Precalculus topics

A.Functions

1. 1

[Domain and range](https://www.ixl.com/math/precalculus/domain-and-range)

1. 2

[Identify functions](https://www.ixl.com/math/precalculus/identify-functions)

1. 3

[Evaluate functions](https://www.ixl.com/math/precalculus/evaluate-functions)

1. 4

[Find values using function graphs](https://www.ixl.com/math/precalculus/find-values-using-function-graphs)

1. 5

[Complete a table for a function graph](https://www.ixl.com/math/precalculus/complete-a-table-for-a-function-graph)

1. 6

[Find the slope of a linear function](https://www.ixl.com/math/precalculus/find-the-slope-of-a-linear-function)

1. 7

[Graph a linear function](https://www.ixl.com/math/precalculus/graph-a-linear-function)

1. 8

[Write the equation of a linear function](https://www.ixl.com/math/precalculus/write-the-equation-of-a-linear-function)

1. 9

[Linear functions over unit intervals](https://www.ixl.com/math/precalculus/linear-functions-over-unit-intervals)

1. 10

[Average rate of change](https://www.ixl.com/math/precalculus/average-rate-of-change)

1. 11

[Add, subtract, multiply, and divide functions](https://www.ixl.com/math/precalculus/add-subtract-multiply-and-divide-functions)

1. 12

[Composition of functions](https://www.ixl.com/math/precalculus/composition-of-functions)

1. 13

[Identify inverse functions](https://www.ixl.com/math/precalculus/identify-inverse-functions)

1. 14

[Find values of inverse functions from tables](https://www.ixl.com/math/precalculus/find-values-of-inverse-functions-from-tables)

1. 15

[Find values of inverse functions from graphs](https://www.ixl.com/math/precalculus/find-values-of-inverse-functions-from-graphs)

1. 16

[Find inverse functions and relations](https://www.ixl.com/math/precalculus/find-inverse-functions-and-relations)

B.Families of functions

1. 1

[Function transformation rules](https://www.ixl.com/math/precalculus/function-transformation-rules)

1. 2

[Translations of functions](https://www.ixl.com/math/precalculus/translations-of-functions)

1. 3

[Reflections of functions](https://www.ixl.com/math/precalculus/reflections-of-functions)

1. 4

[Dilations of functions](https://www.ixl.com/math/precalculus/dilations-of-functions)

1. 5

[Transformations of functions](https://www.ixl.com/math/precalculus/transformations-of-functions)

1. 6

[Describe function transformations](https://www.ixl.com/math/precalculus/describe-function-transformations)

C.Quadratic functions

1. 1

[Find the maximum or minimum value of a quadratic function](https://www.ixl.com/math/precalculus/find-the-maximum-or-minimum-value-of-a-quadratic-function)

1. 2

[Characteristics of quadratic functions](https://www.ixl.com/math/precalculus/characteristics-of-quadratic-functions)

1. 3

[Graph a quadratic function](https://www.ixl.com/math/precalculus/graph-a-quadratic-function)

1. 4

[Match quadratic functions and graphs](https://www.ixl.com/math/precalculus/match-quadratic-functions-and-graphs)

1. 5

[Solve a quadratic equation using square roots](https://www.ixl.com/math/precalculus/solve-a-quadratic-equation-using-square-roots)

1. 6

[Solve a quadratic equation by factoring](https://www.ixl.com/math/precalculus/solve-a-quadratic-equation-by-factoring)

1. 7

[Solve a quadratic equation by completing the square](https://www.ixl.com/math/precalculus/solve-a-quadratic-equation-by-completing-the-square)

1. 8

[Solve a quadratic equation using the quadratic formula](https://www.ixl.com/math/precalculus/solve-a-quadratic-equation-using-the-quadratic-formula)

1. 9

[Using the discriminant](https://www.ixl.com/math/precalculus/using-the-discriminant)

D.Polynomials

1. 1

[Divide polynomials using long division](https://www.ixl.com/math/precalculus/divide-polynomials-using-long-division)

1. 2

[Divide polynomials using synthetic division](https://www.ixl.com/math/precalculus/divide-polynomials-using-synthetic-division)

1. 3

[Evaluate polynomials using synthetic division](https://www.ixl.com/math/precalculus/evaluate-polynomials-using-synthetic-division)

1. 4

[Find the roots of factored polynomials](https://www.ixl.com/math/precalculus/find-the-roots-of-factored-polynomials)

