



# IXL Skill Plan for the ACT<sup>®</sup>

## Math

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# Score range 13-15

## Numbers and Quantity

ACT Topic	IXL skills
Whole numbers and decimals	<ol style="list-style-type: none"> <li>1. Add and subtract whole numbers 2KJ</li> <li>2. Multiply whole numbers ZCL</li> <li>3. Divide whole numbers - 2-digit divisors FL2</li> <li>4. Divide whole numbers - 3-digit divisors STW</li> <li>5. Divide multi-digit numbers by 1-digit numbers XHZ</li> <li>6. Add and subtract decimals BP2</li> <li>7. Multiply decimals TCU</li> <li>8. Divide decimals 6HB</li> </ol>
Equivalent fractions	<ol style="list-style-type: none"> <li>1. Equivalent fractions review 9P3</li> <li>2. Write fractions in lowest terms A76</li> <li>3. Find equivalent fractions using area models HYC</li> <li>4. Graph equivalent fractions on number lines WQL</li> <li>5. Patterns of equivalent fractions 7LH</li> </ol>
Positive rational numbers on number lines	<ol style="list-style-type: none"> <li>1. Number lines - up to 1,000 KFQ</li> <li>2. Decimal number lines BBX</li> <li>3. Fractions on number lines ULL</li> </ol>

## Algebra and Functions

ACT Topic	IXL skills
Word problems with whole numbers and money	<ol style="list-style-type: none"> <li>1. Add, subtract, multiply, and divide money amounts: word problems HGN</li> <li>2. Price lists CVW</li> <li>3. Add and subtract money amounts: word problems DR9</li> <li>4. Multiply money: word problems C55</li> <li>5. Divide money amounts: word problems SEF</li> </ol>
Introduction to expressions	<ol style="list-style-type: none"> <li>1. Write variable expressions UZZ</li> <li>2. Write variable expressions: word problems E2M</li> </ol>

Solve simple equations

1. Solve one-step equations with whole numbers WLR

Arithmetic patterns

1. Number sequences involving decimals H73
2. Arithmetic sequences with fractions MMR

## Geometry

**ACT Topic**

**IXL skills**

Lengths of line segments

Measurement conversions

1. Exchanging money - with pictures VZD
2. Convert time units CXF
3. Conversion tables - customary units 7HU
4. Conversion tables - metric units 7QS

## Statistics and Probability

**ACT Topic**

**IXL skills**

Introduction to mean

1. Find the mean 76J

Introduction to charts and tables

1. Read a table B9R

# Score range 16-19

## Number and Quantity

ACT Topic	IXL skills
Factors	<ol style="list-style-type: none"> <li>1. Factors 7K3</li> <li>2. Multiplication facts up to 12: find the missing factor 76F</li> </ol>
Place value	<ol style="list-style-type: none"> <li>1. Place values in whole numbers MNF</li> <li>2. Decimal place values CR8</li> </ol>
Rational numbers on number lines	<ol style="list-style-type: none"> <li>1. Integers on number lines A5Y</li> <li>2. Graph integers on horizontal and vertical number lines EM8</li> <li>3. Decimal number lines BBX</li> <li>4. Fractions on number lines ULL</li> </ol>

## Algebra and Functions

ACT Topic	IXL skills
Arithmetic with rational numbers	<ol style="list-style-type: none"> <li>1. Add and subtract decimals BP2</li> <li>2. Multiply decimals TCU</li> <li>3. Divide decimals 6HB</li> <li>4. Add and subtract fractions NGL</li> <li>5. Add and subtract mixed numbers 9BE</li> <li>6. Maps with decimal distances J7D</li> <li>7. Multiply fractions PDK</li> <li>8. Divide fractions X7A</li> <li>9. Maps with fractional distances X8Y</li> <li>10. Percents of numbers and money amounts 93K</li> <li>11. Add, subtract, multiply, or divide two whole numbers R99</li> <li>12. Unit rates: word problems ZB9</li> <li>13. Solve the proportion 7H5</li> </ol>
Qualitative descriptions of graphs	
Definitions of whole number operations	

