division -> Comparing with Multiplication a. Comparing with multiplication b. Comparing with multiplication word problems c. Multiplication and division word problems 17. 4th Grade -> Multiplication and Division -> Division a. Multi-digit division without remainders b. Division using place value understanding c. Multi-digit division with visual models d. Division with remainders		

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **natural numbers (N)**	18. 4th Grade -> Multiplication and Division -> Multiplication, Division Word Problems a. Multi-step word problems with whole numbers 19. 5th Grade -> Arithmetic Operations -> Dividing by Two Digits a. Division by 2 digits 20. Arithmetic -> Multiplication and Division -> Loooong Division a. Multi-digit division 21. Arithmetic -> Multiplication and Division -> Multi-digit Multiplication b. Multi-digit multiplication		
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **integers (Z)**	1. 7th Grade -> Negative Numbers -> Adding and Subtracting Negative Numbers a. Adding negative numbers b. Understanding addition and subtraction with negative numbers c. Adding and subtracting negative numbers d. Interpreting negative numbers e. Adding and Subtracting negative number word problems		1. 6th Grade -> Negative Numbers -> Negative Number Basics a. Negative numbers on the number line b. Negative numbers on the number line without reference zero c. Ordering negative numbers d. Number opposites e. Decimals on the number line 3 f. Positive and negative fractions on the number line g. Comparing positive and negative numbers on the number line h. Interpreting negative numbers

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **integers (Z)**	2. 7th Grade -> Negative Numbers -> Multiplying and Dividing Negative Numbers a. Rules for multiplying and dividing negative numbers b. Dividing by zero c. Multiplying and dividing negative numbers 3. 7th Grade -> Negative Numbers -> Absolute Value a. Constructing and interpreting absolute value 4. 7th Grade -> Negative Numbers -> Thinking About the Number Line a. Understanding adding and subtracting with negative numbers		2. 6th Grade -> Negative Numbers -> Absolute Value a. Finding absolute values b. Comparing absolute values c. Interpreting absolute value d. Sorting rational numbers

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **simple fractions**	1. 4th Grade -> Fractions -> Adding Fractions with Common Denominators a. Adding fractions with common denominators b. Subtracting fractions with common denominators 2. 4th Grade -> Fractions -> Word Problems: Adding and Subtracting Fractions a. Using fractions to divide pizzas, pies and cakes b. Adding and subtractions with like denominators word problems 3. 4th Grade -> Fractions -> Mixed Numbers a. Adding and subtracting mixed numbers with like denominators 4. 4th Grade -> Fractions -> Adding Fractions with Unlike Denominators a. Adding fractions with 10 and 100 as denominators 5. 5th Grade -> Fractions -> Adding and Subtracting Fractions a. Adding fractions with unlike denominators b. Subtracting fractions with unlike denominators		1. Early Math -> Geometry -> Composing Shapes a. Halves and fourths b. Filling rectangles with same-sized squares c. Equal parts of circles and rectangles 2. 3rd Grade -> Measurement and Geometry -> Shapes a. Cutting shapes into equal parts 3. 3rd Grade -> Fractions -> What Fractions Mean a. Recognizing fractions 1 b. Recognizing fractions 2 c. Fractions on the number line 1 d. Fractions on the number line 2 e. Finding 1 on the number line 4. 3rd Grade -> Fractions -> Comparing Fractions a. Equivalent fraction models b. Equivalent fractions on the number line c. Identifying numerators and denominators d. Comparing fractions with the same denominator e. Comparing fractions with the same numerator f. Naming the whole 5. 4th Grade -> Fractions -> Equivalent Fractions a. Visualising equivalent fractions b. Equivalent fractions

