



IXL Skill Plan

Oklahoma Academic Standards: Grade 6



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N | Numbers & Operations

Standard	IXL skills
6.N.1: Read, write, and represent rational numbers expressed as integers, fractions, decimals, percents, and ratios; use these representations in real-world and mathematical situations.	
6.N.1.1: Use manipulatives and models (e.g., number lines) to determine positive and negative numbers and their contexts, identify opposites, and explain the meaning of 0 (zero) in a variety of situations.	1. Understanding integers 8EP 2. Integers on number lines K6J 3. Graph integers on horizontal and vertical number lines 36C 4. Understanding opposite integers X8L
6.N.1.2: Compare and order positive rational numbers, represented in various forms, or integers using the symbols "<", ">", and "=".	Integers 1. Compare integers 4G6 2. Put integers in order CMQ Rational numbers 3. Put a mix of decimals and fractions in order MSR 4. Put a mix of decimals, fractions, and mixed numbers in order AWW 5. Compare positive rational numbers YHF
6.N.1.3: Explain that a percent represents parts "out of 100" and ratios "to 100."	1. What percentage is illustrated? RHG
6.N.1.4: Determine equivalencies among fractions, mixed numbers, decimals, and percents.	Fractions 1. Convert between improper fractions and mixed numbers P9A 2. Equivalent fractions review 9P3 Decimals and fractions 3. Convert fractions to decimals 62Y 4. Convert decimals to fractions HTJ 5. Convert between decimals and fractions FL5 6. Convert between decimals and mixed numbers PD8

Percents, fractions, and decimals

7. Convert fractions to percents using grid models ZDZ
8. Convert between percents, fractions, and decimals ZAV
9. Convert between percents, fractions, and decimals: word problems 7CZ

6.N.2: Read, write, and model whole number and integer operations to solve problems.

6.N.2.1: Estimate solutions for integer addition and subtraction of problems in order to assess the reasonableness of results.

6.N.2.2: Illustrate addition and subtraction of integers using a variety of representations.

Addition

1. Add integers using counters 4J9
2. Add integers using number lines L95

Subtraction

3. Subtract integers using counters NYM
4. Subtract integers using number lines EW2

6.N.2.3: Add and subtract integers in a variety of situations; use efficient and generalizable procedures including but not limited to standard algorithms.

Addition

1. Add integers ZM6
2. Add three or more integers F2N

Subtraction

3. Subtract integers WQ6

Mixed operations

4. Add and subtract integers: find the sign HBD
5. Add and subtract integers: word problems MP9
6. Add and subtract integers: input/output tables FLP

6.N.2.4: Identify and represent patterns with whole-number exponents and perfect squares. Evaluate powers with whole-number bases and exponents.

1. Write multiplication expressions using exponents TY5
2. Evaluate powers with whole number bases XDA
3. Write powers of ten with exponents DLL
4. Find the missing exponent or base HC5
5. Square numbers 7JR

6.N.2.5: Factor whole numbers and express prime and composite numbers as a product of prime factors with exponents.

Prime or composite

1. Prime or composite DFC

Factors

2. Identify factors BGJ
3. Find all the factor pairs of a number VTM

Prime factorization

4. Prime factorization 9CP
5. Prime factorization with exponents WLU

6.N.2.6: Determine the greatest common factors and least common multiples. Use common factors and multiples to calculate with fractions, find equivalent fractions, and express the sum of two-digit numbers with a common factor using the distributive property.

