



IXL Skill Plan

The Northern Ireland Curriculum: Key Stage 3, Year 9



Use IXL's interactive skill plan to get up-to-date skill alignments, assign skills to your students, and track progress.

uk.ixl.com/maths/skill-plans/the-northern-ireland-curriculum-key-stage-3-year-9

Developing pupils' Knowledge, Understanding and Skills

Standard	IXL skills
<p>Develop knowledge and understanding of:</p> <p>Number</p>	<p>Number theory</p> <ol style="list-style-type: none"> 1. Multiplicative inverses 7KX 2. Divisibility rules V5C 3. Identify factors QJ8 4. Prime or composite Q8A 5. Prime factorisation KJQ 6. Highest common factor LHN 7. Lowest common multiple 5AR 8. Classify numbers G5G <p>Standard form</p> <ol style="list-style-type: none"> 9. Convert between ordinary numbers and standard form 2T6 10. Compare numbers written in standard form SC6 <p>Decimals</p> <ol style="list-style-type: none"> 11. Decimal numbers review CNP 12. Compare and order decimals 89E 13. Decimal number lines 24E 14. Round decimals M82 <p>Fractions and mixed numbers</p> <ol style="list-style-type: none"> 15. Write fractions in lowest terms NMR 16. Lowest common denominator 6ZZ 17. Compare and order fractions LXE 18. Compare fractions: word problems 2XW 19. Convert between mixed numbers and improper fractions WZN 20. Compare mixed numbers and improper fractions FSX

21. Convert fractions or mixed numbers to decimals DLY
22. Convert between decimals and fractions or mixed numbers EHC
23. Put a mix of decimals, fractions and mixed numbers in order FYN

Integers

24. Understanding integers UYY
25. Integers on number lines GU2
26. Graph integers on horizontal and vertical number lines AW7
27. Compare and order integers HP2

Rational numbers

28. Identify rational numbers PKL
29. Rational numbers on number lines YJX
30. Compare and order rational numbers using number lines KCH
31. Compare rational numbers 5ST
32. Put rational numbers in order 5HY
33. Rational numbers: find the sign N5L

Indices and roots

34. Understanding indices RLE
35. Evaluate indices K62
36. Solve equations with variable indices CH8
37. Indices with negative bases 75Y
38. Indices with decimal and fractional bases LNJ
39. Evaluate numerical expressions involving indices NFH
40. Square roots of perfect squares EV9
41. Estimate square roots 6E9
42. Cube roots of perfect cubes GYA

Ratios, rates and proportions

43. Understanding ratios NXC
44. Identify equivalent ratios KRN
45. Write an equivalent ratio MQQ
46. Unit rates 37P

- 47. Equivalent rates HCU
- 48. Do the ratios form a proportion? K6V
- 49. Solve proportions GZY
- 50. Rate of change CEY
- 51. Constant rate of change 75D

Direct proportions

- 52. Find the constant of proportionality from a table BD7
- 53. Write equations for proportional relationships from tables UTM
- 54. Identify proportional relationships by graphing GKF
- 55. Find the constant of proportionality from a graph T6C
- 56. Write equations for proportional relationships from graphs WB6
- 57. Identify proportional relationships from graphs and equations JTS
- 58. Identify proportional relationships from tables 7DU
- 59. Complete a table and graph a proportional relationship H62
- 60. Interpret graphs of proportional relationships AZD
- 61. Write and solve equations for proportional relationships RXG

Percents

- 62. What percentage is illustrated? YFZ
- 63. Convert between percents, fractions and decimals AB9
- 64. Compare percents to fractions and decimals Z9P
- 65. Solve percent problems using grid models 8QZ
- 66. Solve percent problems using bar models X9T
- 67. Estimate percents of numbers X6P
- 68. Percents of numbers and money amounts VWV
- 69. Compare percents of numbers JWX
- 70. Find what percent one number is of another Q2T

71. Find the total given a part and a percent XST
72. Solve percent equations PBG
73. Percent of change QZP

Algebra

Expressions and properties

1. Write variable expressions BLR
2. Identify terms and coefficients Z2X
3. Properties of addition and multiplication 6C8
4. Add and subtract like terms FQW
5. Multiply using the distributive property PZH
6. Factors of linear expressions PBS
7. Sort factors of expressions UUG
8. Write equivalent expressions using properties 8HF
9. Simplify linear expressions D97

One-variable equations

10. Which x satisfies an equation? TQ2
11. Write an equation from words HQY
12. Model and solve equations using algebra tiles H8N
13. Write and solve equations that represent diagrams NQC
14. Solve equations using properties EAQ
15. Solve one-step equations HWY
16. Solve two-step equations G52
17. Solve equations involving like terms 7HL
18. Solve equations with the distributive property SKQ