1. 5

[Write a polynomial from its roots](https://www.ixl.com/math/precalculus/write-a-polynomial-from-its-roots)

1. 6

[Rational root theorem](https://www.ixl.com/math/precalculus/rational-root-theorem)

1. 7

[Complex conjugate theorem](https://www.ixl.com/math/precalculus/complex-conjugate-theorem)

1. 8

[Conjugate root theorems](https://www.ixl.com/math/precalculus/conjugate-root-theorems)

1. 9

[Descartes' Rule of Signs](https://www.ixl.com/math/precalculus/descartes-rule-of-signs)

1. 10

[Fundamental Theorem of Algebra](https://www.ixl.com/math/precalculus/fundamental-theorem-of-algebra)

1. 11

[Match polynomials and graphs](https://www.ixl.com/math/precalculus/match-polynomials-and-graphs)

1. 12

[Domain and range of polynomials](https://www.ixl.com/math/precalculus/domain-and-range-of-polynomials)

1. 13

[Factor sums and differences of cubes](https://www.ixl.com/math/precalculus/factor-sums-and-differences-of-cubes)

1. 14

[Solve equations with sums and differences of cubes](https://www.ixl.com/math/precalculus/solve-equations-with-sums-and-differences-of-cubes)

1. 15

[Factor using a quadratic pattern](https://www.ixl.com/math/precalculus/factor-using-a-quadratic-pattern)

1. 16

[Solve equations using a quadratic pattern](https://www.ixl.com/math/precalculus/solve-equations-using-a-quadratic-pattern)

1. 17

[Pascal's triangle](https://www.ixl.com/math/precalculus/pascals-triangle)

1. 18

[Pascal's triangle and the Binomial Theorem](https://www.ixl.com/math/precalculus/pascals-triangle-and-the-binomial-theorem)

1. 19

[Binomial Theorem I](https://www.ixl.com/math/precalculus/binomial-theorem)

1. 20

[Binomial Theorem II](https://www.ixl.com/math/precalculus/binomial-theorem-ii)

E.Rational functions

1. 1

[Rational functions: asymptotes and excluded values](https://www.ixl.com/math/precalculus/rational-functions-asymptotes-and-excluded-values)

1. 2

[Solve rational equations](https://www.ixl.com/math/precalculus/solve-rational-equations)

1. 3

[Check whether two rational functions are inverses](https://www.ixl.com/math/precalculus/check-whether-two-rational-functions-are-inverses)

F.Exponential and logarithmic functions

1. 1

[Domain and range of exponential and logarithmic functions](https://www.ixl.com/math/precalculus/domain-and-range-of-exponential-and-logarithmic-functions)

1. 2

[Convert between exponential and logarithmic form](https://www.ixl.com/math/precalculus/convert-between-exponential-and-logarithmic-form)

1. 3

[Solve exponential equations using factoring](https://www.ixl.com/math/precalculus/solve-exponential-equations-using-factoring)

1. 4

[Evaluate logarithms](https://www.ixl.com/math/precalculus/evaluate-logarithms)

1. 5

[Change of base formula](https://www.ixl.com/math/precalculus/change-of-base-formula)

1. 6

[Product property of logarithms](https://www.ixl.com/math/precalculus/product-property-of-logarithms)

1. 7

[Quotient property of logarithms](https://www.ixl.com/math/precalculus/quotient-property-of-logarithms)

1. 8

[Power property of logarithms](https://www.ixl.com/math/precalculus/power-property-of-logarithms)

1. 9

[Evaluate logarithms using properties](https://www.ixl.com/math/precalculus/evaluate-logarithms-using-properties)

1. 10

[Solve exponential equations using logarithms](https://www.ixl.com/math/precalculus/solve-exponential-equations-using-logarithms)

1. 11

[Solve logarithmic equations with one logarithm](https://www.ixl.com/math/precalculus/solve-logarithmic-equations-with-one-logarithm)

1. 12

[Solve logarithmic equations with multiple logarithms](https://www.ixl.com/math/precalculus/solve-logarithmic-equations-with-multiple-logarithms)

1. 13

[Exponential functions over unit intervals](https://www.ixl.com/math/precalculus/exponential-functions-over-unit-intervals)

1. 14

[Identify linear and exponential functions](https://www.ixl.com/math/precalculus/identify-linear-and-exponential-functions)

1. 15

[Describe linear and exponential growth and decay](https://www.ixl.com/math/precalculus/describe-linear-and-exponential-growth-and-decay)