Evaluate expressions with whole numbers

1. Evaluate variable expressions with whole numbers Q8Z
2. Evaluate multi-variable expressions HC9

Solve one-step equations

1. Solve one-step linear equations TXJ

Combine like terms

1. Add and subtract like terms QP7

Geometric patterns

1. Complete a geometric number sequence X8Q

## Geometry

### ACT Topic

### IXL skills

Introduction to angles with parallel lines

1. Transversals: name angle pairs V85

Perimeter

1. Perimeter with whole number side lengths UJ2
2. Perimeter with decimal side lengths K7R
3. Perimeter with fractional side lengths WQU

Area of rectangles

1. Find the area of rectangles and squares 8KJ

Introduction to coordinate planes

1. Objects on a coordinate plane NTR
2. Graph points on a coordinate plane AST

## Statistics and Probability

### ACT Topic

### IXL skills

Mean

1. Find the mean AAP

Charts and tables

1. Price lists WUU
2. Read a table K5P
3. Frequency charts UEK

Probability of an event and its complement

# Score range 20-23

## Number and Quantity

ACT Topic	IXL skills
Number concepts	<ol style="list-style-type: none"> <li>1. Factors 7K3</li> <li>2. Divisibility rules VW5</li> <li>3. Prime or composite JYA</li> <li>4. Prime factorization YVA</li> <li>5. Greatest common factor 3M8</li> <li>6. Compare and order decimals ANM</li> <li>7. Round decimals and mixed numbers 5RT</li> <li>8. Convert between decimals and fractions or mixed numbers 2RC</li> </ol>
Powers of ten	<ol style="list-style-type: none"> <li>1. Write powers of ten with exponents DLL</li> </ol>
Distance on number lines	<ol style="list-style-type: none"> <li>1. Lengths of segments on number lines JSD</li> </ol>
Absolute value	<ol style="list-style-type: none"> <li>1. Absolute value and opposites KGR</li> </ol>
Distance in the coordinate plane	<ol style="list-style-type: none"> <li>1. Distance between two points A7P</li> </ol>
Matrix addition	<ol style="list-style-type: none"> <li>1. Add and subtract matrices BR7</li> </ol>

## Algebra and Functions

ACT Topic	IXL skills
Rate and proportion problems	<ol style="list-style-type: none"> <li>1. Solve proportions 2ZL</li> <li>2. Solve proportions: word problems 8ES</li> <li>3. Scale drawings: word problems 8B7</li> <li>4. Percent of change GRG</li> <li>5. Percent of change: word problems 59V</li> <li>6. Percent of a number: tax, discount, and more SKZ</li> <li>7. Find the percent: tax, discount, and more VQX</li> <li>8. Multi-step word problems EHX</li> </ol>

## Expressions in words and symbols

1. Write variable expressions: two or three operations 6QT
2. Write an equation from words F6R

## Linear graph word problems

## Evaluate expressions with integers

1. Evaluate one-variable expressions V77
2. Evaluate multi-variable expressions QZT
3. Evaluate absolute value expressions 2YA

## Add and subtract expressions

1. Add and subtract like terms QP7

## Solve linear equations

1. Model and solve equations using algebra tiles GRH
2. Write and solve equations that represent diagrams GBC
3. Solve one-step linear equations TXJ
4. Solve two-step linear equations QAK
5. Solve advanced linear equations 28N
6. Solve equations with variables on both sides 757
7. Solve equations: complete the solution EVP
8. Solve linear equations: mixed review DN6

## Multiply binomials

1. Multiply two binomials M7Q

## Graph inequalities on number lines

1. Graph inequalities H68

## Introduction to slope

1. Graph a line using slope FSV

## Evaluate linear and quadratic functions

1. Complete a table and graph a linear function JFG
2. Evaluate a linear function LNV
3. Complete a function table: quadratic functions LFV

## Geometry

### ACT Topic

### IXL skills

## Angles with parallel lines

1. Transversals of parallel lines: find angle measures WB9

## Angle properties

1. Angle vocabulary 9U2
2. Angle measures BCQ
3. Identify complementary, supplementary, vertical, adjacent, and congruent angles 7P7

## Area and perimeter of triangles and rectangles

1. Area of rectangles and squares BE9
2. Area of triangles C8S

## Introduction to the Pythagorean theorem

## Introduction to geometric formulas

1. Area of rectangles and squares BE9
2. Area of triangles C8S
3. Volume of cubes and rectangular prisms XHF
4. Surface area of cubes and rectangular prisms RMG