Two-variable equations

19. Does (x, y) satisfy the equation? U7C
20. Identify independent and dependent variables JXD
21. Write a two-variable equation 9H2
22. Complete a table for a two-variable relationship NRP
23. Complete a table and graph a two-variable equation N92
24. Identify the graph of an equation LMQ

25. Graph a two-variable equation YLL
26. Write an equation from a graph using a table 5AU

Linear functions

27. Find the gradient from a graph BKL
28. Find the gradient from two points GAK
29. Find a missing coordinate using gradient SFZ
30. Find the gradient and y-intercept of a linear equation 5HF
31. Graph a line using gradient VTV
32. Graph an equation in $y=mx+c$ form 6J6
33. Write an equation in $y=mx+c$ form from a graph MHU
34. Write an equation in $y=mx+c$ form from a gradient and y-intercept V8D

Shape, Space and Measures

Two-dimensional figures

1. Identify and classify polygons APC
2. Name, measure and classify angles FRC
3. Classify triangles K5C
4. Triangle inequality HFH
5. Classify quadrilaterals 9P2
6. Interior angles of polygons YRQ
7. Lines, line segments and rays P2L
8. Parallel, perpendicular and intersecting lines 72J
9. Identify complementary, supplementary, vertical, adjacent and congruent angles THF
10. Identify alternate interior and alternate exterior angles EKZ
11. Parts of a circle JNC

Three-dimensional figures

12. Bases of three-dimensional figures SQW
13. Nets of three-dimensional figures QNF
14. Front, side and top view 5D4
15. Base plans KC8

Units of measurement

16. Estimate metric measurements ULP

17. Compare and convert metric units XEE
18. Metric mixed units L79
19. Convert between square metres and hectares CF7
20. Convert square and cubic units of length LPJ
21. Convert between cubic metres and litres TXL
22. Precision 7U7
23. Estimate imperial measurements 5NT
24. Convert and compare imperial units HDG
25. Imperial mixed units DNX
26. Convert between metric and imperial units LQZ

Geometric measurement

27. Area of triangles 88E
28. Area of parallelograms AQK
29. Area of trapeziums 5J3
30. Area of rhombuses YG9
31. Area of triangles and quadrilaterals DMS
32. Circumference of circles LDT
33. Area of circles 7VS
34. Volume of cubes and cuboids 9ZC
35. Volume of triangular pyramids DCX
36. Volume of cylinders YVK
37. Surface area 8FJ

Coordinate plane

38. Coordinate plane review BCD
39. Quadrants and axes ZJW
40. Follow directions on a coordinate plane 8JE
41. Distance between two points 58N

Transformations

42. Symmetry VPS
43. Identify reflections, rotations and translations LD7
44. Translations: graph the image 9DC
45. Translations: find the coordinates AF9
46. Translations: write the rule FFV

- 47. Reflections: graph the image HFK
- 48. Reflections: find the coordinates LJZ
- 49. Rotations: graph the image AF6
- 50. Rotations: find the coordinates 2MJ
- 51. Reflections and rotations: write the rule Z48
- 52. Dilations: graph the image CJJ
- 53. Dilations: find the coordinates 8R6
- 54. Dilations: scale factor and classification EA8

Congruence and similarity

- 55. Identify congruent figures NAR
- 56. Congruence statements and corresponding parts K57
- 57. Side lengths and angle measures of congruent figures 9AQ
- 58. Identify similar figures RUC
- 59. Ratios in similar figures UG5
- 60. Similarity statements P8Y
- 61. Side lengths and angle measures of similar figures B95

Pythagoras' theorem

- 62. Pythagoras' theorem: find the length of the hypotenuse NHN
- 63. Pythagoras' theorem: find the missing leg length JPQ
- 64. Pythagoras' theorem: find the missing leg or hypotenuse length WVM
- 65. Converse of Pythagoras' theorem: is it a right triangle? 82U

Handling Data

Data and graphs

- 1. Interpret tables MXV
- 2. Interpret line plots JC9
- 3. Create line plots 8E8
- 4. Interpret bar graphs for categorical data 9SK
- 5. Create bar graphs for categorical data WPK
- 6. Interpret bar graphs for grouped data 5YS
- 7. Create bar graphs for grouped data WCL
- 8. Create frequency tables UWY