GCF and LCM

1. Greatest common factor AMB
2. Greatest common factor of three or four numbers FBD
3. Least common multiple NGA
4. Least common multiple of three or four numbers ZRM
5. GCF and LCM: word problems ZB8

Distributive property

6. Factor numerical expressions using the distributive property MX2

Fractions

7. Write fractions in simplest form 5EW
8. Least common denominator V5M
9. Add and subtract fractions with unlike denominators AWS
10. Add and subtract fractions with unlike denominators: word problems WT5
11. Equivalent fractions review 9P3

1. Checkpoint: Factors and multiples 6B2
2. Checkpoint: Exponents and prime factorization 6A3

- *Coming soon:* Checkpoint: Add and subtract integers

Checkpoint opportunity

6.N.3: Explain and use the concept of ratio and its relationship to other rational numbers and to the multiplication and division of whole numbers. Use

ratios to solve problems.

6.N.3.1: Identify and use ratios to compare and relate quantities in multiple ways. Recognize that multiplicative comparison and additive comparison are different.

Ratios

1. Write a ratio using a colon 83K
2. Write a ratio using a fraction XZ2
3. Write a ratio: word problems SBQ
4. Which model represents the ratio? 66V

Equivalent ratios

5. Identify equivalent ratios 2LM
6. Write an equivalent ratio NEA
7. Ratio tables PPF
8. Equivalent ratios: word problems RLZ

6.N.3.2: Determine the unit rate for ratios.

Unit rate

1. Unit rates JSZ
2. Rates: word problems 9AF

Unit price

3. Unit prices UKD
4. Unit prices with fractions and decimals 9NF
5. Unit prices with customary unit conversions RW2

6.N.3.3: Apply the relationship between ratios, equivalent fractions, unit rates, and percents to solve problems in various contexts.

Ratios and rates

1. Ratios and rates: complete a table and make a graph 6Z2
2. Use tape diagrams to solve ratio word problems YMD
3. Compare ratios: word problems 2HT
4. Compare rates: word problems NAF
5. Ratios and rates: word problems ZB9

Fractions and percents

6. Compare percents and fractions: word problems 9C8

Percent models

7. Solve percent problems using grid models YX6
8. Solve percent problems using strip models MEA

Percent problems

9. Percents of numbers 8N4
10. Percents of numbers: word problems BBY
11. Percents of numbers: fractional and decimal percents CD5
12. Find what percent one number is of another PE7
13. Find what percent one number is of another: word problems 49B
14. Find the total given a part and a percent D6L
15. Solve percent problems ELY
16. Solve percent word problems YWB

1. Checkpoint: Ratio concepts 5T2
2. Checkpoint: Unit rates KE2
3. Checkpoint: Percents FP9

Checkpoint opportunity

6.N.4: Multiply and divide decimals, fractions, and mixed numbers; solve real-world and mathematical problems with rational numbers.

6.N.4.1: Estimate solutions to problems with whole numbers, decimals, fractions, and mixed numbers, and use the estimates to assess the reasonableness of results in the context of the problem.

Whole numbers

1. Estimate products TFZ
2. Estimate quotients 5RQ
3. Estimate to solve word problems GUU
4. Multi-step word problems: identify reasonable answers PYW

Decimals

5. Estimate sums and differences of decimals SJ6
6. Estimate products of decimal numbers EPL
7. Estimate decimal quotients KFF

Mixed numbers and fractions

8. Estimate sums and differences of mixed numbers LFH
9. Estimate products of fractions and whole numbers EFY
10. Estimate products of mixed numbers 5BG
11. Estimate quotients when dividing mixed numbers HHV

6.N.4.2: Illustrate multiplication and division of fractions and decimals to show connections to fractions, whole number multiplication, and inverse relationships.

Fractions

1. Multiply fractions by whole numbers using models: complete the equation FZV
2. Multiply two fractions using models B7P
3. Multiply fractions greater than one using models ZVX
4. Divide whole numbers by unit fractions using models DXW
5. Divide whole numbers and fractions using models MF8
6. Divide fractions using models CHB

Mixed numbers

7. Multiply with mixed numbers using area models LGS
8. Divide fractions and mixed numbers using models DZT

Decimals

9. Multiply a decimal by a one-digit whole number using blocks XFN
10. Multiply decimals using grids NY9
11. Divide decimals using area models: complete the equation JPR

6.N.4.3: Multiply and divide fractions and decimals using efficient and generalizable procedures.