## Coordinate plane

1. Coordinate plane review H6E
2. Translations: graph the image ZUF

## Statistics and Probability

ACT Topic	IXL skills
Mean: find the missing value	1. Mean: find the missing number E6A
Translate between types of graphs	
Introduction to probability	1. Probability of simple events 5ZY
Counting and combinations	
Exhibit knowledge of simple counting techniques	1. Counting principle CNQ 2. Compound events: find the number of outcomes by counting FDE



# Score range 24-27

## Number and Quantity

ACT Topic	IXL skills
Order fractions	1. Put fractions in order T76
Least common multiple	1. Least common multiple 2QK 2. GCF and LCM: word problems E62 3. Least common denominator 46Z
Numeric factors	1. Factors 7K3 2. GCF and LCM: word problems E62 3. Write fractions in lowest terms ZGT
Introduction to complex numbers	1. Introduction to complex numbers 5VV
Add and subtract matrices	1. Add and subtract matrices BR7

## Algebra and Functions

ACT Topic	IXL skills
Multi-step measurement problems	1. Convert rates and measurements: customary units TXC 2. Convert rates and measurements: metric units 6W2 3. Unit prices with unit conversions LT6 4. Rate of travel: word problems 2C8
Write simple functions and equations	1. Solve proportions: word problems 8ES 2. Scale drawings: word problems 8B7 3. Write linear functions to solve word problems 9RQ 4. Write variable expressions: word problems MEC 5. Write linear functions: word problems YK6
Graph linear equations	1. Slope-intercept form: graph an equation UWB 2. Complete a table and graph a linear function JFG 3. Standard form: graph an equation U6U 4. Point-slope form: graph an equation F8H

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**Numbers in real-world contexts**

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**Linear equation word problems**

1. Solve linear equations: word problems [UFG](#)
2. Write linear functions to solve word problems [9RQ](#)
3. Write variable expressions from diagrams [FPF](#)
4. Write linear functions: word problems [YK6](#)

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**Solve simple linear inequalities**

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1. Solve one-step linear inequalities: addition and subtraction [RZV](#)

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**Graph compound inequalities on number lines**

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1. Graph compound inequalities [BQX](#)

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**Add, subtract, and multiply polynomials**

1. Add and subtract polynomials using algebra tiles [J7V](#)
2. Add and subtract polynomials [5EK](#)
3. Add polynomials to find perimeter [8AS](#)
4. Multiply a polynomial by a monomial [G2G](#)
5. Multiply two polynomials using algebra tiles [WR5](#)
6. Multiply two binomials [M7Q](#)
7. Multiply two binomials: special cases [9JN](#)
8. Multiply polynomials [58A](#)

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**Solve simple quadratic equations**

1. Factor quadratics using algebra tiles [Y6U](#)
2. Factor quadratics with leading coefficient 1 [S9P](#)
3. Factor quadratics with other leading coefficients [7ED](#)
4. Factor quadratics: special cases [56E](#)
5. Solve a quadratic equation using square roots [ERF](#)
6. Solve a quadratic equation using the zero product property [TNM](#)

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**Square roots**

1. Square roots [7PZ](#)
  2. Square roots of perfect squares [9RS](#)
  3. Positive and negative square roots [8TF](#)
  4. Estimate positive and negative square roots [96T](#)
  5. Relationship between squares and square roots [8W2](#)
  6. Solve equations using square roots [NNA](#)
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## Cube roots

1. Cube roots [RNT](#)
2. Cube roots of perfect cubes [RYG](#)
3. Solve equations using cube roots [TQ5](#)
4. Estimate cube roots [RLC](#)

## Scientific notation

1. Convert between standard and scientific notation [H8A](#)
2. Compare numbers written in scientific notation [RHT](#)
3. Multiply numbers written in scientific notation [YZU](#)
4. Divide numbers written in scientific notation [SGT](#)

## Exponents

1. Understanding exponents [VfV](#)
2. Evaluate exponents [EYR](#)
3. Exponents with negative bases [ZQC](#)
4. Exponents with decimal and fractional bases [8CT](#)

## Undefined expressions

## Find slope from an equation

1. Find the slope of a linear equation [U55](#)

## Evaluate polynomials

1. Evaluate a function [R96](#)

## Introduction to recursive sequences

1. Evaluate recursive formulas for sequences [QB9](#)

## Write and graph proportional and linear functions

1. Identify proportional relationships by graphing [RXD](#)
2. Write equations for proportional relationships from graphs [G7N](#)
3. Graph proportional relationships [MQD](#)
4. Identify proportional relationships [PAV](#)
5. Identify linear functions from graphs and equations [VMQ](#)