9. Interpret pie charts 2VY
10. Pie charts and central angles NNM
11. Choose the best type of graph 7SG

Statistics

12. Calculate mean, median, mode and range DYJ
13. Identify an outlier NVB
14. Populations and samples NQR
15. Identify representative, random and biased samples EXJ
16. Create scatter plots KPM
17. Identify trends with scatter plots TQU
18. Make predictions with scatter plots B8E
19. Outliers in scatter plots QPA

Money

1. Add, subtract, multiply and divide money amounts: word problems MT2
2. Price lists XLR
3. Unit prices GV6
4. Unit prices: find the total price MKV

Percents

5. Percent of a number: VAT, discount and more UZP
6. Find the percent: discount and mark-up 66R
7. Sale prices: find the original price NER
8. Multi-step problems with percents D5E
9. Estimate tips 3S9

Interest

10. Simple interest Z5H
11. Compound interest X5L

Number theory

1. HCF and LCM: word problems XPC

Decimals

2. Add and subtract decimals: word problems S46
3. Multiply decimals and whole numbers: word problems U UW

Develop knowledge and understanding of personal finance issues; and skills to enable competent and responsible financial decision making

Develop the application of mathematical skills to real life and work situations

4. Divide decimals by whole numbers: word problems S49
5. Add, subtract, multiply and divide decimals: word problems PBN
6. Maps with decimal distances M9D

Fractions

7. Compare fractions: word problems 2XW
8. Add and subtract fractions: word problems JQA
9. Add and subtract mixed numbers: word problems 7YU
10. Multiply fractions and whole numbers: word problems PBZ
11. Fractions of a number: word problems QMH
12. Multiply fractions: word problems EYD
13. Divide fractions: word problems STB
14. Add, subtract, multiply and divide fractions and mixed numbers: word problems VMP

Integers

15. Add and subtract integers: word problems X7V

Rational numbers

16. Compare and order rational numbers: word problems LSL
17. Multi-step word problems 2CG
18. Multi-step word problems: identify reasonable answers DDE

Ratios, rates and proportions

19. Equivalent ratios: word problems 98H
20. Compare ratios: word problems YHA
21. Use bar diagrams to solve ratio word problems EUG
22. Compare rates: word problems NGD
23. Ratios and rates: word problems 2S2
24. Do the ratios form a proportion: word problems F5J
25. Solve proportions: word problems 9EF

Direct proportions

- 26. Interpret graphs of proportional relationships AZD
- 27. Write and solve equations for proportional relationships RXG

Percents

- 28. Convert between percents, fractions and decimals: word problems ZAA
- 29. Percents of numbers: word problems 6MK
- 30. Find what percent one number is of another: word problems ANM
- 31. Solve percent equations: word problems ZKL
- 32. Percent of change: word problems KWK
- 33. Percent of change: find the original amount word problems 9XY

Units of measurement

- 34. Multi-step problems with metric unit conversions FBE

Sequences

- 35. Number sequences: word problems 95X

Expressions and one-variable equations

- 36. Write variable expressions: word problems MRV
- 37. Solve one- and two-step equations: word problems 8KV

Two-variable equations

- 38. Solve word problems involving two-variable equations SEB
- 39. Interpret a graph: word problems BDW

Geometric measurement

- 40. Area and perimeter of squares and rectangles: word problems VC2
- 41. Circles: word problems DL9
- 42. Scale drawings: word problems KT5
- 43. Scale drawings: scale factor word problems 42A
- 44. Pythagoras' theorem: word problems QBW

Develop the creative use of technology to enhance mathematical understanding

By demonstrating: creative thinking in their approach to solving mathematical problems, increasing competence in mental mathematics skills, increasing competence in pencil and paper methods, increasing confidence in the use of mathematical language and notation, and practical skills using technology

Operations with decimals

1. Add and subtract decimals U5Y
2. Complete the decimal addition or subtraction sentence HSJ
3. Multiply and divide decimals by powers of ten W7S
4. Multi-step inequalities with decimals W6W
5. Maps with decimal distances M9D
6. Evaluate numerical expressions involving decimals ZUY

Add and subtract fractions

7. Add and subtract fractions ZSM
8. Add and subtract mixed numbers RV2
9. Inequalities with addition and subtraction of fractions and mixed numbers K7P

Multiply fractions

10. Multiply fractions by whole numbers I DJC
11. Multiply fractions by whole numbers II VAH
12. Multiply fractions GCB
13. Complete the fraction multiplication sentence CQX
14. Multiply three or more fractions and whole numbers DKQ
15. Multiply mixed numbers and whole numbers QTV
16. Multiply mixed numbers SQ8

Divide fractions

17. Divide unit fractions by whole numbers ZHD
18. Divide whole numbers by unit fractions 8XN
19. Divide whole numbers and unit fractions RNW
20. Divide fractions by whole numbers 6E3
21. Divide whole numbers by fractions RA7
22. Divide fractions K2B
23. Divide fractions and mixed numbers TKY