Multiply and divide decimals

1. Multiply two decimals: where does the decimal point go? 5K4
2. Multiply decimals 2WT
3. Divide decimals by whole numbers NLL
4. Multiply and divide decimals by powers of ten KNH
5. Division with decimal divisors BFR

Multiply fractions

6. Multiply fractions by whole numbers I CGR
7. Multiply fractions by whole numbers II RLN
8. Multiply two fractions BNT
9. Multiply three or more fractions and whole numbers KJF

6.N.4.4: Use mathematical modeling to solve and interpret problems including money, measurement, geometry, and data requiring arithmetic with decimals, fractions and mixed numbers.

Multiply mixed numbers

10. Multiply mixed numbers and whole numbers VUH
11. Multiply mixed numbers Z9M
12. Multiply three or more mixed numbers, fractions, and/or whole numbers W5G

Divide fractions and mixed numbers

13. Reciprocals 5BT
14. Divide whole numbers and unit fractions DPA
15. Divide fractions DS2
16. Divide fractions and mixed numbers N2B

Decimals

1. Add and subtract decimals: word problems 97T
2. Maps with decimal distances J7D
3. Divide decimals by whole numbers: word problems TWZ
4. Multiply and divide decimals: word problems GZN
5. Add, subtract, multiply, or divide two decimals: word problems 8HT

Fractions

6. Add and subtract fractions with unlike denominators: word problems WT5
7. Multiply fractions by whole numbers: word problems 88T
8. Multiply fractions: word problems 94H
9. Multiply three or more fractions and whole numbers KJF
10. Divide fractions by whole numbers in recipes ENK

Mixed numbers

11. Add and subtract mixed numbers: word problems X8C
12. Multiply mixed numbers: word problems 3P8
13. Divide fractions and mixed numbers using models: word problems YRT
14. Divide fractions and mixed numbers: word problems WAH

Money

- 15. Add and subtract money amounts QHL
- 16. Multiply money: word problems C5S
- 17. Divide money amounts: word problems SEF
- 18. Add and subtract money amounts: word problems DR9
- 19. Multiply money by whole numbers and decimals 3D8
- 20. Divide money amounts WPH

Checkpoint opportunity

- 1. Checkpoint: Operations with decimals ZTG
 - 2. Checkpoint: Multiply and divide fractions X9U
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A | Algebraic Reasoning & Algebra

Standard	IXL skills
6.A.1: Recognize and represent relationships between varying quantities; translate from one representation to another; use patterns, tables, graphs, and rules to model and solve mathematical problems.	
6.A.1.1: Plot integer- and rational-valued (limited to halves and fourths) ordered-pairs as coordinates in all four quadrants and recognize the reflective relationships among coordinates that differ only by their signs.	1. Objects on a coordinate plane GFN 2. Graph points on a coordinate plane VHQ 3. Quadrants F5T 4. Reflect a point over an axis 32S 5. Directions on a coordinate plane XDQ
6.A.1.2: Represent relationships between two varying positive quantities involving no more than two operations with rules, graphs, and tables; translate between any two of these representations.	Independent and dependent variables 1. Identify independent and dependent variables in tables and graphs YFW 2. Identify independent and dependent variables: word problems 9UJ Find values 3. Find a value using two-variable equations 46Q 4. Find a value using two-variable equations: word problems XRJ 5. Complete a table for a two-variable relationship TZB Make and interpret graphs 6. Identify the graph of an equation WN7 7. Complete a table and graph a two-variable equation EY5 8. Graph a relationship between two variables TJA 9. Interpret a graph: word problems KZD Write equations 10. Write an equation from a graph using a table BCM

11. Relationships between two variables: word problems UJQ
12. Write a two-variable equation from a table ZTL
13. Write a two-variable equation 2RE

6.A.1.3: Use and evaluate variables in expressions, equations, and inequalities that arise from various contexts, including determining when or if, for a given value of the variable, an equation or inequality involving a variable is true or false.