1. 16

[Exponential growth and decay: word problems](https://www.ixl.com/math/precalculus/exponential-growth-and-decay-word-problems)

1. 17

[Compound interest: word problems](https://www.ixl.com/math/precalculus/compound-interest-word-problems)

G.Radical functions

1. 1

[Domain and range of radical functions](https://www.ixl.com/math/precalculus/domain-and-range-of-radical-functions)

1. 2

[Solve radical equations](https://www.ixl.com/math/precalculus/solve-radical-equations)

H.Roots and rational exponents

1. 1

[Roots of integers](https://www.ixl.com/math/precalculus/roots-of-integers)

1. 2

[Roots of rational numbers](https://www.ixl.com/math/precalculus/roots-of-rational-numbers)

1. 3

[Find roots using a calculator](https://www.ixl.com/math/precalculus/find-roots-using-a-calculator)

1. 4

[Evaluate rational exponents](https://www.ixl.com/math/precalculus/evaluate-rational-exponents)

1. 5

[Operations with rational exponents](https://www.ixl.com/math/precalculus/operations-with-rational-exponents)

1. 6

[Simplify radical expressions with variables](https://www.ixl.com/math/precalculus/simplify-radical-expressions-with-variables)

1. 7

[Nth roots](https://www.ixl.com/math/precalculus/nth-roots)

1. 8

[Simplify expressions involving rational exponents](https://www.ixl.com/math/precalculus/simplify-expressions-involving-rational-exponents)

I.Systems of equations

1. 1

[Solve a system of equations by graphing](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-by-graphing)

1. 2

[Solve a system of equations by graphing: word problems](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-by-graphing-word-problems)

1. 3

[Classify a system of equations](https://www.ixl.com/math/precalculus/classify-a-system-of-equations)

1. 4

[Solve a system of equations using substitution](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-using-substitution)

1. 5

[Solve a system of equations using substitution: word problems](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-using-substitution-word-problems)

1. 6

[Solve a system of equations using elimination](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-using-elimination)

1. 7

[Solve a system of equations using elimination: word problems](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-using-elimination-word-problems)

1. 8

[Solve a system of equations using augmented matrices](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-using-augmented-matrices)

1. 9

[Solve a system of equations using augmented matrices: word problems](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-using-augmented-matrices-word-problems)

1. 10

[Solve a system of equations in three variables using substitution](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-in-three-variables-using-substitution)

1. 11

[Solve a system of equations in three variables using elimination](https://www.ixl.com/math/precalculus/solve-a-system-of-equations-in-three-variables-using-elimination)

1. 12

[Determine the number of solutions to a system of equations in three variables](https://www.ixl.com/math/precalculus/determine-the-number-of-solutions-to-a-system-of-equations-in-three-variables)

J.Systems of inequalities

1. 1

[Solve systems of linear inequalities by graphing](https://www.ixl.com/math/precalculus/solve-systems-of-linear-inequalities-by-graphing)

1. 2

[Solve systems of linear and absolute value inequalities by graphing](https://www.ixl.com/math/precalculus/solve-systems-of-linear-and-absolute-value-inequalities-by-graphing)

1. 3

[Find the vertices of a solution set](https://www.ixl.com/math/precalculus/find-the-vertices-of-a-solution-set)

1. 4

[Linear programming](https://www.ixl.com/math/precalculus/linear-programming)

K.Nonlinear inequalities

1. 1

[Graph solutions to quadratic inequalities](https://www.ixl.com/math/precalculus/graph-solutions-to-quadratic-inequalities)

1. 2

[Solve quadratic inequalities](https://www.ixl.com/math/precalculus/solve-quadratic-inequalities)

1. 3

[Graph solutions to higher-degree inequalities](https://www.ixl.com/math/precalculus/graph-solutions-to-higher-degree-inequalities)

1. 4

[Solve higher-degree inequalities](https://www.ixl.com/math/precalculus/solve-higher-degree-inequalities)

L.Matrices

1. 1

[Matrix vocabulary](https://www.ixl.com/math/precalculus/matrix-vocabulary)

1. 2

[Matrix operation rules](https://www.ixl.com/math/precalculus/matrix-operation-rules)

1. 3

[Add and subtract matrices](https://www.ixl.com/math/precalculus/add-and-subtract-matrices)

1. 4

[Multiply a matrix by a scalar](https://www.ixl.com/math/precalculus/multiply-a-matrix-by-a-scalar)