Operations with integers

- 24. Add and subtract integers 6WV
- 25. Complete addition and subtraction sentences with integers HCL
- 26. Add and subtract three or more integers 64M
- 27. Multiply and divide integers 8DY
- 28. Complete multiplication and division sentences with integers 2K8
- 29. Evaluate numerical expressions involving integers 83P

Operations with rational numbers

- 30. Add and subtract positive and negative decimals A8M
- 31. Add and subtract positive and negative fractions 75J
- 32. Add and subtract rational numbers 5R4
- 33. Apply addition and subtraction rules PYV
- 34. Multiply and divide positive and negative decimals XES
- 35. Multiply and divide positive and negative fractions RUJ
- 36. Multiply and divide rational numbers M9F
- 37. Apply multiplication and division rules 5XE
- 38. Add, subtract, multiply and divide rational numbers V9E
- 39. Evaluate numerical expressions involving rational numbers ZFV

Ratios, rates and proportions

- 40. Unit rates 37P
- 41. Equivalent rates HCU
- 42. Solve proportions GZY
- 43. Rate of change CEY
- 44. Constant rate of change 75D

Problem solving and estimation

- 45. Estimate to solve word problems RNP
- 46. Multi-step word problems 2CG
- 47. Multi-step word problems: identify reasonable answers DDE

- 48. Guess-and-check word problems TCK
- 49. Use Venn diagrams to solve problems 2BN

Expressions and properties

- 50. Evaluate linear expressions RGZ
- 51. Evaluate multi-variable expressions VHD
- 52. Evaluate nonlinear expressions RXJ
- 53. Multiply using the distributive property PZH
- 54. Factors of linear expressions PBS
- 55. Simplify linear expressions D97

One-variable equations

- 56. Write and solve equations that represent diagrams NQC
- 57. Solve one- and two-step equations: word problems 8KV

Angles and two-dimensional figures

- 58. Find missing angles in triangles and quadrilaterals AXA
- 59. Exterior Angle Theorem 8LN
- 60. Interior angles of polygons YRQ
- 61. Find measures of complementary, supplementary, vertical and adjacent angles YGP
- 62. Find lengths and measures of bisected line segments and angles ZN9

Geometric measurement

- 63. Area of compound figures with triangles K46
- 64. Semicircles: calculate area, perimeter, radius and diameter VGY
- 65. Quarter circles: calculate area, perimeter and radius CPV
- 66. Area of compound figures with triangles, semicircles and quarter circles YZA
- 67. Area between two shapes N6W
- 68. Volume of compound figures QRZ

Similar figures

- 69. Similar figures and indirect measurement V5D

Pythagoras' theorem

70. Pythagoras' theorem: find the perimeter SRH

71. Pythagoras' theorem: word problems QBW

Statistics

72. Mean, median, mode and range: find the missing number GZP

73. Changes in mean, median, mode and range FVA

74. Identify an outlier and describe the effect of removing it C9F

Developing pupils as Individuals

Standard	IXL skills
<p>Investigate a personal and class lifestyle study of time, for example, <i>time spent in school, doing homework, watching TV or taking exercise.</i></p>	
<p>Work collaboratively in problem solving, taking account of others' viewpoints to reach consensus.</p>	
<p>Demonstrate an ability and willingness to develop logical arguments, for example, <i>justify how they arrived at a conclusion or solution to a problem.</i></p>	<p>Rational numbers</p> <ol style="list-style-type: none"> 1. Divisibility rules V5C 2. Scaling whole numbers by fractions: justify your answer F98 3. Compare and order rational numbers: word problems LSL 4. Rational numbers: find the sign N5L <p>Ratios, rates and proportions</p> <ol style="list-style-type: none"> 5. Compare ratios: word problems YHA 6. Compare rates: word problems NGD 7. Ratios and rates: word problems 2S2 <p>Direct proportions</p> <ol style="list-style-type: none"> 8. Interpret graphs of proportional relationships AZD 9. Write and solve equations for proportional relationships RXG <p>Problem solving</p> <ol style="list-style-type: none"> 10. Guess-and-check word problems TCK 11. Use Venn diagrams to solve problems 2BN <p>Sequences</p> <ol style="list-style-type: none"> 12. Identify arithmetic and geometric sequences 5BY 13. Arithmetic sequences V2T 14. Geometric sequences 5SY 15. Number sequences: mixed review YRE