Identify terms and coefficients

1. Identify terms and coefficients 9KE

Evaluate variable expressions

2. Evaluate variable expressions with whole numbers Q8Z
3. Evaluate multi-variable expressions HC9
4. Evaluate variable expressions with decimals, fractions, and mixed numbers 49T
5. Evaluate variable expressions: word problems 7XA

Identify solutions

6. Does x satisfy an equation? VMB
7. Which x satisfies an equation? VG8
8. Solutions to inequalities P9N

1. Checkpoint: The coordinate plane LMY
 - *Coming soon:* Checkpoint: Two-variable relationships

Checkpoint opportunity

6.A.2: Use properties of arithmetic to generate equivalent numerical expressions and evaluate expressions involving positive rational numbers.

6.A.2.1: Generate equivalent expressions and evaluate expressions involving positive rational numbers by applying the commutative, associative, and distributive properties and order of operations to model and solve mathematical problems.

Order of operations

1. Evaluate numerical expressions one step at a time XCQ
2. Evaluate numerical expressions with or without parentheses VG6
3. Evaluate numerical expressions with parentheses or brackets MLU
4. Identify mistakes involving the order of operations V46
5. Evaluate numerical expressions involving decimals PEL
6. Evaluate numerical expressions involving fractions FDK

Properties of operations

7. Properties of addition JRM
8. Properties of multiplication HC8
9. Factor numerical expressions using the distributive property MX2

6.A.3: Use equations and inequalities to model and solve mathematical problems and use the idea of maintaining equality to solve equations. Interpret solutions in the original context.

6.A.3.1: Model mathematical situations using expressions, equations and inequalities involving variables and rational numbers.

Variable expressions

1. Write variable expressions: one operation F5B
2. Write variable expressions: two operations CX9
3. Write variable expressions: word problems 6LQ

Equations

4. Write an equation from words AN8
5. Write a one-step equation: word problems YVX
6. Which word problem matches the one-step equation? WYQ

Inequalities

7. Write inequalities from number lines N99
8. Write and graph inequalities: word problems AGB

6.A.3.2: Use number sense and properties of operations and equality to model and solve mathematical problems involving equations in the form $x + p = q$ and $px = q$, where p and q are nonnegative rational numbers. Graph the solution on a number line, interpret the solution in the original context, and assess the reasonableness of the solution.

Solve equations using models

1. Model and solve equations using algebra tiles G6Z
2. Model and solve equations using diagrams 82C
3. Write and solve equations that represent diagrams FSQ

Equations with whole numbers

4. Solve one-step addition and subtraction equations with whole numbers JXM
5. Solve one-step multiplication and division equations with whole numbers JUA
6. Solve one-step equations with whole numbers WLR

7. Solve one-step addition and subtraction equations: word problems 35Q
8. Solve one-step multiplication and division equations: word problems GMV
9. Solve one-step equations: word problems BXY

Equations with decimals and fractions

10. Solve one-step addition and subtraction equations with decimals and fractions 5D2
11. Solve one-step multiplication and division equations with decimals and fractions T53
12. Solve one-step equations with decimals and fractions 5UU

Checkpoint opportunity

1. Checkpoint: Understand and solve equations DEJ
 2. Checkpoint: Inequalities RTK
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GM | Geometry & Measurement