1. 5

[Add and subtract scalar multiples of matrices](https://www.ixl.com/math/precalculus/add-and-subtract-scalar-multiples-of-matrices)

1. 6

[Multiply two matrices](https://www.ixl.com/math/precalculus/multiply-two-matrices)

1. 7

[Simplify matrix expressions](https://www.ixl.com/math/precalculus/simplify-matrix-expressions)

1. 8

[Properties of matrices](https://www.ixl.com/math/precalculus/properties-of-matrices)

1. 9

[Solve matrix equations](https://www.ixl.com/math/precalculus/solve-matrix-equations)

1. 10

[Determinant of a matrix](https://www.ixl.com/math/precalculus/determinant-of-a-matrix)

1. 11

[Is a matrix invertible?](https://www.ixl.com/math/precalculus/is-a-matrix-invertible)

1. 12

[Inverse of a 2 x 2 matrix](https://www.ixl.com/math/precalculus/inverse-of-a-2-x-2-matrix)

1. 13

[Inverse of a 3 x 3 matrix](https://www.ixl.com/math/precalculus/inverse-of-a-3-x-3-matrix)

1. 14

[Identify inverse matrices](https://www.ixl.com/math/precalculus/identify-inverse-matrices)

1. 15

[Solve matrix equations using inverses](https://www.ixl.com/math/precalculus/solve-matrix-equations-using-inverses)

1. 16

[Identify transformation matrices](https://www.ixl.com/math/precalculus/identify-transformation-matrices)

1. 17

[Transformation matrices: write the vertex matrix](https://www.ixl.com/math/precalculus/transformation-matrices-write-the-vertex-matrix)

1. 18

[Transformation matrices: graph the image](https://www.ixl.com/math/precalculus/transformation-matrices-graph-the-image)

M.Trigonometry

1. 1

[Convert between radians and degrees](https://www.ixl.com/math/precalculus/convert-between-radians-and-degrees)

1. 2

[Radians and arc length](https://www.ixl.com/math/precalculus/radians-and-arc-length)

1. 3

[Quadrants](https://www.ixl.com/math/precalculus/quadrants)

1. 4

[Coterminal and reference angles](https://www.ixl.com/math/precalculus/coterminal-and-reference-angles)

1. 5

[Find trigonometric ratios using right triangles](https://www.ixl.com/math/precalculus/find-trigonometric-ratios-using-right-triangles)

1. 6

[Find trigonometric ratios using the unit circle](https://www.ixl.com/math/precalculus/find-trigonometric-ratios-using-the-unit-circle)

1. 7

[Find trigonometric ratios of special angles](https://www.ixl.com/math/precalculus/find-trigonometric-ratios-of-special-angles)

1. 8

[Find trigonometric ratios using reference angles](https://www.ixl.com/math/precalculus/find-trigonometric-ratios-using-reference-angles)

1. 9

[Inverses of trigonometric functions](https://www.ixl.com/math/precalculus/inverses-of-trigonometric-functions)

1. 10

[Solve trigonometric equations](https://www.ixl.com/math/precalculus/solve-trigonometric-equations)

1. 11

[Trigonometric ratios: find a side length](https://www.ixl.com/math/precalculus/trigonometric-ratios-find-a-side-length)

1. 12

[Trigonometric ratios: find an angle measure](https://www.ixl.com/math/precalculus/trigonometric-ratios-find-an-angle-measure)

1. 13

[Solve a right triangle](https://www.ixl.com/math/precalculus/solve-a-right-triangle)

1. 14

[Law of Sines](https://www.ixl.com/math/precalculus/law-of-sines)

1. 15

[Law of Cosines](https://www.ixl.com/math/precalculus/law-of-cosines)

1. 16

[Solve a triangle](https://www.ixl.com/math/precalculus/solve-a-triangle)

1. 17

[Area of a triangle: sine formula](https://www.ixl.com/math/precalculus/area-of-a-triangle-sine-formula)

1. 18

[Area of a triangle: Heron's formula](https://www.ixl.com/math/precalculus/area-of-a-triangle-herons-formula)

N.Trigonometric functions

1. 1

[Find properties of sine functions](https://www.ixl.com/math/precalculus/find-properties-of-sine-functions)

1. 2

[Write equations of sine functions from graphs](https://www.ixl.com/math/precalculus/write-equations-of-sine-functions-from-graphs)

1. 3

[Write equations of sine functions using properties](https://www.ixl.com/math/precalculus/write-equations-of-sine-functions-using-properties)