16. Number sequences: word problems 95X
17. Evaluate variable expressions for arithmetic sequences G5W
18. Evaluate variable expressions for geometric sequences E7K
19. Write variable expressions for arithmetic sequences 45L

Expressions

20. Identify equivalent expressions using bar models QP8
21. Multiply using the distributive property: area models X5H
22. Factorise linear expressions: area models UXE
23. Write equivalent expressions using properties 8HF
24. Identify equivalent linear expressions HU8
25. Identify equivalent linear expressions: word problems PNH

One-variable equations

26. Model and solve equations using algebra tiles H8N
27. Write and solve equations that represent diagrams NQC
28. Solve equations: complete the solution MD5
29. Solve one- and two-step equations: word problems 8KV
30. Solve multi-step equations: complete the solution TAA

Angles and two-dimensional figures

31. Find missing angles in triangles and quadrilaterals AXA
32. Exterior Angle Theorem 8LN
33. Interior angles of polygons YRQ
34. Find measures of complementary, supplementary, vertical and adjacent angles YGP
35. Find lengths and measures of bisected line segments and angles ZN9

Congruence and similarity

- 36. Side lengths and angle measures of congruent figures 9AQ
- 37. Side lengths and angle measures of similar figures B95
- 38. Similar figures and indirect measurement V5D

Pythagoras' theorem

- 39. Pythagoras' theorem: word problems QBW
- 40. Converse of Pythagoras' theorem: is it a right triangle? 82U

Probability

- 41. Probability of simple events 8U4
- 42. Probability of simple events and opposite events 9ZJ
- 43. Probability of mutually exclusive events and overlapping events WBA
- 44. Experimental probability ZE8
- 45. Make predictions using theoretical probability J9U
- 46. Make predictions using experimental probability Q8E
- 47. Compound events: find the number of outcomes SLM
- 48. Probability of compound events RUQ
- 49. Find the number of outcomes: word problems N6J

Explore issues related to Personal Health: Investigate aspects of health and healthy living, for example, *body temperature, heart rate, breathing rate, nutritional requirements, food choices, special diets, road safety, substance misuse, life expectancy*. Investigate incidence of diseases and recovery rates, for example, *heart disease, cancers, chicken-pox, influenza, etc.*

Explore issues related to Spiritual Awareness: Be aware of the infinite nature of number and space and the prevalence of pattern, for example, *the Fibonacci series in the natural world, harmonics in music, 'golden ratio', Islamic tiles, etc.*

Developing pupils as Contributors to Society

Standard	IXL skills
<p>Analyse and interpret information patterns relating to local and global trends, for example, <i>population profile (including age, gender, religion and ethnicity), indices of development, voting patterns, crime rates, etc.</i></p>	<p>Tables</p> <ol style="list-style-type: none"> 1. Interpret tables MXV <p>Bar graphs</p> <ol style="list-style-type: none"> 2. Interpret bar graphs for categorical data 9SK 3. Interpret bar graphs for grouped data 5YS <p>Line plots</p> <ol style="list-style-type: none"> 4. Interpret line plots JC9 <p>Pie charts</p> <ol style="list-style-type: none"> 5. Interpret pie charts 2VY 6. Pie charts and central angles NNM <p>Scatter plots</p> <ol style="list-style-type: none"> 7. Identify trends with scatter plots TQU 8. Make predictions with scatter plots B8E
<p>Critically examine the use and misuse of mathematics to justify/support particular attitudes/opinions in different media, and the interpretation of data, for example, <i>investigate the use of numbers in marketing strategies, advertising and opinion polls.</i></p>	<ol style="list-style-type: none"> 1. Choose the best type of graph 7SG
<p>Explore issues related to Cultural Understanding: Explore how mathematics have been used and developed in other parts of the world, for example, <i>Egyptian fractions, Russian multiplication, Roman numerals; how European digits derived from Arabian numbers.</i> Explore elements of geometry using patterns from different cultures, for example, <i>Amish quilt designs and Islamic patterns.</i> Apply mathematical problem solving skills to contexts faced by developing countries, including mathematical games from these cultures.</p>	

Explore issues related to Ethical Awareness:
Research and interpret statistics in relation to social and economic issues, for example, *compare and contrast aid versus arms expenditure or aid versus debt repayments, hospital waiting lists, child labour, etc.*

Measures of center and spread

1. Calculate mean, median, mode and range DYJ
2. Interpret charts to find mean, median, mode and range 8UP
3. Mean, median, mode and range: find the missing number GZP
4. Describe distributions in line plots CMB