## Functions as models

## Definition of a function

1. Identify functions [VLL](#)
2. Identify functions: vertical line test [HLX](#)

## Domain and range

1. Domain and range of relations [2CG](#)

## Function notation in context

Find the domain of polynomial functions and rational functions

Asymptotes of rational functions

1. Rational functions: asymptotes and excluded values B6J

Functions of two variables

1. Complete a function table from a graph HXF
2. Complete a function table from an equation Z73

## Geometry

ACT Topic	IXL skills
Find unknown angles	<ol style="list-style-type: none"> <li>1. Angle bisectors 68E</li> <li>2. Triangle Angle-Sum Theorem UBU</li> <li>3. Exterior Angle Theorem TGK</li> <li>4. Exterior Angle Inequality YQA</li> <li>5. Find missing angles in triangles JFJ</li> <li>6. Find missing angles in quadrilaterals I N2R</li> </ol>
Lines of symmetry	<ol style="list-style-type: none"> <li>1. Line symmetry WBX</li> <li>2. Count lines of symmetry M7U</li> </ol>
Isosceles triangles	<ol style="list-style-type: none"> <li>1. Congruency in isosceles and equilateral triangles HPR</li> </ol>
Precision	<ol style="list-style-type: none"> <li>1. Precision M5E</li> </ol>
Perimeter of composite shapes	<ol style="list-style-type: none"> <li>1. Perimeter MG8</li> </ol>
Area of triangles and rectangles: advanced	<ol style="list-style-type: none"> <li>1. Area of rectangles and squares BE9</li> <li>2. Area of triangles C8S</li> <li>3. Area between two rectangles EY6</li> <li>4. Area between two triangles 8RG</li> </ol>
Area and circumference of circles	<ol style="list-style-type: none"> <li>1. Circles: calculate area, circumference, radius, and diameter YA8</li> <li>2. Circles: word problems P56</li> </ol>
Pythagorean theorem with whole numbers	<ol style="list-style-type: none"> <li>1. Pythagorean theorem: find the length of the hypotenuse LDL</li> <li>2. Pythagorean theorem: find the missing leg length ME7</li> </ol>

Introduction to trigonometric ratios

1. Trigonometric ratios: sin, cos, and tan NH8

Find the slope from a graph or two points

1. Find the slope of a graph E7D
2. Find the slope from two points MD5

Midpoints

1. Midpoints 7RH

Rotations in the coordinate plane

## Statistics and Probability

ACT Topic	IXL skills
Mean and frequency	
Charts and tables: advanced	<ol style="list-style-type: none"><li>1. Interpret tables LVG</li></ol>
Probability	<ol style="list-style-type: none"><li>1. Theoretical probability 2MS</li><li>2. Experimental probability LQV</li></ol>
Venn diagrams	<ol style="list-style-type: none"><li>1. Use Venn diagrams to solve problems BZF</li></ol>
Data, precision, and modeling	

# Score range 28-32

## Number and Quantity

ACT Topic	IXL skills
Number properties	<ol style="list-style-type: none"> <li>1. Prime factorization <a href="#">YVA</a></li> <li>2. Greatest common factor <a href="#">3M8</a></li> <li>3. Least common multiple <a href="#">2QK</a></li> <li>4. GCF and LCM: word problems <a href="#">E62</a></li> <li>5. Even or odd: arithmetic rules <a href="#">L8Y</a></li> <li>6. Absolute value and opposite integers <a href="#">ABP</a></li> <li>7. Compare and order integers <a href="#">T2M</a></li> <li>8. Integer inequalities with absolute values <a href="#">U6V</a></li> <li>9. Integer addition and subtraction rules <a href="#">YDA</a></li> <li>10. Add and subtract integers using counters <a href="#">5F7</a></li> <li>11. Add and subtract integers <a href="#">6UW</a></li> <li>12. Add and subtract three or more integers <a href="#">NB7</a></li> <li>13. Add and subtract integers: word problems <a href="#">XP7</a></li> <li>14. Integer multiplication and division rules <a href="#">XLP</a></li> <li>15. Multiply and divide integers <a href="#">MDA</a></li> <li>16. Evaluate numerical expressions involving integers <a href="#">Y6W</a></li> </ol>
Rational and irrational numbers	<ol style="list-style-type: none"> <li>1. Sort rational and irrational numbers <a href="#">ALH</a></li> <li>2. Classify rational and irrational numbers <a href="#">3S8</a></li> </ol>
Rational exponents	<ol style="list-style-type: none"> <li>1. Exponents with integer bases <a href="#">EJ8</a></li> <li>2. Exponents with decimal and fractional bases <a href="#">7SS</a></li> <li>3. Negative exponents <a href="#">SCM</a></li> <li>4. Multiplication with exponents <a href="#">HQD</a></li> <li>5. Division with exponents <a href="#">9SS</a></li> <li>6. Multiplication and division with exponents <a href="#">HPK</a></li> <li>7. Power rule <a href="#">RWY</a></li> <li>8. Evaluate expressions using properties of exponents <a href="#">LRR</a></li> <li>9. Identify equivalent expressions involving exponents I <a href="#">EUF</a></li> <li>10. Evaluate integers raised to rational exponents <a href="#">PQH</a></li> </ol>