1. 4

[Graph sine functions](https://www.ixl.com/math/precalculus/graph-sine-functions)

1. 5

[Graph translations of sine functions](https://www.ixl.com/math/precalculus/graph-translations-of-sine-functions)

1. 6

[Find properties of cosine functions](https://www.ixl.com/math/precalculus/find-properties-of-cosine-functions)

1. 7

[Write equations of cosine functions from graphs](https://www.ixl.com/math/precalculus/write-equations-of-cosine-functions-from-graphs)

1. 8

[Write equations of cosine functions using properties](https://www.ixl.com/math/precalculus/write-equations-of-cosine-functions-using-properties)

1. 9

[Graph cosine functions](https://www.ixl.com/math/precalculus/graph-cosine-functions)

1. 10

[Graph translations of cosine functions](https://www.ixl.com/math/precalculus/graph-translations-of-cosine-functions)

1. 11

[Graph sine and cosine functions](https://www.ixl.com/math/precalculus/graph-sine-and-cosine-functions)

1. 12

[Graph translations of sine and cosine functions](https://www.ixl.com/math/precalculus/graph-translations-of-sine-and-cosine-functions)

O.Trigonometric identities

1. 1

[Complementary angle identities](https://www.ixl.com/math/precalculus/complementary-angle-identities)

1. 2

[Symmetry and periodicity of trigonometric functions](https://www.ixl.com/math/precalculus/symmetry-and-periodicity-of-trigonometric-functions)

1. 3

[Trigonometric identities I](https://www.ixl.com/math/precalculus/trigonometric-identities)

1. 4

[Trigonometric identities II](https://www.ixl.com/math/precalculus/trigonometric-identities-ii)

P.Conic sections

1. 1

[Find properties of parabolas](https://www.ixl.com/math/precalculus/find-properties-of-parabolas)

1. 2

[Write equations of parabolas in vertex form](https://www.ixl.com/math/precalculus/write-equations-of-parabolas-in-vertex-form)

1. 3

[Graph parabolas](https://www.ixl.com/math/precalculus/graph-parabolas)

1. 4

[Find properties of circles](https://www.ixl.com/math/precalculus/find-properties-of-circles)

1. 5

[Write equations of circles in standard form](https://www.ixl.com/math/precalculus/write-equations-of-circles-in-standard-form)

1. 6

[Graph circles](https://www.ixl.com/math/precalculus/graph-circles)

1. 7

[Find properties of ellipses](https://www.ixl.com/math/precalculus/find-properties-of-ellipses)

1. 8

[Find the eccentricity of an ellipse](https://www.ixl.com/math/precalculus/find-the-eccentricity-of-an-ellipse)

1. 9

[Write equations of ellipses in standard form](https://www.ixl.com/math/precalculus/write-equations-of-ellipses-in-standard-form)

1. 10

[Find properties of hyperbolas](https://www.ixl.com/math/precalculus/find-properties-of-hyperbolas)

1. 11

[Find the eccentricity of a hyperbola](https://www.ixl.com/math/precalculus/find-the-eccentricity-of-a-hyperbola)

1. 12

[Write equations of hyperbolas in standard form](https://www.ixl.com/math/precalculus/write-equations-of-hyperbolas-in-standard-form)

1. 13

[Convert equations of conic sections from general to standard form](https://www.ixl.com/math/precalculus/convert-equations-of-conic-sections-from-general-to-standard-form)

Q.Real numbers

1. 1

[Sort rational and irrational numbers](https://www.ixl.com/math/precalculus/sort-rational-and-irrational-numbers)

1. 2

[Classify rational and irrational numbers](https://www.ixl.com/math/precalculus/classify-rational-and-irrational-numbers)

1. 3

[Properties of operations on rational and irrational numbers](https://www.ixl.com/math/precalculus/properties-of-operations-on-rational-and-irrational-numbers)

R.Complex numbers

1. 1

[Add and subtract complex numbers](https://www.ixl.com/math/precalculus/add-and-subtract-complex-numbers)

1. 2

[Complex conjugates](https://www.ixl.com/math/precalculus/complex-conjugates)

1. 3

[Multiply and divide complex numbers](https://www.ixl.com/math/precalculus/multiply-and-divide-complex-numbers)

1. 4

[Add, subtract, multiply, and divide complex numbers](https://www.ixl.com/math/precalculus/add-subtract-multiply-and-divide-complex-numbers)