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **simple fractions**	6. Pre-Algebra -> Fractions -> Mixed Number Addition and Subtraction a. Adding and subtracting mixed numbers with like denominators b. Adding and subtracting mixed numbers with unlike denominators 7. 5th Grade -> Fractions -> More Adding and Subtracting Fractions, and Mixed Fractions a. Adding and subtracting fractions with unlike denominators word problems b. Adding and subtracting mixed numbers with unlike denominators 8. 4th Grade -> Fractions -> Multiplying Whole Numbers and Fractions a. Understanding multiplying fractions and whole numbers b. Multiplying fractions by whole numbers c. Multiplying fractions and whole numbers word problems 9. 5th Grade -> Fractions -> Multiplying Fractions a. Multiplying fractions by whole numbers b. Understanding multiplying fractions by fractions c. Multiplying positive fractions d. Fraction multiplication as scaling e. Multiplying mixed numbers		6. 4th Grade -> Fractions -> Comparing Fractions a. Comparing fractions with different numerators and denominators b. Ordering fractions 7. Pre-Algebra -> Fractions -> Visualizing Equivalent Fractions a. Visualizing equivalent fractions b. Fractions cut and copy 1 8. Pre-Algebra -> Fractions -> Equivalent fractions and simplified form c. Simplifying fractions d. Equivalent fractions e. Equivalent fractions 2 9. Pre-Algebra -> Fractions -> Decomposing Fractions a. Decomposing fractions 10. Pre-Algebra -> Fractions -> Mixed Numbers and Improper Fractions a. Converting mixed numbers and improper fractions b. Fractions on the number line 2 c. Comparing improper fractions and mixed numbers d. Fractions cut and copy 2 e. Positive and negative fractions on the number line

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **simple fractions**	10. 5th Grade -> Fractions -> Dividing Fractions a. Understanding fractions as division b. Dividing fractions by whole numbers c. Dividing whole numbers by fractions d. Division with fractions and whole numbers word problems 11. 5th Grade -> Fractions -> Multiplying Fractions Word Problems a. Multiplying fractions and whole numbers word problems b. Multiplying fractions by fractions word problems 12. 6th Grade -> Arithmetic Operations -> Dividing Fractions by Fractions a. Understanding dividing fractions by fractions c. Dividing positive fractions d. Dividing fractions by fractions word problems 13. 7th Grade -> Fractions and Decimals -> Adding and Subtracting Fractions a. Adding and subtracting fractions with unlike denominators		

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **simple fractions**	14. 7th Grade -> Fractions and Decimals -> Multiplying and Dividing Fractions a. Multiplying positive and negative fractions b. Dividing positive and negative fractions		

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **decimal numbers to two decimal places**	1. Arithmetic -> Decimals -> Adding and Subtracting Decimals a. Adding decimals 0.5 b. Adding decimals 1 c. Subtracting decimals 0.5 d. Subtracting decimals 2. 6th Grade -> Arithmetic Operations -> Adding and Subtracting Decimals a. Adding decimals 2 b. Subtracting decimals 2 c. Adding and subtracting decimals word problems 3. Arithmetic -> Decimals -> Multiplying Decimals a. Multiplying decimals 1 b. Multiplying decimals 2 4. 6th Grade -> Arithmetic Operations -> Multiplying Decimals a. Multiplying decimals 3 5. Arithmetic -> Decimals -> Dividing Decimals a. Dividing completely b. Dividing decimals 1 c. Dividing decimals 2 d. Dividing decimals 3 e. Dividing decimals 4		1. 5th Grade -> Place Value and Decimals -> Decimal and Place Value: Conceptualizing a. Writing and interpreting decimals b. Comparing decimal place value c. Money and decimal place value intuition 2. 5th Grade -> Place Value and Decimals -> Regrouping Decimal Numbers a. Regrouping whole numbers b. Regrouping decimals 3. Arithmetic -> Decimals -> Decimals on the Number Line a. Decimals on the number line 1 b. Decimals on the number line 2 c. Decimals on the number line 3 4. Arithmetic -> Decimals -> Comparing Decimals a. Comparing decimals 1 5. 5th Grade -> Place Value and Decimals -> Comparing Decimals a. Comparing decimals 2 b. Ordering decimals 6. 5th Grade -> Place Value and Decimals -> Multiplication by Powers of Ten a. Powers of ten b. Patterns in zero

1. Number	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
1.6	Demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. addition, subtraction, multiplication, division, to **decimal numbers to two decimal places**			7. 6th Grade -> Arithmetic Operations -> Dividing Whole Numbers and Decimals a. Division by 2 digits b. Multi-digit division

2. Measurement and Capacity	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
2.1	Describe shape and space constructs using language appropriate to shape and space to include square, rectangle, circle, cylinder, angles, bisect, radius, parallel, perpendicular etc.	1. 3rd Grade -> Measurement and Geometry -> Shapes a. Categorize quadrilaterals 2. 4th Grade -> Geometry -> Angles a. Naming angles b. Understanding angles c. Measuring angles d. Drawing angles 3. 4th Grade -> Geometry -> Interpreting and Constructing Angles a. Angle types b. Recognizing angles c. Drawing right, acute and obtuse angles d. Benchmark angles e. Recognizing parallel and perpendicular lines f. Decomposing angles 4. 4th Grade -> Geometry -> Line of Symmetry a. Axis of symmetry	1. Describing a square, rectangle, circle, cylinder using terminology around angles, bisects, radius, parallel, perpendicular, etc.	1. Early Math -> Geometry -> Recognizing Shapes a. Naming shapes b. Naming shapes 2 c. Comparing shapes d. Attributes of shapes e. Recognizing shapes 2. Early Math -> Geometry -> Composing Shapes a. Composing shapes