Multiply complex numbers

1. Multiply complex numbers VZ8

Vectors and matrices

1. Add and subtract matrices QFX
2. Multiply a matrix by a scalar 72T
3. Add and subtract scalar multiples of matrices XFV
4. Add vectors KKG
5. Multiply a vector by a scalar WNC

## Algebra and Functions

ACT Topic

IXL skills

Multi-step percent and proportion problems

1. Multi-step problems with percents HBJ

Write functions and equations

1. Find the distance between a point and a line GWC
2. Create equations with no solutions or infinitely many solutions PUK
3. Write direct variation equations Y6M
4. Write inverse variation equations ECT
5. Find a missing coordinate using slope 5C7
6. Slope-intercept form: write an equation from a word problem HWM
7. Write linear functions to solve word problems 9RQ
8. Write an equation for a parallel or perpendicular line 5SH
9. Linear inequalities: word problems ZAY

Interpret graphs

1. Find values using function graphs QCG
2. Complete a function table from a graph HXF
3. Interpret the graph of a function: word problems STU
4. Identify proportional relationships PAV
5. Find the constant of variation 9TD
6. Slope-intercept form: write an equation from a graph 9GW
7. Point-slope form: write an equation from a graph LBX
8. Characteristics of quadratic functions: graphs HW8

## Vertical translations of graphs

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### Equivalent expressions and equations

1. Simplify variable expressions involving like terms and the distributive property [ZXX](#)
  2. Identify equivalent linear expressions [62A](#)
  3. Rearrange multi-variable equations [WSJ](#)
  4. Solve equations with variables on both sides [757](#)
  5. Solve linear equations: mixed review [DN6](#)
  6. Simplify rational expressions [37N](#)
  7. Multiply and divide rational expressions [MG2](#)
  8. Add and subtract rational expressions [FEX](#)
  9. Write equations in standard form [ESP](#)
  10. Linear inequalities: solve for  $y$  [UYU](#)
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### Solve linear inequalities

1. Solve one-step linear inequalities: multiplication and division [BRJ](#)
  2. Solve one-step linear inequalities [EEX](#)
  3. Solve two-step linear inequalities [NPZ](#)
  4. Solve advanced linear inequalities [9K8](#)
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### Graph linear inequalities on number lines

1. Graph solutions to one-step linear inequalities [E2Z](#)
  2. Graph solutions to two-step linear inequalities [XVM](#)
  3. Graph solutions to advanced linear inequalities [5GC](#)
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### Systems of linear equations

1. Is  $(x, y)$  a solution to the system of equations? [LRL](#)
2. Solve a system of equations by graphing [LCD](#)
3. Solve a system of equations by graphing: word problems [BVB](#)
4. Find the number of solutions to a system of equations by graphing [HJW](#)
5. Find the number of solutions to a system of equations [ACN](#)
6. Classify a system of equations by graphing [T2D](#)
7. Classify a system of equations [LTA](#)
8. Solve a system of equations using substitution [8P9](#)
9. Solve a system of equations using substitution: word problems [US9](#)



10. Solve a system of equations using elimination [A48](#)
11. Solve a system of equations using elimination: word problems [NHR](#)
12. Solve a system of equations using augmented matrices [P5Y](#)
13. Solve a system of equations using augmented matrices: word problems [9ZW](#)
14. Solve a system of equations using any method [HLV](#)
15. Solve a system of equations using any method: word problems [GDQ](#)