1. 5

[Absolute values of complex numbers](https://www.ixl.com/math/precalculus/absolute-values-of-complex-numbers)

1. 6

[Powers of i](https://www.ixl.com/math/precalculus/powers-of-i)

S.Complex plane

1. 1

[Introduction to the complex plane](https://www.ixl.com/math/precalculus/introduction-to-the-complex-plane)

1. 2

[Graph complex numbers](https://www.ixl.com/math/precalculus/graph-complex-numbers)

1. 3

[Addition in the complex plane](https://www.ixl.com/math/precalculus/addition-in-the-complex-plane)

1. 4

[Subtraction in the complex plane](https://www.ixl.com/math/precalculus/subtraction-in-the-complex-plane)

1. 5

[Graph complex conjugates](https://www.ixl.com/math/precalculus/graph-complex-conjugates)

1. 6

[Absolute value in the complex plane](https://www.ixl.com/math/precalculus/absolute-value-in-the-complex-plane)

1. 7

[Midpoints in the complex plane](https://www.ixl.com/math/precalculus/midpoints-in-the-complex-plane)

1. 8

[Distance in the complex plane](https://www.ixl.com/math/precalculus/distance-in-the-complex-plane)

T.Polar form

1. 1

[Find the modulus and argument of a complex number](https://www.ixl.com/math/precalculus/find-the-modulus-and-argument-of-a-complex-number)

1. 2

[Convert complex numbers from rectangular to polar form](https://www.ixl.com/math/precalculus/convert-complex-numbers-from-rectangular-to-polar-form)

1. 3

[Convert complex numbers from polar to rectangular form](https://www.ixl.com/math/precalculus/convert-complex-numbers-from-polar-to-rectangular-form)

1. 4

[Convert complex numbers between rectangular and polar form](https://www.ixl.com/math/precalculus/convert-complex-numbers-between-rectangular-and-polar-form)

1. 5

[Match polar equations and graphs](https://www.ixl.com/math/precalculus/match-polar-equations-and-graphs)

U.Two-dimensional vectors

1. 1

[Find the magnitude of a vector](https://www.ixl.com/math/precalculus/find-the-magnitude-of-a-vector)

1. 2

[Find the component form of a vector](https://www.ixl.com/math/precalculus/find-the-component-form-of-a-vector)

1. 3

[Find the direction angle of a vector](https://www.ixl.com/math/precalculus/find-the-direction-angle-of-a-vector)

1. 4

[Find the component form of a vector from its magnitude and direction angle](https://www.ixl.com/math/precalculus/find-the-component-form-of-a-vector-from-its-magnitude-and-direction-angle)

1. 5

[Graph a resultant vector using the triangle method](https://www.ixl.com/math/precalculus/graph-a-resultant-vector-using-the-triangle-method)

1. 6

[Graph a resultant vector using the parallelogram method](https://www.ixl.com/math/precalculus/graph-a-resultant-vector-using-the-parallelogram-method)

1. 7

[Add vectors](https://www.ixl.com/math/precalculus/add-vectors)

1. 8

[Subtract vectors](https://www.ixl.com/math/precalculus/subtract-vectors)

1. 9

[Find the magnitude and direction of a vector sum](https://www.ixl.com/math/precalculus/find-the-magnitude-and-direction-of-a-vector-sum)

1. 10

[Multiply a vector by a scalar](https://www.ixl.com/math/precalculus/multiply-a-vector-by-a-scalar)

1. 11

[Find the magnitude of a vector scalar multiple](https://www.ixl.com/math/precalculus/find-the-magnitude-of-a-vector-scalar-multiple)

1. 12

[Determine the direction of a vector scalar multiple](https://www.ixl.com/math/precalculus/determine-the-direction-of-a-vector-scalar-multiple)

1. 13

[Find a unit vector](https://www.ixl.com/math/precalculus/find-a-unit-vector)

1. 14

[Linear combinations of vectors](https://www.ixl.com/math/precalculus/linear-combinations-of-vectors)

V.Three-dimensional vectors

1. 1

[Find the magnitude of a three-dimensional vector](https://www.ixl.com/math/precalculus/find-the-magnitude-of-a-three-dimensional-vector)

1. 2

[Find the component form of a three-dimensional vector](https://www.ixl.com/math/precalculus/find-the-component-form-of-a-three-dimensional-vector)

1. 3

[Add and subtract three-dimensional vectors](https://www.ixl.com/math/precalculus/add-and-subtract-three-dimensional-vectors)