Outliers

5. Identify an outlier NVB
6. Identify an outlier and describe the effect of removing it C9F

Statistical samples

7. Populations and samples NQR
8. Identify representative, random and biased samples EXJ

Scatter plots

9. Identify trends with scatter plots TQU
10. Make predictions with scatter plots B8E
11. Outliers in scatter plots QPA

Developing pupils as Contributors to the Economy and the Environment

Standard	IXL skills
<p>Examine the role of mathematics as a "key" to entry for future education, training and employment. Explore how the skills developed through mathematics will be useful to a range of careers, for example, <i>jobs involving computation, checkout operation, data analysis, education, financial services, quantitative problem solving, research, surveying, construction, etc.</i></p>	<p>Consumer maths</p> <ol style="list-style-type: none"> 1. Add, subtract, multiply and divide money amounts: word problems MT2 2. Price lists XLR 3. Unit prices GV6 4. Unit prices: find the total price MKV 5. Percent of a number: VAT, discount and more UZP 6. Find the percent: discount and mark-up 66R 7. Sale prices: find the original price NER 8. Multi-step problems with percents D5E 9. Estimate tips 3S9 10. Simple interest Z5H 11. Compound interest X5L <p>Geometric measurement</p> <ol style="list-style-type: none"> 12. Area and perimeter of squares and rectangles: word problems VC2 13. Circles: word problems DL9 14. Scale drawings: word problems KT5 15. Scale drawings: scale factor word problems 42A <p>Pythagoras' theorem</p> <ol style="list-style-type: none"> 16. Pythagoras' theorem: word problems QBW
<p>Apply mathematical skills in everyday financial planning and decision making, for example, <i>cash and non-cash methods of payment for goods and services, to include relevant examples such as mobile phone tariffs and e-shopping; the role of banks, building societies, credit unions and the post office; sources of income; savings; dealing with debt</i></p>	<p>Money</p> <ol style="list-style-type: none"> 1. Add, subtract, multiply and divide money amounts: word problems MT2 2. Price lists XLR 3. Unit prices GV6 4. Unit prices: find the total price MKV

and credit; exchange rates.

Percents

5. Percent of a number: VAT, discount and more UZP
6. Find the percent: discount and mark-up 66R
7. Sale prices: find the original price NER
8. Multi-step problems with percents D5E
9. Estimate tips 3S9

Interest

10. Simple interest Z5H
11. Compound interest X5L

Explore issues related to Education for Sustainable Development: Understand the need to manage renewable and nonrenewable resources, for example, *investigate the savings and benefits of energy conservation measures etc.* Investigate the various costs and benefits of waste management, for example, *by analysing the cost/benefit of recycling glass, paper, garden waste and other waste.*

Learning Outcomes

Standard	IXL skills
<p>Demonstrate mental mathematical capability with simple problems;</p>	<p>Whole numbers</p> <ol style="list-style-type: none"> Multiplicative inverses 7KX Divisibility rules V5C Estimate to solve word problems RNP <p>Decimals</p> <ol style="list-style-type: none"> Round decimals M82 Multiply and divide decimals by powers of ten W7S Estimate sums, differences and products of decimals TQJ <p>Fractions</p> <ol style="list-style-type: none"> Estimate sums and differences of mixed numbers BNV Estimate products of fractions and whole numbers XM9 Scaling whole numbers by fractions R6S Estimate products and quotients of fractions and mixed numbers WG9 <p>Integers</p> <ol style="list-style-type: none"> Integer addition and subtraction rules CEW Integer multiplication and division rules DXE <p>Rational numbers</p> <ol style="list-style-type: none"> Apply addition and subtraction rules PYV Apply multiplication and division rules 5XE <p>Percents</p> <ol style="list-style-type: none"> Estimate percents of numbers X6P
<p>Decide on the appropriate method and equipment to solve problems—mental, written, calculator, mathematical instruments or a combination of these.</p>	<p>Operations with decimals</p> <ol style="list-style-type: none"> Add and subtract decimals U5Y Complete the decimal addition or subtraction sentence HSJ