## Solve quadratic equations

1. Solve a quadratic equation using the zero product property [TNM](#)
2. Solve a quadratic equation by factoring [CSS](#)
3. Complete the square [RD2](#)
4. Solve a quadratic equation by completing the square [XCL](#)
5. Solve a quadratic equation using the quadratic formula [XCF](#)

## Solve absolute value equations

1. Solve absolute value equations [9LF](#)

## Qualitative descriptions of graphs: rates of change

1. Rate of change: graphs [BNH](#)

## Write inversely proportional functions

1. Write inverse variation equations [ECT](#)
2. Write and solve inverse variation equations [UWS](#)

## Recursive sequences

1. Write a formula for a recursive sequence [ZAH](#)

## Evaluate composite functions

1. Composition of linear functions: find a value [MFV](#)
2. Composition of linear and quadratic functions: find a value [P9T](#)

## Geometry

### ACT Topic

### IXL skills

Advanced problems with area, perimeter, and volume

1. Area and circumference of circles [ZDX](#)
2. Area and perimeter of similar figures [6J7](#)
3. Surface area and volume of similar solids [N9X](#)

## Pythagorean theorem

1. Pythagorean theorem [KKT](#)
2. Pythagorean theorem: word problems [EU8](#)
3. Converse of the Pythagorean theorem: is it a right triangle? [M68](#)

## Similar and congruent triangles

1. Special right triangles [E9S](#)
2. SSS, SAS, ASA, and AAS Theorems [LER](#)
3. Congruency in isosceles and equilateral triangles [HPR](#)
4. Hypotenuse-Leg Theorem [VQJ](#)
5. Similar triangles and indirect measurement [JWK](#)
6. Similarity rules for triangles [XJQ](#)
7. Triangle Proportionality Theorem [6WA](#)

## Right triangles

1. Trigonometric ratios in similar right triangles [7X7](#)
2. Trigonometric ratios: find a side length [UZC](#)
3. Trigonometric ratios: find an angle measure [49E](#)
4. Solve a right triangle [GPR](#)

## Distance formula

1. Distance formula [59F](#)

## Parallel and perpendicular lines in the coordinate plane

1. Equations of parallel and perpendicular lines [VEB](#)

## Reflections and rotations in the coordinate plane

1. Reflections: find the coordinates [SVY](#)
2. Rotations: find the coordinates [ZX5](#)

## Introduction to parabolas and circles in the coordinate plane

1. Identify the direction a parabola opens [HHX](#)
2. Find the vertex of a parabola [2NE](#)
3. Find the focus or directrix of a parabola [TNG](#)
4. Find the axis of symmetry of a parabola [AAV](#)
5. Find the center of a circle [U6E](#)
6. Find the radius or diameter of a circle [5Q2](#)

## Statistics and Probability

ACT Topic	IXL skills
Weighted averages	<ol style="list-style-type: none"><li>1. Weighted averages: word problems <a href="#">2TQ</a></li></ol>
Charts and tables: advanced	<ol style="list-style-type: none"><li>1. Interpret tables <a href="#">LVG</a></li><li>2. Find probabilities using two-way frequency tables <a href="#">HGA</a></li></ol>
Counting techniques	<ol style="list-style-type: none"><li>1. Outcomes of compound events <a href="#">GKA</a></li><li>2. Counting principle <a href="#">GTX</a></li><li>3. Permutations <a href="#">SFZ</a></li><li>4. Permutation and combination notation <a href="#">7TT</a></li></ol>
Advanced probability	<ol style="list-style-type: none"><li>1. Find conditional probabilities <a href="#">2M4</a></li><li>2. Find conditional probabilities using two-way frequency tables <a href="#">HGC</a></li></ol>
Independent events	<ol style="list-style-type: none"><li>1. Identify independent events <a href="#">RTZ</a></li><li>2. Probability of independent and dependent events <a href="#">X5U</a></li><li>3. Independence and conditional probability <a href="#">AJC</a></li></ol>