2. Measurement and Capacity	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
2.1	Describe shape and space constructs using language appropriate to shape and space to include square, rectangle, circle, cylinder, angles, bisect, radius, parallel, perpendicular etc.	5. 4th Grade -> Geometry -> Classifying Geometric Shapes a. Quadrilateral types b. Recognizing triangle types c. Classifying shapes by line and angle types 6. 5th Grade -> Geometry -> Quadrilaterals a. Quadrilateral types b. Properties of shapes 7. Basic Geometry -> Shapes -> Finding Angles in Shapes a. Triangle angles 1 8. Geometry -> Circles -> Geometric Models a. Geometric descriptions of everyday objects 4. 7th Grade -> Geometry -> Area and Circumference of Circles a. Radius, diameter, and circumference		

2. Measurement and Capacity	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
2.2	Draw everyday objects to scale using a range of mathematical instruments	1. 7th Grade -> Geometry -> Scale Drawings a. Interpreting scale drawings b. Constructing scale drawings	1. Draw everyday objects to scale	1. Early Math -> Measurement and Data -> Measurement a. Measuring lengths with different units b. Comparing size c. Order by length d. Measuring lengths 1 e. Measuring lengths 2 f. Comparing lengths g. Length word problems 2. 4th Grade -> Measurement and Data -> Measuring with Metric and U.S. Customary Units:Intro a. Unit sense 3. 4th Grade -> Measurement and Data -> Unit Conversion a. Converting to smaller units 4. 5th Grade -> Measurement and Data -> Unit Conversion a. Converting units
2.3	Calculate the area of a square, rectangle, triangle and circle using the correct formula and giving the answer in the correct form	1. 3rd Grade -> Measurement and Geometry -> Area a. Finding area by multiplying b. Comparing area by multiplying c. Area and the distributive property d. Decompose shapes to find area		1. 3rd Grade -> Measurement and Geometry -> Area a. Understanding area b. Measuring area with unit squares

2. Measurement and Capacity	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
2.3	Calculate the area of a square, rectangle, triangle and circle using the correct formula and giving the answer in the correct form	2. 4th Grade -> Measurement an Data -> Area and Perimeter a. Area problems b. Area and perimeter of rectangles word problems 3. 6th Grade -> Geometry -> Finding Area a. Area of triangles b. Area of triangles 2 c. Area of parallelograms d. Area of trapezoids, rhombi, and kites e. Finding area by composing and decomposing shapes f. Area of quadrilaterals and polygons 4. 7th Grade -> Geometry -> Area and Circumference of Circles a. Area of a circle b. Area and circumference of circles		2. 3rd Grade -> Measurement and Geometry -> Perimeter a. Perimeter 1 b. Perimeter 2 c. Finding perimeter d. Comparing area and perimeter

2. Measurement and Capacity	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
2.4	Calculate the volume of a cylinder and cone using the correct formula and giving the answer in the correct form	1. 8th Grade -> Geometry -> Volume a. Solid geometry b. Volume word problems with cones, cylinders, and spheres		1. 3rd Grade -> Measurement and Geometry -> Mass and Volume a. Arithmetic word problems with volume 2. 5th Grade -> Measurement and Data -> Volume a. Volume with unit cubes 1 b. Comparing volumes with unit cubes c. Volume 1 d. Volume word problems 3. 6th Grade -> Geometry -> Volume and Surface Area a. Volume with fractions b. Volume with unit cubes 2 c. Volume word problems with fractions
2.5	Demonstrate metric measurement skills using the correct measurement instrument, and vocabulary appropriate to the measurement, to accurately measure **length/distance,**	1. Early Math -> Measurement and Data -> Measurement a. Measuring lengths with different units b. Measuring lengths 1 c. Measuring lengths 2 d. Comparing lengths e. Length word problems 2. 4th Grade -> Measurement and Data -> Measuring with Metric and U.S. Customary Units:Intro a. Unit sense	1. Measuring distance	1. Early Math -> Measurement and Data -> Measurement a. Measuring lengths with different units b. Comparing size c. Order by length