3. Multiply decimals ZQD

4. Divide decimals YRF

Add and subtract fractions

5. Add and subtract fractions ZSM

6. Add and subtract mixed numbers RV2

Multiply fractions

7. Multiply fractions by whole numbers using number lines YS8

8. Multiply fractions by whole numbers: choose the model BC8

9. Multiply fractions by whole numbers using models: complete the equation 5GN

10. Multiply fractions by whole numbers I DJC

11. Multiply fractions by whole numbers II VAH

12. Multiply two fractions using models EHZ

13. Multiply fractions GCB

14. Complete the fraction multiplication sentence CQX

15. Multiply three or more fractions and whole numbers DKQ

16. Multiply mixed numbers and whole numbers QTV

17. Multiply mixed numbers SQ8

Divide fractions

18. Divide unit fractions by whole numbers ZHD

19. Divide whole numbers by unit fractions 8XN

20. Divide unit fractions and whole numbers using area models ZCQ

21. Divide whole numbers and unit fractions RNW

22. Divide fractions by whole numbers 6E3

23. Divide whole numbers by fractions RA7

24. Divide fractions K2B

25. Divide fractions and mixed numbers TKY

Operations with integers

26. Add and subtract integers using number lines 3V2

27. Add and subtract integers using counters CTE

28. Add and subtract integers 6WV
29. Complete addition and subtraction sentences with integers HCL
30. Add and subtract three or more integers 64M
31. Understand multiplying by a negative integer using a number line R9Z
32. Multiply and divide integers 8DY
33. Complete multiplication and division sentences with integers 2K8

Operations with rational numbers

34. Add and subtract positive and negative decimals A8M
35. Add and subtract positive and negative fractions 75J
36. Add and subtract rational numbers 5R4
37. Multiply and divide positive and negative decimals XES
38. Multiply and divide positive and negative fractions RUJ
39. Multiply and divide rational numbers M9F
40. Add, subtract, multiply and divide rational numbers V9E

Numerical expressions

41. Evaluate numerical expressions involving decimals ZUY
42. Evaluate numerical expressions involving fractions DFS
43. Evaluate numerical expressions involving integers 83P
44. Evaluate numerical expressions involving rational numbers ZFV

Indices and square roots

45. Evaluate indices K62
46. Solve equations with variable indices CH8
47. Indices with negative bases 75Y
48. Indices with decimal and fractional bases LNJ
49. Evaluate numerical expressions involving indices NFH
50. Square roots of perfect squares EV9

51. Cube roots of perfect cubes GYA

Ratios, rates and proportions

52. Use bar diagrams to solve ratio word problems EUG

53. Compare rates: word problems NGD

54. Ratios and rates: word problems 2S2

55. Solve proportions GZY

56. Solve proportions: word problems 9EF

Percents

57. Solve percent problems using grid models 8QZ

58. Solve percent problems using bar models X9T

59. Solve percent equations PBG

60. Solve percent equations: word problems ZKL

One-variable equations

61. Write an equation from words HQY

62. Model and solve equations using algebra tiles H8N

63. Write and solve equations that represent diagrams NQC

64. Solve equations using properties EAQ

65. Solve one-step equations HWY

66. Solve two-step equations G52

67. Solve equations involving like terms 7HL

68. Solve equations with the distributive property SKQ

Money

1. Add, subtract, multiply and divide money amounts: word problems MT2

2. Price lists XLR

3. Unit prices GV6

4. Unit prices: find the total price MKV

Percents

5. Percent of a number: VAT, discount and more UZP

6. Find the percent: discount and mark-up 66R

7. Sale prices: find the original price NER

Demonstrate financial capability in a range of relevant everyday contexts.

Research and manage information effectively to investigate and solve mathematical problems, including using ICT where appropriate.

8. Multi-step problems with percents D5E

9. Estimate tips 3S9

Interest

10. Simple interest Z5H

11. Compound interest X5L

Tables

1. Interpret tables MXV

Line plots

2. Interpret line plots JC9

3. Create line plots 8E8

4. Describe distributions in line plots CMB

Bar graphs

5. Interpret bar graphs for categorical data 9SK

6. Create bar graphs for categorical data WPK

7. Interpret bar graphs for grouped data 5YS

8. Create bar graphs for grouped data WCL

Frequency charts

9. Create frequency tables UWY

Pie charts

10. Interpret pie charts 2VY

11. Pie charts and central angles NNM

Measures of center and spread

12. Calculate mean, median, mode and range DYJ

13. Interpret charts to find mean, median, mode and range 8UP

14. Mean, median, mode and range: find the missing number GZP

15. Changes in mean, median, mode and range FVA

Outliers

16. Identify an outlier NVB

17. Identify an outlier and describe the effect of removing it C9F

Show deeper mathematical understanding by thinking critically and flexibly, solving problems and making informed decisions, demonstrating using ICT where appropriate.