# Score range 33-36

## Number and Quantity

ACT Topic	IXL skills
Advanced number concepts	<ol style="list-style-type: none"> <li>1. Compare and order rational numbers <small>ALW</small></li> <li>2. Evaluate variable expressions involving rational numbers <small>JDV</small></li> <li>3. Sort rational and irrational numbers <small>ALH</small></li> <li>4. Classify rational and irrational numbers <small>3S8</small></li> <li>5. Classify numbers <small>RB8</small></li> <li>6. Add and subtract rational numbers <small>J8R</small></li> <li>7. Multiply and divide rational numbers <small>H6L</small></li> <li>8. Evaluate numerical expressions involving rational numbers <small>8CU</small></li> <li>9. Apply addition, subtraction, multiplication, and division rules <small>S6N</small></li> <li>10. Roots of rational numbers <small>HNE</small></li> <li>11. Consecutive integer problems <small>HDF</small></li> <li>12. Simplify complex fractions <small>HYL</small></li> </ol>
Complex numbers	<ol style="list-style-type: none"> <li>1. Add and subtract complex numbers <small>JVF</small></li> <li>2. Complex conjugates <small>7U5</small></li> <li>3. Divide complex numbers <small>MBM</small></li> <li>4. Add, subtract, multiply, and divide complex numbers <small>CEN</small></li> <li>5. Absolute values of complex numbers <small>UJS</small></li> <li>6. Powers of <math>i</math> <small>EUT</small></li> </ol>
Multiply matrices	<ol style="list-style-type: none"> <li>1. Multiply two matrices <small>T64</small></li> </ol>
Matrix properties	<ol style="list-style-type: none"> <li>1. Simplify matrix expressions <small>GCE</small></li> <li>2. Properties of matrices <small>RA5</small></li> <li>3. Solve matrix equations <small>QU8</small></li> <li>4. Determinant of a matrix <small>KLQ</small></li> </ol>

## Algebra and Functions

ACT Topic	IXL skills
Advanced word problems	
Write functions and equations: advanced	<ol style="list-style-type: none"> <li>1. Write a linear inequality: word problems <a href="#">LLV</a></li> <li>2. Write linear, quadratic, and exponential functions <a href="#">AFA</a></li> </ol>
Draw conclusions based on algebraic properties	<ol style="list-style-type: none"> <li>1. Add and subtract functions <a href="#">QQD</a></li> <li>2. Multiply functions <a href="#">49K</a></li> <li>3. Divide functions <a href="#">9PH</a></li> <li>4. Compare linear functions: tables, graphs, and equations <a href="#">GD7</a></li> </ol>
Draw conclusions based on graphs	<ol style="list-style-type: none"> <li>1. Solve a system of equations by graphing: word problems <a href="#">T86</a></li> <li>2. Match quadratic functions and graphs <a href="#">QCE</a></li> <li>3. Match polynomials and graphs <a href="#">XJU</a></li> <li>4. Match exponential functions and graphs <a href="#">PCX</a></li> </ol>
Characteristics of graphs	<ol style="list-style-type: none"> <li>1. Find the slope of a linear function <a href="#">W67</a></li> <li>2. Characteristics of quadratic functions: graphs <a href="#">WMS</a></li> <li>3. Domain and range of radical functions <a href="#">HR9</a></li> <li>4. Rational functions: asymptotes and excluded values <a href="#">7JJ</a></li> <li>5. Domain and range of exponential and logarithmic functions <a href="#">GLL</a></li> <li>6. Find properties of a parabola from equations in general form <a href="#">B7U</a></li> <li>7. Find properties of circles from equations in general form <a href="#">2PA</a></li> <li>8. Find properties of ellipses from equations in general form <a href="#">S7E</a></li> <li>9. Find properties of hyperbolas from equations in general form <a href="#">RME</a></li> <li>10. Find properties of sine functions <a href="#">2EK</a></li> <li>11. Find properties of cosine functions <a href="#">F8Y</a></li> </ol>
Horizontal and vertical translations of graphs	<ol style="list-style-type: none"> <li>1. Translations of functions <a href="#">F6J</a></li> </ol>

## Solve absolute value inequalities

1. Solve absolute value inequalities UKU
2. Graph solutions to absolute value inequalities G85

## Graph quadratic inequalities on number lines

1. Graph solutions to quadratic inequalities DP9

## Polynomial remainder theorem

1. Divide polynomials using long division YN5
2. Divide polynomials using synthetic division D6D
3. Evaluate polynomials using synthetic division CHC

## Evaluate and compare models

## Write exponential functions

1. Exponential growth and decay: word problems TYQ
2. Compound interest: word problems YJW
3. Continuously compounded interest: word problems 5GU