2. Measurement and Capacity	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
2.5	Demonstrate metric measurement skills using the correct measurement instrument, and vocabulary appropriate to the measurement, to accurately measure **length/distance,**	3. 5th Grade -> Measurement and Data -> Unit Conversion a. Converting units 4. 5th Grade -> Measurement and Data -> Unit Measurement Word Problems a. Converting measurements word problems	1. Measuring distance	
2.5	Demonstrate metric measurement skills using the correct measurement instrument, and vocabulary appropriate to the measurement, to accurately measure **capacity**	1. 3rd Grade -> Measurement and Geometry -> Mass and Volume a. Arithmetic word problems with volume 2. 4th Grade -> Measurement and Data -> Word Problems: Moving Between Units of Measurement a. Converting to smaller units word problems (metric) 2. 5th Grade -> Measurement and Data -> Volume a. Volume with unit cubes 1 b. Comparing volumes with unit cubes c. Volume 1 d. Volume word problems		

2. Measurement and Capacity	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
2.5	Demonstrate metric measurement skills using the correct measurement instrument, and vocabulary appropriate to the measurement, to accurately measure **weight**	1. [3rd Grade -> Measurement and Geometry -> Mass and Volume](#) a. [Arithmetic word problems with mass](#) 2. [4th Grade -> Measurement and Data -> Measuring with Metric and U.S. Customary Units:Intro](#) a. [Unit sense](#) 3. [4th Grade -> Measurement and Data -> Word Problems: Moving Between Units of Measurement](#) a. [Converting to smaller units word problems (metric)](#)		
2.5	Demonstrate metric measurement skills using the correct measurement instrument, and vocabulary appropriate to the measurement, to accurately measure **time**	1. [Early Math -> Measurement and Data -> Time and Money](#) a. [Telling time with a labelled clock](#) b. [Telling time without labels](#) 2. [3rd Grade -> Measurement and Geometry -> Telling Time](#) a. [Telling time word problems with the number line](#) b. [Telling time word problems](#) 3. [4th Grade -> Measurement and Data -> Word Problems: Moving Between Units of Measurements](#) a. [Time word problems](#)	1. Digital clock 2. 24hr clock	

2. Measurement and Capacity	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
2.6	Use simple scaled drawings to work out real distance, location, and direction.	1. 7th Grade -> Geometry -> Scale Drawings a. Interpreting scale drawings b. Constructing scale drawings	1. Scaled maps for distance, location, and direction	1. Early Math -> Measurement and Data -> Measurement a. Measuring lengths with different units b. Comparing size c. Order by length d. Measuring lengths 1 e. Measuring lengths 2 f. Comparing lengths g. Length word problems 2. 4th Grade -> Measurement and Data -> Measuring with Metric and U.S. Customary Units:Intro a. Unit sense 3. 4th Grade -> Measurement and Data -> Unit Conversion a. Converting to smaller units 4. 5th Grade -> Measurement and Data -> Unit Conversion a. Converting units

3. Algebra	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
3.1	Describe familiar real life situations in algebraic form	1. Algebra I -> Introduction to Algebra -> Writing and Interpreting Expressions a. Writing expressions b. Writing expressions 2 c. Interpreting linear expressions 2. Algebra I -> Introduction to Algebra -> Working with Units Algebraically a. Working with units algebraically b. Defining appropriate units c. Measurement precision 3. Algebra I -> Linear Equations -> Super Yoga Plans a. Constructing linear equations word problems 4. Algebra I -> Linear Equations -> Age Word Problems a. Age word problems 5. Algebra I -> Linear Equations -> Linear Equation Word Problems a. Linear equation word problems	1. Create equations relevant to student's own life	1. Pre-algebra -> Arithmetic Properties -> Order of Operations a. Order of operations b. Order of operations with negative numbers 2. Pre-algebra -> Arithmetic Properties -> The Distributive Property a. Distributive property 3. Pre-algebra -> Applying Mathematical Reasoning -> Constructing Numeric Expressions a. Expressions with parentheses b. Creating expressions with parentheses 4. Algebra I -> Introduction to Algebra -> Overview and History of Algebra (videos)