1. 4

[Scalar multiples of three-dimensional vectors](https://www.ixl.com/math/precalculus/scalar-multiples-of-three-dimensional-vectors)

1. 5

[Find a three-dimensional unit vector](https://www.ixl.com/math/precalculus/find-a-three-dimensional-unit-vector)

1. 6

[Linear combinations of three-dimensional vectors](https://www.ixl.com/math/precalculus/linear-combinations-of-three-dimensional-vectors)

W.Sequences and series

1. 1

[Find terms of a sequence](https://www.ixl.com/math/precalculus/find-terms-of-a-sequence)

1. 2

[Find terms of a recursive sequence](https://www.ixl.com/math/precalculus/find-terms-of-a-recursive-sequence)

1. 3

[Identify a sequence as explicit or recursive](https://www.ixl.com/math/precalculus/identify-a-sequence-as-explicit-or-recursive)

1. 4

[Find a recursive formula](https://www.ixl.com/math/precalculus/find-a-recursive-formula)

1. 5

[Find recursive and explicit formulas](https://www.ixl.com/math/precalculus/find-recursive-and-explicit-formulas)

1. 6

[Convert a recursive formula to an explicit formula](https://www.ixl.com/math/precalculus/convert-a-recursive-formula-to-an-explicit-formula)

1. 7

[Convert an explicit formula to a recursive formula](https://www.ixl.com/math/precalculus/convert-an-explicit-formula-to-a-recursive-formula)

1. 8

[Convert between explicit and recursive formulas](https://www.ixl.com/math/precalculus/convert-between-explicit-and-recursive-formulas)

1. 9

[Identify arithmetic and geometric series](https://www.ixl.com/math/precalculus/identify-arithmetic-and-geometric-series)

1. 10

[Introduction to sigma notation](https://www.ixl.com/math/precalculus/introduction-to-sigma-notation)

1. 11

[Find the sum of an arithmetic series](https://www.ixl.com/math/precalculus/find-the-sum-of-an-arithmetic-series)

1. 12

[Find the sum of a finite geometric series](https://www.ixl.com/math/precalculus/find-the-sum-of-a-finite-geometric-series)

1. 13

[Introduction to partial sums](https://www.ixl.com/math/precalculus/introduction-to-partial-sums)

1. 14

[Partial sums of arithmetic series](https://www.ixl.com/math/precalculus/partial-sums-of-arithmetic-series)

1. 15

[Partial sums of geometric series](https://www.ixl.com/math/precalculus/partial-sums-of-geometric-series)

1. 16

[Partial sums: mixed review](https://www.ixl.com/math/precalculus/partial-sums-mixed-review)

1. 17

[Convergent and divergent geometric series](https://www.ixl.com/math/precalculus/convergent-and-divergent-geometric-series)

1. 18

[Find the value of an infinite geometric series](https://www.ixl.com/math/precalculus/find-the-value-of-an-infinite-geometric-series)

1. 19

[Write a repeating decimal as a fraction](https://www.ixl.com/math/precalculus/write-a-repeating-decimal-as-a-fraction)

X.Probability

1. 1

[Introduction to probability](https://www.ixl.com/math/precalculus/introduction-to-probability)

1. 2

[Calculate probabilities of events](https://www.ixl.com/math/precalculus/calculate-probabilities-of-events)

1. 3

[Combinations and permutations](https://www.ixl.com/math/precalculus/combinations-and-permutations)

1. 4

[Find probabilities using combinations and permutations](https://www.ixl.com/math/precalculus/find-probabilities-using-combinations-and-permutations)

1. 5

[Find probabilities using two-way frequency tables](https://www.ixl.com/math/precalculus/find-probabilities-using-two-way-frequency-tables)

1. 6

[Identify independent events](https://www.ixl.com/math/precalculus/identify-independent-events)

1. 7

[Find conditional probabilities](https://www.ixl.com/math/precalculus/find-conditional-probabilities)

1. 8

[Independence and conditional probability](https://www.ixl.com/math/precalculus/independence-and-conditional-probability)

1. 9

[Find conditional probabilities using two-way frequency tables](https://www.ixl.com/math/precalculus/find-conditional-probabilities-using-two-way-frequency-tables)

1. 10

[Find probabilities using the addition rule](https://www.ixl.com/math/precalculus/find-probabilities-using-the-addition-rule)