Standard	IXL skills
6.GM.1: Use translations, reflections, and rotations to establish congruence and understand symmetry (not on a coordinate plane).	
6.GM.1.1: Predict, describe, and apply translations (slides), reflections (flips), and rotations (turns) to a two-dimensional figure.	1. Reflection, rotation, and translation HVB 2. Combinations of reflections, rotations, and translations RLJ
6.GM.1.2: Recognize that translations, reflections, and rotations preserve congruence and use them to show that two figures are congruent.	1. Identify congruent figures KXQ
6.GM.1.3: Identify and describe the line(s) of symmetry in two-dimensional shapes.	1. Line symmetry PDS
6.GM.2: Use mathematical modeling to calculate the area of squares, parallelograms, and triangles to solve problems.	
6.GM.2.1: Develop and use formulas for the area of squares and parallelograms using a variety of methods including but not limited to the standard algorithms and finding unknown measures.	1. Area of rectangles and squares BE9 2. Understanding area of a parallelogram QMU 3. Area of parallelograms Y8K
6.GM.2.2: Develop and use formulas to determine the area of triangles and find unknown measures.	1. Understanding area of a triangle PLL 2. Area of triangles C8S
6.GM.2.3: Find the area of right triangles, other triangles, special quadrilaterals, and polygons that can be decomposed into triangles and other shapes.	Triangles 1. Understanding area of a triangle PLL 2. Area between two triangles 8RG 3. Area of right triangles Y6A Quadrilaterals 4. Understanding area of a trapezoid 42R 5. Area of trapezoids PKW

6. Area of rhombuses 2QG
7. Area of quadrilaterals 27F
8. Area between two rectangles EY6

Compound figures

9. Area of compound figures 76U
10. Area of compound figures with triangles 5V2

Word problems

11. Area of quadrilaterals and triangles: word problems ULK

Checkpoint opportunity

1. Checkpoint: Area of polygons 6NH

6.GM.3: Understand and use relationships between angles in geometric figures.

6.GM.3.1: Solve problems using the relationships between the angles (vertical, complementary, and supplementary) formed by intersecting lines.

1. Complementary and supplementary angles 8WF
2. Identify complementary, supplementary, vertical, adjacent, and congruent angles BS5
3. Find measures of complementary, supplementary, vertical, and adjacent angles Q9Z

6.GM.3.2: Develop and use the fact that the sum of the interior angles of a triangle is 180° to determine missing angle measures in a triangle.

1. Find missing angles in triangles TFG
2. Find missing angles in special triangles A5B

Checkpoint opportunity

- *Coming soon:* Checkpoint: Angles in geometric figures

6.GM.4: Choose appropriate units of measurement and use ratios to convert within measurement systems to model and solve real-world and mathematical problems.

6.GM.4.1: Estimate weights and capacities using benchmarks in customary and metric measurement systems with appropriate units.

1. Estimate customary measurements H8P
2. Estimate metric measurements V6Y

6.GM.4.2: Solve problems that require the conversion of lengths within the same measurement systems using appropriate units.

1. Convert customary and metric units of length EDD

D | Data & Probability

Standard	IXL skills
6.D.1: Interpret and analyze data.	
6.D.1.1: Interpret the mean, median, and mode for a set of data.	1. Interpret charts and graphs to find mean, median, mode, and range 2WK 2. Calculate mean, median, and mode NKV
6.D.1.2: Explain and justify which measure of center (mean, median, or mode) would provide the most descriptive information for a given set of data.	
6.D.2: Use probability to model and solve mathematical problems; represent probabilities using fractions and decimals.	
6.D.2.1: Represent possible outcomes using a probability continuum from impossible to certain.	1. Understanding probability ZY7
6.D.2.2: Determine the sample space for a given experiment and determine which members of the sample space are related to certain events. Sample space may be determined by the use of tree diagrams, tables or pictorial representations.	1. Sample spaces of simple events PX6 2. Counting principle GDJ 3. Sample spaces for compound events 8HY
6.D.2.3: Demonstrate simple experiments in which the probabilities are known and compare the resulting relative frequencies with the known probabilities, recognizing that there may be differences between the two results.	1. Probability of one event Q2X 2. Make predictions CFS 3. Probability of simple events and opposite events BZH 4. Make predictions using experimental probability 93C 5. Experimental probability MLH