Scatter plots

18. Create scatter plots KPM
19. Identify trends with scatter plots TQU
20. Make predictions with scatter plots B8E
21. Outliers in scatter plots QPA

Number theory

1. HCF and LCM: word problems XPC

Decimals

2. Add and subtract decimals: word problems S46
3. Multiply decimals and whole numbers: word problems UUW
4. Divide decimals by whole numbers: word problems S49
5. Add, subtract, multiply and divide decimals: word problems PBN
6. Maps with decimal distances M9D

Fractions

7. Compare fractions: word problems 2XW
8. Add and subtract fractions: word problems JQA
9. Add and subtract mixed numbers: word problems 7YU
10. Multiply fractions and whole numbers: word problems PBZ
11. Fractions of a number: word problems QMH
12. Multiply fractions: word problems EYD
13. Divide fractions: word problems STB
14. Add, subtract, multiply and divide fractions and mixed numbers: word problems VMP

Integers

15. Add and subtract integers: word problems X7V

Rational numbers

16. Compare and order rational numbers: word problems LSL

Ratios, rates and proportions

17. Equivalent ratios: word problems 98H
18. Compare ratios: word problems YHA

19. Use bar diagrams to solve ratio word problems EUG
20. Compare rates: word problems NGD
21. Ratios and rates: word problems 2S2
22. Do the ratios form a proportion: word problems F5J
23. Solve proportions: word problems 9EF

Direct proportions

24. Interpret graphs of proportional relationships AZD
25. Write and solve equations for proportional relationships RXG

Percents

26. Convert between percents, fractions and decimals: word problems ZAA
27. Percents of numbers: word problems 6MK
28. Find what percent one number is of another: word problems ANM
29. Solve percent equations: word problems ZKL
30. Percent of change: word problems KWK
31. Percent of change: find the original amount word problems 9XY

Multi-step problems and estimation

32. Estimate to solve word problems RNP
33. Multi-step word problems 2CG
34. Multi-step word problems: identify reasonable answers DDE
35. Guess-and-check word problems TCK
36. Use Venn diagrams to solve problems 2BN

Units of measurement

37. Multi-step problems with metric unit conversions FBE

Sequences

38. Number sequences: word problems 95X

Expressions and one-variable equations

39. Write variable expressions: word problems MRV

40. Solve one- and two-step equations: word problems 8KV

Two-variable equations

41. Solve word problems involving two-variable equations SEB

42. Interpret a graph: word problems BDW

Geometric measurement

43. Area and perimeter of squares and rectangles: word problems VC2

44. Circles: word problems DL9

45. Scale drawings: word problems KT5

46. Scale drawings: scale factor word problems 42A

Pythagoras' theorem

47. Pythagoras' theorem: word problems QBW

Statistics

48. Interpret charts to find mean, median, mode and range 8UP

49. Changes in mean, median, mode and range FVA

50. Populations and samples NQR

51. Identify representative, random and biased samples EXJ

Probability

52. Make predictions using theoretical probability J9U

53. Make predictions using experimental probability Q8E

54. Find the number of outcomes: word problems N6J

Demonstrate creativity and initiative when developing ideas and following them through.

Work effectively with others.

Demonstrate self-management by working systematically, persisting with tasks, evaluating and improving own performance.

Communicate effectively in oral, visual, written, mathematical and ICT formats, showing clear awareness of audience and purpose.

Rational numbers

1. Classify numbers G5G
2. Decimal numbers review CNP
3. Write fractions in lowest terms NMR
4. Understanding integers UYY
5. Identify rational numbers PKL
6. Rational numbers on number lines YJX
7. Rational numbers: find the sign N5L

Indices

8. Understanding indices RLE
9. Evaluate indices K62
10. Solve equations with variable indices CH8

Ratios

11. Understanding ratios NXC
12. Write an equivalent ratio MQQ

Direct proportions

13. Find the constant of proportionality from a table BD7
14. Write equations for proportional relationships from tables UTM
15. Identify proportional relationships by graphing GKF
16. Find the constant of proportionality from a graph T6C
17. Write equations for proportional relationships from graphs WB6
18. Identify proportional relationships from graphs and equations JTS
19. Identify proportional relationships from tables 7DU
20. Complete a table and graph a proportional relationship H62

Expressions

21. Write variable expressions for arithmetic sequences 45L
22. Write variable expressions BLR
23. Write variable expressions: word problems MRV

24. Write equivalent expressions using properties 8HF

One-variable equations

25. Write an equation from words HQY
26. Write and solve equations that represent diagrams NQC

Two-variable equations

27. Write a two-variable equation 9H2
28. Graph a two-variable equation YLL

Linear functions

29. Write an equation from a graph using a table 5AU
30. Graph a line using gradient VTV
31. Graph an equation in $y=mx+c$ form 6J6
32. Write an equation in $y=mx+c$ form from a graph MHU
33. Write an equation in $y=mx+c$ form from a gradient and y-intercept V8D

Data and graphs

34. Create line plots 8E8
35. Create bar graphs for categorical data WPK
36. Create bar graphs for grouped data WCL
37. Create frequency tables UWY