Y.Probability distributions

1. 1

[Identify discrete and continuous random variables](https://www.ixl.com/math/precalculus/identify-discrete-and-continuous-random-variables)

1. 2

[Write a discrete probability distribution](https://www.ixl.com/math/precalculus/write-a-discrete-probability-distribution)

1. 3

[Graph a discrete probability distribution](https://www.ixl.com/math/precalculus/graph-a-discrete-probability-distribution)

1. 4

[Expected values of random variables](https://www.ixl.com/math/precalculus/expected-values-of-random-variables)

1. 5

[Variance of random variables](https://www.ixl.com/math/precalculus/variance-of-random-variables)

1. 6

[Standard deviation of random variables](https://www.ixl.com/math/precalculus/standard-deviation-of-random-variables)

1. 7

[Write the probability distribution for a game of chance](https://www.ixl.com/math/precalculus/write-the-probability-distribution-for-a-game-of-chance)

1. 8

[Expected values for a game of chance](https://www.ixl.com/math/precalculus/expected-values-for-a-game-of-chance)

1. 9

[Choose the better bet](https://www.ixl.com/math/precalculus/choose-the-better-bet)

1. 10

[Find probabilities using the binomial distribution](https://www.ixl.com/math/precalculus/find-probabilities-using-the-binomial-distribution)

1. 11

[Mean, variance, and standard deviation of binomial distributions](https://www.ixl.com/math/precalculus/mean-variance-and-standard-deviation-of-binomial-distributions)

1. 12

[Find probabilities using the normal distribution I](https://www.ixl.com/math/precalculus/find-probabilities-using-the-normal-distribution)

1. 13

[Find probabilities using the normal distribution II](https://www.ixl.com/math/precalculus/find-probabilities-using-the-normal-distribution-ii)

1. 14

[Find z-values](https://www.ixl.com/math/precalculus/find-z-values)

1. 15

[Find values of normal variables](https://www.ixl.com/math/precalculus/find-values-of-normal-variables)

1. 16

[Distributions of sample means](https://www.ixl.com/math/precalculus/distributions-of-sample-means)

1. 17

[The Central Limit Theorem](https://www.ixl.com/math/precalculus/the-central-limit-theorem)

1. 18

[Use normal distributions to approximate binomial distributions](https://www.ixl.com/math/precalculus/use-normal-distributions-to-approximate-binomial-distributions)

Z.Statistics

1. 1

[Identify biased samples](https://www.ixl.com/math/precalculus/identify-biased-samples)

1. 2

[Variance and standard deviation](https://www.ixl.com/math/precalculus/variance-and-standard-deviation)

1. 3

[Identify an outlier](https://www.ixl.com/math/precalculus/identify-an-outlier)

1. 4

[Identify an outlier and describe the effect of removing it](https://www.ixl.com/math/precalculus/identify-an-outlier-and-describe-the-effect-of-removing-it)

1. 5

[Outliers in scatter plots](https://www.ixl.com/math/precalculus/outliers-in-scatter-plots)

1. 6

[Match correlation coefficients to scatter plots](https://www.ixl.com/math/precalculus/match-correlation-coefficients-to-scatter-plots)

1. 7

[Calculate correlation coefficients](https://www.ixl.com/math/precalculus/calculate-correlation-coefficients)

1. 8

[Find the equation of a regression line](https://www.ixl.com/math/precalculus/find-the-equation-of-a-regression-line)

1. 9

[Interpret regression lines](https://www.ixl.com/math/precalculus/interpret-regression-lines)

1. 10

[Analyze a regression line of a data set](https://www.ixl.com/math/precalculus/analyze-a-regression-line-of-a-data-set)

1. 11

[Analyze a regression line using statistics of a data set](https://www.ixl.com/math/precalculus/analyze-a-regression-line-using-statistics-of-a-data-set)

1. 12

[Find confidence intervals for population means](https://www.ixl.com/math/precalculus/find-confidence-intervals-for-population-means)

1. 13

[Find confidence intervals for population proportions](https://www.ixl.com/math/precalculus/find-confidence-intervals-for-population-proportions)

1. 14

[Interpret confidence intervals for population means](https://www.ixl.com/math/precalculus/interpret-confidence-intervals-for-population-means)

1. 15

[Experiment design](https://www.ixl.com/math/precalculus/experiment-design)

1. 16

[Analyze the results of an experiment using simulations](https://www.ixl.com/math/precalculus/analyze-the-results-of-an-experiment-using-simulations)