3. Algebra	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
3.2	Simplify basic algebraic expressions by applying the principal mathematical functions i.e. addition, subtraction, multiplication, division, to algebraic expressions of 1 or 2 variables	1. Pre-algebra -> Arithmetic Properties -> The Distributive Property a. Distributive property 2. Pre-algebra -> Arithmetic Properties -> Arithmetic Properties videos 3. Algebra I -> Introduction to Algebra -> Manipulating Expressions a. Combining like terms b. Combining like terms with distribution c. Equivalent forms of expressions 1	1. Simplify expressions with addition and subtractions with 2 variables 2. Simplify expressions with multiplication with 1 variable 3. Simplify expressions with division with 1 variable 4. Simplify expressions with multiplication with 2 variables 5. Simplify expressions with division with 2 variables	1. Pre-algebra -> Negative Numbers and Absolute Value -> Negative Number Basics a. Negative numbers on the number line b. Negative numbers on the number line without reference zero c. Ordering negative numbers d. Number opposites 2. Pre-algebra -> Negative Numbers and Absolute Value -> Adding and Subtracting Negative Numbers a. Number opposites b. Adding negative numbers c. Adding and subtracting negative numbers d. Interpreting negative numbers 3. Pre-algebra -> Negative Numbers and Absolute Value -> Multiplying and Dividing Negative Numbers a. Multiplying and dividing negative numbers 4. Pre-algebra -> Factors and Multiples -> Divisibility Tests a. Divisibility tests 5. Pre-algebra -> Factors and Multiples -> Divisibility and Factors a. Divisibility intuition b. Factor pairs c. Identifying factors and multiples

3. Algebra	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
3.2				6. Pre-algebra -> Factors and Multiples -> Prime Numbers a. Prime numbers b. Composite Numbers 7. Pre-algebra -> Factors and Multiples -> Prime Factorization a. Prime factorization b. The fundamental theorem of arithmetic c. Divisibility
3.3	Solve basic algebraic equations of 1 variable, by using the variable to solve mathematical problems where the solution is N.	1. Algebra I -> Introduction to Algebra -> Variables and Expressions a. Evaluating expressions in one variable b. Evaluating expressions in 2 variables c. Evaluating expressions with variables word problems 2. Algebra I -> Introduction to Algebra -> The Why of Algebra a. One step equation intuition 3. Algebra I -> Introduction to Algebra -> Getting the Feel for Equations and Inequalities a. Solving equations and inequalities through substitution b. Dependent and independent variables		

3. Algebra	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
3.3	Solve basic algebraic equations of 1 variable, by using the variable to solve mathematical problems where the solution is N.	4. Algebra I -> Linear Equations -> Equations for Beginners a. One-step equations with multiplication b. One step equations c. Two-step equations 5. Algebra I -> Linear Equations -> More Fancy Equations for Beginners a. Equations with variables on both sides b. Understanding the process for solving linear equations		

4. Data Handling	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
4.1	Describe the presence of data in everyday situations		1. Where do we see/use data?	
4.2	Conduct a simple survey using a variety of data collection methods		1. Data collection	
4.3	Display data using appropriate classifications on bar charts or pie charts	1. Early Math -> Measurement and Data -> Data a. Making line plots, bar graphs, and picture graphs 2. 3rd Grade -> Measurement and Geometry -> Data a. Create picture and bar graphs 2 3. 6th Grade -> Data and Statistics -> Bar Charts a. Creating bar charts	1. Display collected data 2. Reading pie charts 3. Creating pie charts	1. Early Math -> Measurement and Data -> Data a. Sort by count or category b. Solving problems with picture graphs 1 c. Solving problems with line plots 1 2. 3rd Grade -> Measurement and Geometry -> Data a. Solving problems with picture graphs 2
4.4	Describe findings, to include interpretation of results, and suggesting reasons for findings.	1. Early Math -> Measurement and Data -> Data a. Solving problems with bar graphs 1 b. Solving problems with bar graphs 2 2. 3rd Grade -> Measurement and Geometry -> Data a. Solving problems with bar graphs 3 3. 6th Grade -> Data and Statistics -> Bar Charts a. Reading bar charts 1 b. Reading bar charts 2	1. Interpret collected data results 2. Discuss findings	1. Early Math -> Measurement and Data -> Data a. Sort by count or category b. Solving problems with picture graphs 1 c. Solving problems with line plots 1 2. 3rd Grade -> Measurement and Geometry -> Data a. Solving problems with picture graphs 2

5. Problem Solving	Learning Outcome	Khan Academy	Additional Worksheets Required	Base Knowledge that can be explored on Khan Academy
5.1	Describe everyday situations in terms of quantitative descriptions		1. Project work	
5.2	Calculate solutions to real life quantitative problems by applying appropriate mathematical techniques			
5.3	Describe how a quantitative solution to a problem may be applied in a limited range of contexts.			