## Geometric sequences

1. Find terms of a geometric sequence BHV
2. Write a formula for a geometric sequence Q5V

## Unit circle

1. Find trigonometric ratios using the unit circle ZF7

## Graphs of trigonometric functions

1. Write equations of sine functions from graphs FGW
2. Graph sine functions 9NS
3. Write equations of cosine functions from graphs 4G8
4. Graph cosine functions KXG
5. Graph sine and cosine functions A7V

## Trigonometric properties

1. Solve trigonometric equations I CQB
2. Solve trigonometric equations II SNX
3. Trigonometric ratios: find a side length MHJ
4. Trigonometric ratios: find an angle measure 84G
5. Solve a right triangle DPP
6. Law of Sines BSY
7. Law of Cosines ZQB
8. Solve a triangle YPP
9. Area of a triangle: sine formula LNQ
10. Area of a triangle: Law of Sines 5NP

11. Trigonometric identities I XJJ

12. Trigonometric identities II F8F

**Logarithms**

1. Evaluate logarithms GBR

2. Evaluate natural logarithms XG9

3. Change of base formula J2R

4. Identify properties of logarithms N59

5. Product property of logarithms CW9

6. Quotient property of logarithms ZNT

7. Power property of logarithms 7T3

8. Properties of logarithms: mixed review 5LL

9. Evaluate logarithms using properties RNH

**Composition of functions**

1. Composition of linear functions: find an equation RSP

2. Composition of linear and quadratic functions: find an equation EKJ

**Geometry****ACT Topic****IXL skills****Arcs and angles in circles**

1. Central angles and arc measures VZX

2. Arc length 7L9

3. Area of sectors XZQ

4. Circle measurements: mixed review TFF

5. Arcs and chords P63

6. Tangent lines CFV

7. Perimeter of polygons with an inscribed circle UJT

8. Inscribed angles 98U

9. Angles in inscribed right triangles 6DL

10. Angles in inscribed quadrilaterals I 24Y

11. Angles in inscribed quadrilaterals II 2Y5

**Area of composite figures**

1. Area of compound figures KHG

**Scale factors**

1. Dilations: scale factor and classification ZDM

**Draw conclusions**

1. Scale drawings: word problems M7M

2. Proofs involving angles HV9

3. Proofs involving parallel lines I CUV

4. Proofs involving parallel lines II 5U8
5. Identify hypotheses and conclusions 7FW
6. Counterexamples 2GJ
7. Conditionals VU9
8. Negations VBY
9. Converses, inverses, and contrapositives N5P
10. Biconditionals Q6E
11. Proving triangles congruent by SSS and SAS VVZ
12. Proving triangles congruent by ASA and AAS 23Z
13. Proving triangles congruent by SSS, SAS, ASA, and AAS SZL
14. Proofs involving corresponding parts of congruent triangles AKL
15. Proofs involving isosceles triangles V45
16. Proofs involving triangles I G78
17. Proofs involving triangles II DUQ
18. Proofs involving quadrilaterals I V7W
19. Proofs involving quadrilaterals II P77
20. Proofs involving similarity in right triangles XCT
21. Prove the Pythagorean theorem JGT

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### Advanced geometry problems

1. Solve problems involving corresponding parts WYB
  2. Midsegments of triangles 8GT
  3. Triangles and bisectors GWE
  4. Angle-side relationships in triangles ZN8
  5. Side lengths and angle measures in similar figures E2K
  6. Perimeters of similar figures 9T8
  7. Similar triangles and similarity transformations G2Z
  8. Areas of similar figures 2BA
  9. Area between two shapes SB6
  10. Heron's formula KU2
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## Statistics and Probability

ACT Topic	IXL skills
Mean, median, and mode	1. Mean, median, mode, and range <a href="#">MHB</a>
Draw conclusions from charts and tables	1. Find probabilities using two-way frequency tables <a href="#">HGA</a> 2. Write a discrete probability distribution <a href="#">RH6</a>
Randomization	1. Experiment design <a href="#">BKR</a>
Conditional and joint probability	1. Find conditional probabilities <a href="#">2M4</a> 2. Independence and conditional probability <a href="#">AJC</a> 3. Find conditional probabilities using two-way frequency tables <a href="#">HGC</a> 4. Find probabilities using the addition rule <a href="#">B9L</a>
Statistical modeling	1. Identify biased samples <a href="#">CH7</a> 2. Analyze the results of an experiment using simulations <a href="#">RLB</a>